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# Environmental Compliance Assessment and Management Program (ECAMP)

## U.S. Air Force

The number of environmental laws and regulations have continued to grow in the United States and worldwide, making compliance with these regulations increasingly difficult. Environmental assessments became a way to determine compliance with current environmental regulations. The U.S. Air Force has adopted an environmental compliance program that identifies compliance problems before they are cited as violations by the U.S. Environmental Protection Agency (USEPA).

Beginning in 1984, the U.S. Army Construction Engineering Research Laboratories (USACERL), in cooperation with the U.S. Air Force, began research on the Environmental Compliance Assessment and Management Program (ECAMP). The concept was to combine Code of Federal Regulations (CFRs), Air Force Regulations (AFRs), Air Force Instructions (AFIs), and Department of Defense (DOD) Directives, along with good management practices and risk-management issues, into a series of checklists that show legal requirements and which specific items or operations to review. Each assessment protocol lists a point of contact to help assessors review the checklists as effectively as possible.

Since this initial printing, the ECAMP manual has been updated and revised annually. The manual is continually updated to address new environmental compliance laws and regulations.

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## FOREWORD

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The research was performed by the Environmental Compliance Modeling and Systems Division (EC) of the Environmental Sustainment Laboratory (EL), U.S. Army Construction Engineering Research Laboratories (USACERL). The Principal Investigator was Donna J. Schell, Environmental Protocol Team, CECER-ECP. Dr. Diane K. Mann, CECER-ECP is Acting Team Leader. Dr. John T. Bandy is Chief, CECER-EC, and William D. Goran is Chief, CECER-EL.

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## NOTICE

This manual is intended as general guidance for personnel at U.S. Air Force facilities. It is not, nor is it intended to be, a complete treatise on environmental laws and regulations. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information contained herein. For any specific questions about, or interpretations of, the legal references herein, consult appropriate counsel.

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## COMPLIANCE CATEGORIES

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## MANUAL OBJECTIVES AND ORGANIZATION

This manual provides the Environmental Compliance Assessment and Management Program (ECAMP) assessment checklists to be used during an ECAMP assessment. These environmental assessment checklists are based on Federal environmental regulations and are to be supplemented locally using the Air Force (AF) Form 1954, Environmental Compliance Requirements, to include state and local environmental regulations that are applicable to USAF installations and are more stringent than the Federal regulations included in this manual. If state and local requirements are more stringent than Federal requirements, the more stringent of the two has preemptive authority. This manual, with the local supplements, serves as the primary tool in conducting the environmental compliance assessment phase of the ECAMP process. Specifically, this manual:

1. Compiles applicable Federal, Department of Defense (DOD), and Air Force environmental regulations and instructions with Air Force operations and activities
2. Synthesizes environmental regulations, management practices (MP), and risk management issues into consistent and easy to use checklists
3. Serves as an aid in the assessment process and the management action development phases of the ECAMP.

This manual is divided into 11 sections. General ECAMP guidance and information applicable to all 11 compliance assessment checklists in the ECAMP can be found in the Main Introduction. Sections 1 through 11 contain the specific environmental compliance guidelines and checklists for each of the eleven compliance categories:

- Air Emissions Management
- Hazardous Materials Management
- Hazardous Waste Management
- Natural and Cultural Resources Management
- Environmental Noise Management
- Pesticides Management
- Petroleum, Oil, and Lubricants (POL) Management
- Solid Waste Management
- Special Programs Management
- Water Quality Management
- Pollution Prevention Management.

This manual contains references to existing Air Force Regulations (AFRs). The Air Force is in the process of replacing AFRs with Air Force Policy Directives (AFPDs), Air Force Instructions (AFIs), Air Force Manuals (AFMs), and Air Force Pamphlets (AFPs). This ECAMP manual contains references to a combination of the above. References to AFRs will be replaced with applicable citations in the next version of U.S. ECAMP. HQ USAF/CEV will issue interim guidance as the new policies and regulations are approved.

**(NOTE: The regulations in all of the volumes have been promulgated through 12 May 1994.)**





## **PROGRAM BACKGROUND**

The Environmental Compliance Assessment and Management Program (ECAMP) is explained in AFI 32-7045, *Environmental Compliance Assessment and Management Program (ECAMP)*. The primary objectives of ECAMP are to:

1. improve Air Force environmental management
2. improve Air Force environmental compliance and compliance management in the United States and its possessions
3. build supporting financial programs and budgets for environmental compliance requirements
4. ensure that Major Commands (MAJCOMs) are effectively addressing past, present, and future environmental concerns.

Air Force installations, support sites, and Government Owned Contractor Operated (GOCO) facilities are required to receive an external environmental compliance assessment at least once every 3 yr. Each installation and support site must conduct an internal assessment each calendar year, except in years when external assessments are conducted.

Facilities can be exempted from the ECAMP if their inclusion in the program will significantly interfere with their military effectiveness or if it is otherwise in the national interest. Approval authority for such exemptions is the Deputy Assistant Secretary of the Air Force for Environment, Safety, and Occupational Health (SAF/MIQ). The MAJCOM Environmental Protection Committee (EPC) will prepare requests for exemption and forward to HQ USAF/CEV for action.



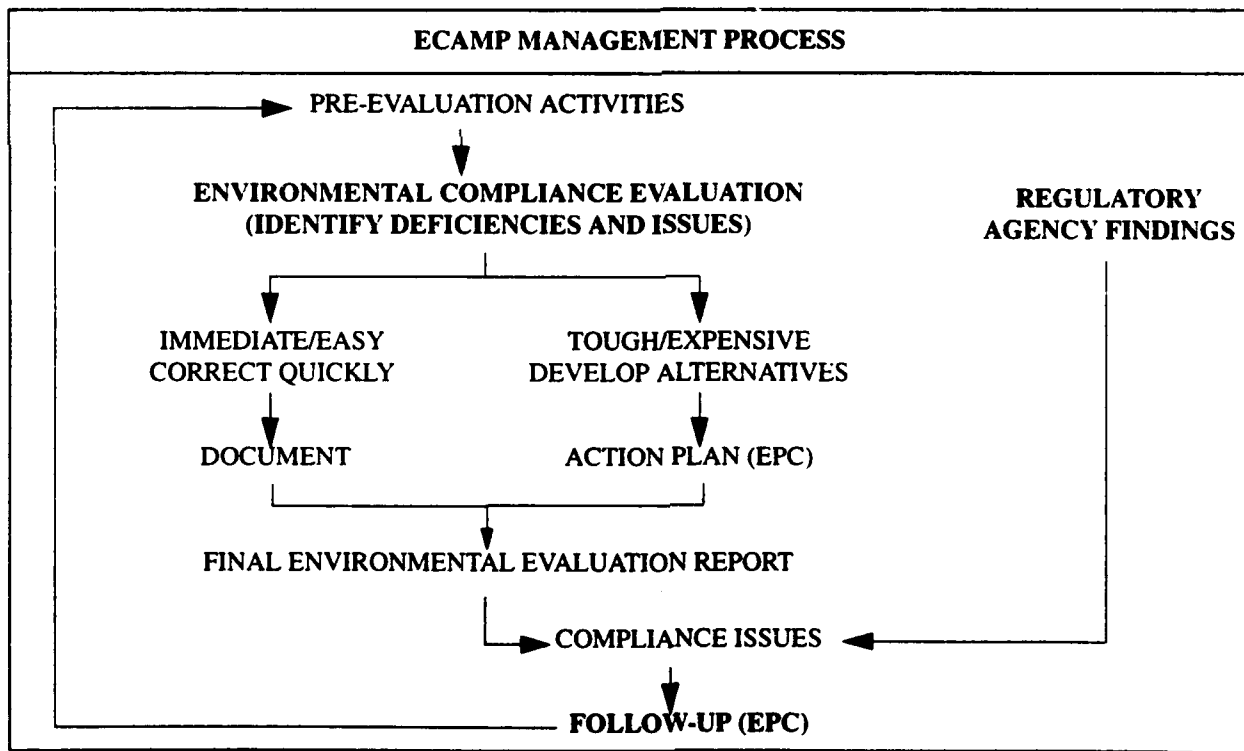
## ECAMP PROGRAM MANAGEMENT PROCESS

The ECAMP program management process begins with the environmental compliance assessment and written report that identifies compliance and management issues. The Commander, through the EPC, then assigns appropriate staff agencies to work each issue.

**ECAMP Action Summary** - The path illustrated on the far left of the flowchart represents the process the installation follows in resolving most issues. Immediate hazards should, of course, be addressed as quickly as possible. The procedural, easy-to-fix issues, are corrected during the assessment process and documented in the report.

The path in the center, for the tough and expensive issues, includes preparing a management action plan describing how these problems will be addressed.

Formal notices of noncompliance issued by regulatory agencies are represented by the path on the far right. Open notices of noncompliance at the time of the assessment are included in the ECAMP assessment and report. Notices of noncompliance issued after the date of the ECAMP assessment do not appear in the report, but are managed by the installation EPC along with ECAMP issues.





## ENVIRONMENTAL COMPLIANCE ASSESSMENT PROCESS

The ECAMP program management process described above can be divided into three distinct phases:

1. Previsit activities
2. Site assessment activities
3. Post assessment activities.

**Preassessment Activities** - There are five key activities that should be completed before an assessment team begins the site assessment.

1. **Previsit Questionnaire** - The purpose of the previsit questionnaire is to collect information that will familiarize the assessment team with the installation and its operations so that its assessment team is able to review the applicable regulations and prepare a detailed assessment schedule. The previsit questionnaire is essential as part of the previsit activities for an external assessment. It is also an excellent tool for ensuring internal assessment team members are starting from the same base of information. Table 1 contains a sample previsit questionnaire (see page xlvi).
2. **Define Assessment Scope and Team Responsibilities** - The installation or MAJCOM may wish to place special emphasis on certain compliance categories or to review additional areas not covered in the volumes. These goals should be clearly stated so the assessment can be properly planned. Additionally, the duration of the assessment, appointment of team members by the EPC, and handling of tenants and off-base sites should be addressed. Typical teams include members from personnel, and may include: Environmental Coordinator (EC), Bioenvironmental Engineering (BEE), Judge Advocate (JA), Ground Supply Officer, Supply, Maintenance, Transportation, Defense Reutilization and Marketing Organization (DRMO), Base Civil Engineer (BCE) Water and Waste Superintendent, BCE (Contract Management), BCE (Natural Resources Manager), BCE (Fire Department), BCE (Engineering Design); or, if contracted, people with equivalent varied experience may be chosen. Assessors should possess a good working knowledge of the various environmental pollution statutes and regulations. Collectively, the team must have the knowledge and background required to efficiently and effectively conduct all aspects of an installation assessment. Team members should also understand appropriate techniques for collecting information and interviewing installation personnel. Team members should have received formal training or received oversight from someone who has received formal training. Finally, responsibilities for each of the checklists should be assigned to the team members as appropriate.

Table 2 (see page lxiii) lists the major environmental operations and activities at typical Air Force installations and the sections within which they are addressed. As shown, many activities and operations cause environmental impacts in more than one area, and are, therefore, addressed in more than one section.

3. **Review Relevant Regulations** - Once the assessment scope and responsibilities are known, the assessors should undertake a thorough review of the relevant Federal, state, and local regulations affecting the installation. One online data source of state regulations that is available to Air Force installations is DENIX. The applicable environmental regulations must be determined before the assessment begins. If not already available, checklist items for state and local requirements must be added to the checklists in these volumes.

4. **Develop Assessment Schedule** - The team should develop a detailed assessment schedule that includes the activities planned for each day.
5. **Review Assessment Protocols** - Each assessor should know the regulatory requirements and be familiar with the assessment checklists that will be used.

**Site Assessment Activities** - Onsite, the assessors will conduct record searches, interviews, and site surveys to determine the compliance status of the installation. Operations are compared with environmental standards and any deficiencies are written up as findings. The data collected should be sufficient, reliable, and relevant to provide a sound basis for assessment findings and recommendations. Figure 1 (see page xiii, the ECAMP Finding Summary is available to assist assessors in compiling needed information during an ECAMP assessment. A Finding Summary should be completed for each finding during the assessment. These forms comprise the basis of the ECAMP report. Figure 1 is based on the future version of the finding screen layout on Work Information Management System (WIMS).

All items of Finding Summary must be filled in up to Sampling Results for negative findings and up to Criteria for positive findings. This a factual statement describing the status of the process, permit, or situation under investigation, and this the environmental standard (Federal, state, local, DOD, Air Force, Management Practices, etc.) the installation is being measured against. A condition may be positive if the installation is going above and beyond the requirements. Optional inputs include: The reason the condition exists; causes can include staffing problems, incorrect or lack of training, procedures that are not followed, inadequate equipment or facilities, and impact on the installation if the finding goes uncorrected. This can be actual or potential; effects can include health and safety, environmental damage, cost, effectiveness of operation, legal consequences, and mission impact. Further instructions for completing the Finding Form start on page xv.

For example, a team member assigned to assess the installation's hazardous waste management program visited the accumulation point at building 5000. The installation is a small quantity generator (SQG). The assessor noticed some drums were damaged and took a count of the total number of drums and the number of damaged drums to get an accurate description for the finding. Three of the eight drums were rusted and bulging. Item HW.28 in Section 3 states that 40 CFR 262.34(d)(2) and 40 CFR 265.171 require containers to be in good condition and not leaking. The damaged drums were behind the others, so the accumulation point manager may have overlooked them during his regular inspections. The accumulation point manager immediately put overpack drums on order. The assessor is now ready to fill out a Finding Form for this finding. A completed sample form for this finding is at Figure 2 (see page xxi).

(NOTE: Any findings discovered through the use of this guidance manual by the internal assessment should be validated by the environmental coordinator and Judge Advocate. The findings and corrective actions should be recorded in the EPC minutes.)

**Post Assessment Activities.** The first step in the post-assessment activities is the creation of the draft report. The MAJCOM EPC will ensure that each installation reviews and comments on the Preliminary Environmental Findings, develops a management action plan that addresses all unresolved findings; and tracks significant, major, and minor noncompliance findings. The MAJCOM EPC will coordinate the development of a management action plan, the Draft Final Environmental Compliance Assessment Report, and the Final Environmental Compliance Assessment Report within 120 days of the site assessment. Upon approval, the MAJCOM will forward the final report to HQ USAF/CEV and AFCEE/ESP via the WIMS-ES.



ECAMP Finding Form (continued)

Question Number \_\_\_\_\_

A-106 Media \_\_\_\_\_

Responsible Organization \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Org Type \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CFR Citation \_\_\_\_\_

Other Criteria \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Root Cause \_\_\_\_\_ Explain \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Violation Type \_\_\_\_\_ Finding ID \_\_\_\_\_ Finding Type \_\_\_\_\_ Source \_\_\_\_\_

Owning Org POC \_\_\_\_\_ Off Sym \_\_\_\_\_ Phone \_\_\_\_\_ Ext \_\_\_\_\_

Env Mgt Org POC \_\_\_\_\_ Off Sym \_\_\_\_\_ Phone \_\_\_\_\_ Ext \_\_\_\_\_

Suggested Solution \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

A-106 Proj # \_\_\_\_\_ Est Cost \$ \_\_\_\_\_



## Definitions for Finding Form

(NOTE: The following fields which are included on the form are not in the current version of the software, but this form can be used to assist with data entry in the current version: Repeat Finding; Grid Coordinates; Street Address; Organization Type; CFR Citation; Other Criteria; Root Cause; additional two entries for Violation Type; additional two entries for Finding ID; Suggested Solution.)

1. **Date of Finding:** Enter the date the finding was discovered. This is the exact date the finding was discovered. Try to avoid using the same date for all findings. YYYY MM DD (Convert "Finding Date")
2. **Protocol:** Using the selector, choose the protocol for this finding.
  - Air
  - Hazardous Materials
  - Hazardous Waste
  - Nat/Cul Resources
  - Noise
  - Pesticides
  - POL
  - Solid Waste
  - Special Programs (PCBs, Asbestos, Radon, IRP, EIAP, A-106, WIMS-ES, Lead-based Paint)
  - Water Quality
  - Pollution Prevention
3. **Finding Number:** This field indicates the placement of this finding in the report. It may not have something to do with it's priority or status depending on the philosophy of the program manager. Each protocol has it's own set of numbers. In other words, you can have a HW - 001 and an AIR - 001.
4. **Rating:**
  - Significant
  - Major
  - Minor
  - Management Practice
  - Positive
5. **Repeat?:** Identify with a "Y" if this finding is a repeat finding. Has there been a finding documented in a prior ECAMP identical to this finding? If not, enter "N".
6. **Estimated Compliance Date (ECD):** What is the YY MM DD that this finding will be brought into compliance?
7. **Actual Compliance:** If the finding is brought into compliance during the evaluation, enter that date.
8. At least one of the following three must be completed. If more information is known, it should be entered.
  - a. **Street Address:** Enter the street/ mailing address for the location of this finding.
  - b. **Grid Coord:** Enter the grid coordinated for the location of the finding. This is optional.
  - c. **Facility Number:** Enter the facility number for the location of the finding.
9. **Location Description:** Use this field if facility number or street address is not applicable. Briefly describe the location of the finding.

10. **Finding Title:** Enter a brief, descriptive title for the finding. (up to 51 characters)
11. **Details:** Enter a detailed description of the finding. State what is wrong, how the process or procedures are being done now, and how long it has been under way. State exactly how the AF is out of compliance. Be concise, objective and strictly factual. Do not be subjective. Do not make inflammatory remarks. (up to 726 characters)
12. **Question #:** This is the question number from the ECAMP manual. The first 3-characters are entered automatically by the system. Enter the question number from the manual (enter the main paragraph number only, no periods or dashes required).
13. **A-106 Media:** Choose the A-106 media that best matches the finding condition.
- |    |   |
|----|---|
| AT | Atomic Energy   |
| CA | Clean Air Act   |
| CW | Clean Water Act   |
| ES | Endangered Species Act  |
| FF | Fed Insect/Fungicide/Rodent Act                                   |
| HP | Historic Preservation   |
| MU | Multi-Media   |
| NC | Noise Control   |
| NE | National Environment Policy Act                                   |
| RC | Resources Conservation and Recovery Act                           |
| SD | Safe Drinking Water Act   |
| SF | Comprehensive Environmental Response Compliance and Liability Act |
| TS | Toxic Substance Control Act                                       |
14. **Responsible Organization:** Enter the organizations that "caused" the finding. You can enter up to 3 organizations. This is the "who done it" data field that can be used for trend analysis to find organizations that need additional training, equipment, manpower, etc.
15. **Organization Type:** For each organization, identify the appropriate type code.
- |            |  |
|------------|--|
| Academic   | Academic                               |
| AC Maint   | Aircraft Maintenance                   |
| AC Clean   | Cleaning/degreasing aircraft parts     |
| AC Storage | Aircraft storage, ramp, parking, etc.  |
| AC Wash    | Aircraft washrack                      |
| AGE Repair | AGE Storage and/or Repair              |
| Alert      | Transient Alert                        |
| Arts       | Arts and Crafts                        |
| Auto Body  | Auto Hobby                             |
| Audio      | Audiovisual Services                   |
| Avionics   | Aircraft Avionics Maintenance          |
| Base Svc   | Base Service Station                   |
| Bio        | Bioenvironmental Engineering           |
| Bulk Fuels | Bulk Fuels Management                  |
| BX         | Base Exchange                          |
| Childcare  | Childcare center                       |
| Clean/Deg  | Cleaning and degreasing (not aircraft) |
| CE Maint   | Civil Engineering Maintenance Shop     |

CE Mat	Civil Engineering Material Control
CE Self	Civil Engineering Self-Help Store
Cmmssry	Commissary
Comm Maint	Communications Maintenance
Dental	Dental Clinic
DRMO	DRMO TSD Facility
Elect/Env	Electro/Environmental
Entomology	Entomology Shop
EOD	Explosive Ordinance Disposal
Env Mgt	Environmental Management
Fire Dept	fire Department
Golf	Gold Course
Heat Plnt	Heat Plant
Hvy Equip	Heavy Equipment Maintenance/Storage
Hospital	Hospital/Clinic
Housing	Housing Maintenance
Hyd/Pneu	Hydraulics/Pneudraulics
IWTP	Industrial Wastewater Treatment Plant
Landfill	Landfill
Off Bldg	Business Offices (CBPO, banks, etc.)
Other	Other, any other not listed
Rsrch Lab	Research Laboratory
Supply	Base Supply
Swim	Swimming Pool
Test Cell	Engine Test Cell
TSD	Base TSD Facility
Veh Maint	Vehicle Maintenance/storage
Veh Wash	Vehicle Washrack
Vet Clinic	Veterinary Clinic
WWTP	Wastewater Treatment Plant

16. **CFR Citation:** Enter the CFR citation for the finding.
17. **Other Criteria:** Enter all the laws, regulations, statutes, etc., other than the CFR citation, defining the out-of-compliance condition. You may also enter a brief description of that criteria. (up to 192 characters)
18. **Root Cause:** Select the root cause that best reflects the basic reason for the out of compliance condition.

**Materials:**

- M1 Supply  
M2 Poor Quality

**Personnel:**

- P1 Awareness of Requirement  
P2 Understanding  
P3 Not conscientious (deals with attitude of personnel)  
P4 Result vs. Action (The result did not equal the action taken. Procedures were followed which should have produced a favorable result but did not.)

- P5 Accountability not assigned
- P6 Action vs. Procedure (correct procedure(s) in place but incorrect action taken)
- P7 Insufficient skills
- P8 Inexperience (not an attitude of personnel)

**Equipment:**

- E1 Controls failure
- E2 Inadequate facility design
- E3 Monitoring equipment failure
- E4 Poor maintenance

**Techniques:**

- T1 Time to do the job
- T2 No procedures in place
- T3 Priority conflict
- T4 Inadequate procedures
- T5 Procedures not available

19. Explain the reason for your selection of Root Cause. Be specific and stick to the facts (up to 119 characters).

20. **Violation Type:** Choose the appropriate code(s) that best describe(s) the situation. You can enter up to three.

**Administrative**

- A1 Records
- A2 Labels
- A3 Reports
- A4 Manifests
- A5 Lack of a Permit
- A6 Inadequate/Missing Plan
- A7 Public Notification
- A8 Operator Certification
- A9 Fire Standard
- A10 Program Planning
- A11 Sampling
- A12 Training
- A13 Other
- A14 Registration
- A15 Uncharacterized
- A16 Lacking or Incomplete Inventory/Survey

**Potential Discharge**

- P1 Operational Practices
- P2 Inadequate Facility
- P3 Inadequate Equipment/Containers
- P4 Other
- P5 No Testing/Verification
- P6 Containment

**Discharge**

- D1 Excess Chemical Parameter
- D2 Excess Physical Parameter
- D3 Groundwater Contamination
- D4 Spills/Leaks
- D5 Other

21. **Finding ID Codes:** Choose the appropriate code(s). You can enter up to three.

Air Emissions

- 1A Fuel Burners
- 1B Incinerators
- 1C Volatile Organics
- 1D Others
- 1E Ozone Depl Chems
- 1F Particulates/Bead Blast
- 1G Air Toxics, Metals
- 1H General Requirements

Hazardous Material Mgt

- 2A Storage Structures
- 2B Operations/Management
- 2C Others

Hazardous Waste

- 3A Accumulation Points
- 3B TSD Facilities
- 3C Training
- 3D Waste Minimization
- 3E Others
- 3F Oil/Water Separators
- 3G Satellite Accum Points
- 3H Operational Procedures

Natural/Cultural Resources

- 4A Wildlife/Recreation/Forestry
- 4B Cultural/Historic
- 4C Land/Agriculture
- 4D Wetlands/Floodplains
- 4E Others

Noise Management

- 5A AICUZ
- 5B Procedures
- 5C Others

Pesticide Management

- 6A Facilities/Equipment
- 6B Operations/Mgt
- 6C Others

POL

- 7A Aboveground Tanks
- 7B Underground Tanks
- 7C Operations/Mgt
- 7D Others
- 7E Oil/Water Separators
- 7F Drum Storage

Solid Waste

- 8A Landfills
- 8B Receptacles
- 8C Recycling
- 8D Others
- 8E Medical Waste
- 8F Regulated Materials

Special Programs

- 9A PCBs
- 9B Asbestos
- 9C Radon Mitigation
- 9D Others
- 9E IRP
- 9F EIAP
- 9G A-106
- 9H ECAMP
- 9I Lead-Based Paint
- 9J Low Level Radiation
- 9K Automation Issues

Water Quality

- 10A Sanitary Wastewater
- 10B Industrial Wastewater
- 10C Stormwater Runoff
- 10D Nonpoint Runoff
- 10E Operations
- 10F Others
- 10G Facilities/Equipment
- 10H Oil/Water Separators
- 10I Drinking Water

Pollution Prevention

- 11A Management Plans
- 11B ODCs
- 11C EPA 17
- 11D Hazardous Waste Minimization
- 11E Recycling
- 11F Affirmative Procurement
- 11G Energy Conservation
- 11H Education and Training
- 11I Hazardous Material Control
- 11J Other

**22. Finding Type:** Choose the appropriate code.

Regulatory REG  
Procedural PRO  
Host Nation HON

**23. Source:** Choose the appropriate source for the definition of the noncompliance.

U.S. Protocols  
Worldwide Manual/Overseas Manual  
Installation Supplement to ECAMP Manual  
Command Supplement to ECAMP Manual  
Country Manual  
Country Supplement  
State Supplement  
Local Law/Ordinance

**24. Owning Organization POC:** Enter the name of the POC of the organization handling the fix.

**25. Office Symbol:** Enter the office symbol for the POC.

**26. Phone and Extension:** Enter the phone and extension for the POC.

**27. Environmental Management POC:** Enter the name of the POC within EM who is responsible for tracking this finding.

**28. Office Symbol:** Enter the office symbol for the POC.

**29. Phone and Extension:** Enter the phone and extension for the POC.

**30. Evaluator's Suggested Solution:** Enter the suggested solution for the evaluator. After validation, this is nonmodifiable (up to 308 characters).

**31. A-106 Project #:** If there is funding already programmed for the fix, enter the A-106 project number if available.

**32. Estimated Cost:** If the information is available, enter the estimated cost of the project.



ECAMP Finding Form (continued)

Question Number HW. 28

A-106 Media RC

Responsible Organization AGE

Org Type AGE Repair

CFR Citation 40 CFR 262.34(d)(2) and 265.171

Other Criteria \_\_\_\_\_

Root Cause P1 Explain Personnel in charge of the accumulation point was unaware that the condition of the drums was unacceptable.

Violation Type P2 P3 Finding ID 3A Finding Type REG Source U.S.

Owning Org POC BCE Off Sym \_\_\_\_\_ Phone 7603 Ext \_\_\_\_\_

Env Mgt Org POC Fred Smith Off Sym CE Phone 7603 Ext \_\_\_\_\_

Suggested Solution \_\_\_\_\_

1. Transfer contents of bad drums to new drums.
2. Place bad drums in an overpack drum.

A-106 Proj # \_\_\_\_\_ Est Cost \$ \_\_\_\_\_



## USING THE ECAMP MANUAL

Air Force installations engage in many operations and activities that can cause environmental impacts on public health and the environment if not controlled or properly managed. Many of these activities and operations are regulated by Federal, state, and local regulations, and by Air Force regulations/policies. After a review of these activities at Air Force it is apparent that there are major categories of environmental compliance into which most environmental regulations and Agency activities could be grouped. This manual is divided into 11 sections that correspond to major compliance categories.

1. Air Emissions Management
2. Hazardous Materials Management
3. Hazardous Waste Management
4. Natural Resource Management
5. Environmental Noise Management
6. Pesticide Management
7. Petroleum, Oils, and Lubricants (POL) Management
8. Solid Waste Management
9. Special Programs Management (includes asbestos, PCBs, radon, and noise)
10. Water Quality Management (includes both wastewater and potable water)
11. Pollution Prevention Management.

Each section is organized in the following format:

- A. **Applicability.** This provides guidance on the major activities and operations included in the section and a brief description of the major application.
- B. **Federal Legislation.** This identifies, in summary form, the key legislative issues associated with the compliance area in the Federal law.
- C. **State/Local Requirement.** This identifies the typical compliance areas normally addressed in state and local regulations. This section does not present individual state/local requirements. An assessment of state and local requirements must be conducted and supplemental checklist items prepared to cover these requirements. The manual is prepared in loose leaf form to allow state and local requirements to be easily inserted.
- D. **Department of Defense (DOD) Directives and Instructions.** This identifies DOD Directives and Instructions which have not yet been implemented by an AFR or AFI.
- E. **Air Force Regulations and Policies.** This identifies, in summary form, the key AFRs, AFIs, and AFPDs that mandate requirements in the compliance category.
- F. **Key Compliance Requirements.** This summarizes the significant compliance requirements associated with the regulations included in the checklist. It is a brief abstract summarizing the overall thrust of the regulations for that particular compliance category.
- G. **Responsibility for Compliance.** This identifies the personnel on the installation who have compliance responsibilities for the compliance category.

**H. Key Compliance Definitions.** This presents definitions taken from the CFRs and pertinent AFRs and AFIs for those key terms associated with each compliance category.

**I. Compliance Assessment Checklists.** The final portion of each section and its tables contain checklists composed of requirements or guidelines that serve as indicators to point out possible compliance problems, as well as practices, conditions, and situations that could indicate potential problems. They are intended to focus attention on the key compliance issues that should be investigated. Instructions are provided to direct the assessor to the appropriate action, references, or activity that corresponds to the specific requirement or guide.

## USING THE CHECKLISTS

Understanding the layout and structure of the checklists facilitates their use during the assessment. Please see Table 3 (page lxvii) for a sample of a portion of a checklist.

- **Explanation of Layout/Content.** The checklist portion of assessment section is divided into two columns. The first of these is a statement of a requirement. This may be a strict regulatory requirement, in which case the citation is given, or it may be a requirement that is considered to be a good management practice to maintain compliance, but which is not specifically mandated by regulation.

The second column gives instructions to help conduct the compliance assessment. These instructions are intended to be specific action items that should be accomplished by the investigator. Some of the instructions may be a simple documentation check taking a few minutes; others may require physical inspection of a facility.

- **Worksheet.** At the end of each section is an assessment worksheet. This worksheet should be reproduced and used during the assessment to take notes. It is designed to be inserted between each page of the checklists, allowing the main text to be kept usable for the next assessment. The worksheet is divided into two columns. The first column is a quick check for those items that are in compliance (C), not applicable (N/A) to the facility being reviewed, or require management action (RMA).

The second column on the worksheet allows for more detailed notations or comments. These notations will provide a record for use in preparing the final report. These notations should include both situations of substandard operation needing attention and those operations that are above requirements or provide examples of good programs. For future reference and clarity it is essential that the building number (or other reference to location) be made during the review.

- **Standard Checklist Items.** The first 5 checklist item in each section of the manual are standardized. The first item requires a review of any previous assessment documents. The second is a list of the Federal regulations that are required to be at the installation. The third is a management practice that indicated the Air Force documents that the installation should have on hand. The fourth requires a review of state and local regulations as well as indicating issues commonly regulated at the state and local level. The fifth item provides a place for assessors to write up findings that are based on regulations that have been promulgated since the publication of the manual or regulations not included in the manual. Table 3 provides an example of these checklist items as found in the section titled Solid Waste Management.

The assessment procedures are designed as an aid and should not be considered exhaustive. Use of the checklist requires the assessor's judgement to play a role in determining the focus and extent of further investigation. A review of appropriate state regulations should be conducted so additional review checklist items that reflect the substantive requirements of state/local regulations pertinent to individual facilities can be included on the checklists.



## CUSTOMIZING THE CHECKLISTS FOR YOUR INSTALLATION

**Creating Shop-Specific And Self-Inspection Checklists** - The ECAMP checklists in this manual are a useful tool for creating self-inspection checklists for individual shops. These shop-specific checklists, can be used by shop supervisors and workers to ensure correct practices and procedures are being followed on a routine basis. Thus, good self-inspection checklists are an excellent supplement to annual ECAMP assessments. A customized checklist can be created in five steps:

1. Review the shop's activities to determine which sections apply
2. Select broad portions of the applicable sections for closer review by using the guidance page found before the checklist in each section
3. Review the individual checklist items selected for application to the shop being assessed
4. Edit the applicable checklist items to make them shop-specific
5. Compile the checklist items

**Customized Checklist** - For example, using these five steps, a customized checklist for a paint shop is derived as follows:

1. A paint shop has many environmental concerns - emissions from painting activities; proper storage of flammable and combustible liquids; hazardous waste accumulation point requirements; management of the solid waste receptacles at the shop; and discharge of solvents, stripping compounds and paint solids into the storm or sanitary systems. Protocols that apply are Air Emissions Management, Hazardous Materials Management, Hazardous Waste Management, Pollution Prevention Management, Solid Waste Management, and Water Quality Management.
2. Referring to the guidance pages in this manual, the following sections may apply to the paint shop: in Air Emissions Management, spray painting or surface coating operations (checklist item A.4); in Hazardous Materials Management, storage of flammable or combustible liquids (checklist items HM.32 through HM.48); in Hazardous Waste Management, small quantity generator requirements (checklist items HW.8 through HW.15 and HW.20 through HW.45); in Solid Waste Management, management of solid waste receptacles (checklist items SW.8 and SW.14); in Water Quality Management, discharge to treatment works (checklist items W.76 through W.79).
3. Of the possible review checklist items obtained through the road maps, the following are applicable to paint shop operations: A.4; HM.32 through HM.45; HW.20 through HW.45; SW.8 and SW.14; W.77 through W.79. See Table 4 (page lxxi) for the applicable hazardous waste checklist items.
4. Most of these applicable checklist items can be easily rewritten to specifically address paint shop concerns. Using Hazardous Waste Management as an example, checklist items HW.20 through HW.45 are edited to delete interviews and inspections not applicable to this shop since it does not have hazardous waste storage tanks and it does not generate restricted wastes.
5. Finally, the edited checklist items are compiled. An example of edited checklist items is shown in Table 5 (see page lxxxi).



## **WRITING THE ECAMP REPORT**

All ECAMP documents prepared prior to the Final Environmental Report are internal working documents until the time that the Final Environmental Report is executed. They will be marked "For Official Use Only" and handled accordingly. The Air Force has determined that their premature release would jeopardize the Air Force's interest in preserving the free flow, analysis, and comment on internal information regarding environmental compliance. Therefore, except as otherwise required by law, ECAMP documents will not be released to the public sector prior to the execution of the Final Environmental Evaluation Report. As a matter of policy, the Final Environmental Evaluation Report will be made available for release to the public, upon request, as soon as it is executed.

Final assessment reports will consist of five chapters and subheadings for each chapter as follows:

**Chapter 1.0 Executive Summary**

- 1.1 Background**
- 1.2 Summary of Findings**

**Chapter 2.0 Background and Scope**

- 2.1 Background**
- 2.2 Scope**

**Chapter 3.0 Environmental Compliance Status**

- 3.1 Air Emissions Management**
- 3.2 Hazardous Materials Management**
- 3.3 Hazardous Waste Management**
- 3.4 Natural/Cultural Resources Management**
- 3.5 Environmental Noise Management**
- 3.6 Pesticide Management**
- 3.7 Petroleum, Oil, and Lubricant (POL) Management**
- 3.8 Solid Waste Management**
- 3.9 Special Programs Management**
- 3.10 Water Quality Management**
- 3.11 Pollution Prevention Management**

**Chapter 4.0 Environmental Practices Issues**

- 4.1 Air Emissions Management**
- 4.2 Hazardous Materials Management**
- 4.3 Hazardous Waste Management**
- 4.4 Natural/Cultural Resources Management**
- 4.5 Environmental Noise Management**
- 4.6 Pesticide Management**
- 4.7 Petroleum, Oil, and Lubricant (POL) Management**
- 4.8 Solid Waste Management**
- 4.9 Special Programs Management**
- 4.10 Water Quality Management**
- 4.11 Pollution Prevention Management**

## **Chapter 5.0 Management Plan**

- 5.1 Corrected environmental Compliance Findings**
- 5.2 Open environmental Compliance Findings**
- 5.3 Closed Environmental Practice Issues**
- 5.4 Open Environmental Practice Issues**

Each chapter of the assessment report should follow the described format:

**Chapter 1.0. Executive Summary** - The executive summary should contain background information and a summary of findings, as follows:

- 1. Background**
  - a. Date and location of the assessment and identification of the assessment team
  - b. Overall assessment purpose.
- 2. Summary of Findings**
  - a. Narrative summary of compliance status by section and major environmental issues. To provide balanced tone, consider placing positive comments first, followed by a summary of negative comments, if applicable
  - b. the Environmental Compliance Summary (see Figure 3 for format, page xxxi)
  - c. the Detailed Environmental Compliance Status (see Figure 4, page xxxii)
  - d. The Environmental Compliance Status (see Figure 5, page xxxv) which is a summary of findings by violation type.



**Figure 3**

**Environmental Compliance Summary**

<b>Compliance Area</b>	<b>Summary</b>			<b>TOTAL</b>
	<b>Sig</b>	<b>Major</b>	<b>Minor</b>	
1. Air Emissions	_____	_____	_____	_____
2. Hazardous Materials	_____	_____	_____	_____
3. Hazardous Wastes	_____	_____	_____	_____
4. Natural/Cultural Resources	_____	_____	_____	_____
5. Noise (Environmental)	_____	_____	_____	_____
6. Pesticides	_____	_____	_____	_____
7. POL	_____	_____	_____	_____
8. Solid Waste	_____	_____	_____	_____
9. Special Programs	_____	_____	_____	_____
10. Water Quality	_____	_____	_____	_____
11. Pollution Prevention	_____	_____	_____	_____
<b>TOTAL</b>	_____	_____	_____	_____

**Figure 4**

**Detailed Environmental Compliance Status**

<b>Compliance Area</b>	<b>FINDINGS</b>			
	<b>Sig</b>	<b>Major</b>	<b>Minor</b>	<b>TOTAL</b>
<b>Air Emissions</b>				
Fuel Burners	—	—	—	—
Incinerators	—	—	—	—
Volatile Organics	—	—	—	—
Vehicle Emissions	—	—	—	—
Ozone Depleting Chemicals	—	—	—	—
Particulates, Bead Blast	—	—	—	—
Air Toxics Metals	—	—	—	—
General Requirements	—	—	—	—
<b>TOTAL</b>	—	—	—	—
<b>Hazardous Materials</b>				
Storage Structures	—	—	—	—
Operations/Management	—	—	—	—
<b>TOTAL</b>	—	—	—	—
<b>Hazardous Waste</b>				
Accumulation Points	—	—	—	—
TSD Facilities	—	—	—	—
Training	—	—	—	—
Waste Minimization	—	—	—	—
Oil/Water Separators	—	—	—	—
Satellite Accumulation Points	—	—	—	—
Operational Procedures	—	—	—	—
<b>TOTAL</b>	—	—	—	—

**Figure 4 (continued)**

**Detailed Environmental Compliance Status**

Compliance Area	FINDINGS			
	Sig	Major	Minor	TOTAL
<b>Natural/Cultural Resources</b>				
Wilderness/Recreation/Forestry	—	—	—	—
Cultural/Historic	—	—	—	—
Land/Agriculture	—	—	—	—
Wetlands/Floodplains	—	—	—	—
<b>TOTAL</b>	—	—	—	—
<b>Noise (Environmental)</b>				
AICUZ	—	—	—	—
Procedures	—	—	—	—
Management	—	—	—	—
<b>TOTAL</b>	—	—	—	—
<b>Pesticides Management</b>				
Facilities/Equipment	—	—	—	—
Operations/Management	—	—	—	—
<b>TOTAL</b>	—	—	—	—
<b>POL</b>				
Aboveground Tanks	—	—	—	—
Underground Tanks	—	—	—	—
Operations/Management	—	—	—	—
Loading/Unloading Racks	—	—	—	—
Oil/Water Separators	—	—	—	—
Drum Storage	—	—	—	—
Hydrant System	—	—	—	—
<b>TOTAL</b>	—	—	—	—

**Figure 4 (continued)**

**Detailed Environmental Compliance Status**

Compliance Area	FINDINGS			
	Sig	Major	Minor	TOTAL
<b>Solid Waste</b>				
Landfills	—	—	—	—
Receptacles	—	—	—	—
Recycling	—	—	—	—
Medical Waste	—	—	—	—
Regulated Wastes	—	—	—	—
<b>TOTAL</b>	—	—	—	—
<b>Special Programs</b>				
PCB	—	—	—	—
Asbestos	—	—	—	—
Radon Mitigation	—	—	—	—
IRP	—	—	—	—
EIAP	—	—	—	—
A-106	—	—	—	—
ECAMP (Preparation/Conduct)	—	—	—	—
Lead-Based Paint	—	—	—	—
Low Level Radiation	—	—	—	—
<b>TOTAL</b>	—	—	—	—
<b>Water Quality</b>				
Sanitary Wastewater	—	—	—	—
Industrial Wastewater	—	—	—	—
Stormwater Runoff	—	—	—	—
Nonpoint runoff	—	—	—	—
Facilities/Equipment	—	—	—	—
Oil/Water Separators	—	—	—	—
Drinking Water	—	—	—	—

**Figure 4 (continued)**

**Detailed Environmental Compliance Status**

Compliance Area	FINDINGS			
	Sig	Major	Minor	TOTAL
<b>Pollution Prevention</b>				
Management Plans	—	—	—	—
ODCs	—	—	—	—
EPA 17	—	—	—	—
Hazardous Waste Minimization	—	—	—	—
Recycling	—	—	—	—
Affirmative Procurement	—	—	—	—
Energy Conservation	—	—	—	—
Education and Training	—	—	—	—
Hazardous Material Control	—	—	—	—
Other	—	—	—	—
<b>TOTAL</b>	—	—	—	—
<b>TOTAL FINDINGS</b>	—	—	—	—

**Figure 5**

**Environmental Compliance Status**

Totals Identified	Findings			
	Sig	Major	Minor	TOTAL
Discharge	—	—	—	—
Potential Discharge	—	—	—	—
Administrative	—	—	—	—
<b>TOTAL FINDINGS</b>	—	—	—	—

**Chapter 2.0. Background and Scope.** The background and scope section is reserved for information needed to make a complete report but which does not fit into the executive summary or compliance findings section.

**1. Background**

- a. **ECAMP Objectives.** A statement of the ECAMP objectives as stated in this manual and individual objectives unique to each specific assessment.
- b. **Installation Description.** Describe the major attributes of the installation.
- c. **Environmental Management Structure.** Describe in general how the installation's environmental management organization is structured.

**2. Scope**

- a. **Activity Review.** Describe the base activities that were inspected (this is an appropriate section for positive statements). Comment on the state and local or host nation regulations that were considered. Identify any permits or licenses (by number and issuing agency) that were reviewed.
- b. **Summary of Evaluation Procedures.** A statement that the assessment included a review of documentation, inspection of facilities, interviews of personnel, and that samples were or were not collected.

**Chapter 3.0. Environmental Compliance Status.** The regulatory compliance section of the report should contain a separate subsection for each assessed checklist. The information presented in Figure 5 pertains to each compliance section. Each compliance finding may consist of two parts: a findings paragraph and a separate observations and comments paragraph as follows:

1. **Findings.** Findings may be positive or negative. Positive findings (descriptions of exemplary activities and procedures) should be stated concisely. Negative findings will be limited to noncompliance issues involving Federal, state, local, DOD, host nation, or Air Force regulations and should briefly summarize the permit conditions or other restrictions, note the deficiency, and cite the specific regulation (be specific). Where applicable, describe the total sample universe, the number of items sampled, and how many were out of compliance:
  - a. Ensure each negative finding is clearly identified as regulatory, host country, or procedural.
  - b. Negative findings that were closed since the last ECAMP and have occurred again must be identified as repeat findings.
  - c. Negative findings that remain open since the last external ECAMP must be identified as carryover findings.
  - d. Ensure each finding paragraph is concise, factual (conditions clearly in noncompliance with criteria), and free of the assessor's opinions and recommendations. If there is uncertainty over the regulations that apply, their meaning, or the actual conditions on the installation, place such comments in the Environmental Practice Issues Section of the report.
  - d. Negative findings will be separately labelled and numbered. All negative findings will include finding identification codes for summarizing ECAMP results. See the explanation of how to fill out the findings summary for a listing of codes.
2. **Observations and Comments on Compliance Findings.** Since the finding paragraphs are reserved for strictly factual compliance criteria and conditions, all comments and recommendations on a compliance finding will be placed in a separate comments paragraph immediately following the finding. No new findings will be introduced in the comments paragraphs. Information in the comments paragraphs may include background information on a finding if necessary, statements on causes and effects, and a recommendation to

correct the deficiency. Assessment teams are under no obligation to make recommendations. Where recommendations are made, they should be aimed at resolving root causes. Often, the onsite portion of the assessment does not permit time to identify root causes. Recommendations made under these conditions usually address symptoms rather than providing permanent solutions.

**Chapter 4.0. Environmental Practice Issues.** The assessment team may include recommendations for reducing environmental risks and improving environmental management practices as well as suggesting areas requiring additional study. Recommendations placed in this chapter are not based on environmental regulations and do not involve noncompliance. Instead, they are management practices that will help keep an installation in compliance. Items appropriate for this chapter include:

1. Environmental risk reduction issues not associated with noncompliance
2. Potential noncompliance based on final regulations with a future compliance deadline
3. Management practice recommendations based on items in the ECAMP checklist
4. Other management practice recommendations.

**Chapter 5.0. Management Action Plan.** The management action plan states how each compliance finding was resolved or contains the installation's EPC's plan for resolving the compliance finding. The Management Action Plan also states how each environmental practice issue is being addressed. Since environmental practice issues do not involve noncompliance, they should be carefully reviewed by the installation EPC, but may be closed without action. After the installation approves the Management Action Plan, it should be included in the Draft Final Environmental Assessment Report as Chapter 5. The Management Action Plan tracks each compliance finding or environmental issue.





## Glossary of Acronyms

ACHP	Advisory Council on Historic Preservation
ACM	asbestos containing material
AF	Air Force
AFI	Air Force Instruction
AFM	Air Force Manual
AFP	Air Force Pamphlet
AFPD	Air Force Policy Directive
AFR	Air Force Regulation
AHERA	<i>Asbestos Hazard Emergency Response Act</i>
AICUZ	Air Installation Compatible Use Zone Program
ANSI	American National Standards Institute
AQCR	Air Quality Control Regions
ARPA	<i>Archeological Resources Protection Act</i>
ASME	American Society of Mechanical Engineers
ASTM	American Standards Test Manual
BACT	best available control technology
BAT	best sailable technology
BCE	Base Civil Engineer
BCP	Base Comprehensive Plan
BDPO	Base Disaster Preparedness Officer
BEE	Bioenvironmental Engineer
BOD	biochemical oxygen demand
BPAT	best practically available treatment
Btu	British thermal units
C	compliance
CAA	<i>Clean Air Act</i>
CAS	chemical abstract service
CECORS	Civil Engineer Contract Reporting System
CEQ	Council on Environmental Quality
CERCLA	<i>Comprehensive Environmental Response Compensation &amp; Liability Act</i>
CESQG	conditionally exempt small quantity generator

## Glossary of Acronyms (continued)

CFC	chlorofluorocarbons
CFR	Code of Federal Regulations
CHEMTREC	Chemical Transportation Emergency Center
CWA	<i>Clean Water Act</i>
DMR	Discharge Monitoring Report
DOD	Department of Defense
DOT	Department of Transportation
DRMO	Defense Reutilization and Marketing Organization
EA	environmental assessment
EC	Environmental Coordinator
ECAMP	Environmental Compliance Assessment and Management Program
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EPC	Environmental Protection Committee
EPCRA	<i>Emergency Planning &amp; Community Right-to-Know Act</i>
FIFRA	<i>Federal Insecticide, Fungicide, and Rodenticide Act</i>
FOF	finding of fact
FONSI	finding of no significant impact
FWS	Fish and Wildlife Service
GOCO	government owned contractor operated
HCFC	hydrogenated chlorofluorocarbons
HSWA	Hazardous and Solid Waste Amendment
IARC	International Agency for Research On Cancer Monographs
IRP	Installation Restoration Program
ISCP	Installation Spill Contingency Plan
ISS	Interim Status Standards
JA	judge advocate
LAER	lowest achievable emission rate
LD	lethal dose
LDR	land disposal restriction
LPG	liquefied petroleum gas
MAJCOM	Major Command

## Glossary of Acronyms (continued)

MCL	maximum contaminant level
MIPR	military interdepartmental purchase request
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MP	management practice
MSD	marine sanitation device
MSDS	material safety data sheets
MTR	Materials Testing Report
N/A	not applicable
NAA	nonattainment areas
NAAQS	National Ambient Air Quality Standards
NACE	National Association of Corrosion Engineers
NEPA	<i>National Environmental Policy Act</i>
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Prevention Association
NIOSH	National Institute of Occupational Safety and Health
NOI	notice of intent (to file an EIS)
NOV	notice of violation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NRC	National Response Center
NSPS	New Source Performance Standards
NTP	National Toxicology Program
O&M	Operations and Management
OHSPC	Oil and Hazardous Substance Pollution Contingency (Plan)
OMB	Office of Management and Budget
ORV	off-road vehicle
OSHA	<i>Occupational Safety and Health Act</i>
PAO	Public Affairs Officer
PCB	polychlorinated biphenyl
PL	Public Law
POC	point of contact

## Glossary of Acronyms (continued)

POL	petroleum, oil, and lubricant
POTW	public owned treatment works
PSD	prevention of significant deterioration
PVC	polyvinyl chloride
RACT	reasonably available control technology
RCRA	<i>Resource Conservation and Recovery Act</i>
RMA	Requires Management Action
RQ	reportable quantity
RVP	Reid vapor pressure
SARA	<i>Superfund Amendments and Reauthorization Act</i>
SDWA	<i>Safe Drinking Water Act</i>
SGOT	Serum Glutamic Oxaloacetic Transaminase
SGPT	Serum Glutamic Pyuvic Transaminase
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SPCC	Spill Prevention Control and Countermeasure (Plan)
SQG	small quantity generator
SWDA	<i>Solid Waste Disposal Act</i>
THM	trihalomethane
TIM	Technical Information Memorandum
TM	Technical Manual
T <sup>2</sup> Q	threshold planning quantities
TSCA	<i>Toxic Substances Control Act</i>
TSDF	treatment, storage, or disposal facility
TSS	total suspended solids
TU	Turbidity Unit
UIC	Underground Injection Control
UL	Underwriters Laboratory
USACE	United States Army Corps of Engineers
USACERL	Construction Engineering Research Laboratory
USAF	United States Air Force
USC	United States Congress

## Glossary of Acronyms (continued)

UST	underground storage tank
VOC	volatile organic compound
WQA	<i>Water Quality Act</i>



## Commonly Used Abbreviations

bbbl	barrel	mg	microgram
C	Celsius	mm	micrometer
cm	centimeter	min	minute
cm <sup>2</sup>	square centimeter	MJ	Megajoule
F	Fahrenheit	mo	month
ft	foot	mm	millimeter
ft <sup>2</sup>	square feet	mrem	millirem
ft <sup>3</sup>	cubic feet	MW	Megawatt
g	gram	ng	nanogram
gal	gallon	NTU	nephelometric turbidity unit
gJ	gigajoule	oz	ounce
h	hour	pCi	picocurie
hp	horsepower	ppm	part per million
in.	inch	psi	pound per square inch
J	Joule	psia	pounds per square inch absolute
kg	kilogram	psig	pounds per square inch gauge
km	kilometer	s	second
kPa	kilopascals	scf	standard cubic foot
L	Liter	scm	standard cubic meter
lb	pound	V	volt
m	meter	yd	yard
m <sup>3</sup>	cubic meter	yd <sup>2</sup>	square yard
mg	milligram	yr	year
mi	mile		

### Chemicals

CO	carbon monoxide	NO <sub>2</sub>	nitrogen dioxide
CO <sub>2</sub>	carbon dioxide	NO <sub>x</sub>	nitrogen oxides
Hg	mercury	SO <sub>2</sub>	sulfur dioxide





**Table 1: Sample Previsit Environmental Management Questionnaire**

ITEM	DATE	
	YES	NO

This questionnaire will provide background information necessary to plan and conduct an environmental compliance assessment.

**Name of Installation:** \_\_\_\_\_

**Air Emissions**

<b>1. Does installation operate one or more fuel burners?</b>	—	—	—
a. Central steam plant?	—	—	—
b. Hot water?	—	—	—
c. Other? _____			
d. Approximate size of fuel burner _____			
<b>2. Are any hazardous or toxic air pollutants present in the installation's air emissions (e.g., beryllium, mercury, and vinyl chloride)?</b>	—	—	—
<b>3. Is the installation subject to any of the following air emission standards:</b>			
a. Particulates?	—	—	—
b. NO <sub>x</sub>	—	—	—
c. SO <sub>2</sub> ?	—	—	—
d. Volatile organic compounds?	—	—	—
e. CO?	—	—	—
f. Toxic air pollutants?	—	—	—
If yes, please specify source of standards: _____			
<b>4. Does the installation operate any incinerators (i.e., for classified documents, medical waste, solid waste, etc.)?</b>	—	—	—
a. How many _____			
a. What type _____			
Attach list of locations.			
<b>5. Does the installation engage in:</b>			
a. Open burning?	—	—	—
b. Open detonation?	—	—	—
c. Fire fighter training?	—	—	—
<b>6. Does the installation use any solvent degreasers?</b>	—	—	—
<b>7. Does the installation have a drycleaning facility?</b>	—	—	—

(continued)

**Table 1 (continued)**

Table 1: Sample Previsit Environmental Management Questionnaire	OPR DATE			
	ITEM	YES	NO	N/A
8. Does the installation have a:				
a. Spray painting operation?	—	—	—	
b. Surface coating operation?	—	—	—	
Attach list of locations if answered yes to either.				
9. Have installation emissions resulted in complaints from the public due to:				
a. Odors?	—	—	—	
b. Fugitive dusts?	—	—	—	
c. Other? _____	—	—	—	
10. Does the installation use air pollution control equipment?	—	—	—	
If yes, please list and explain:				
_____				
_____				
11. Does installation operate a motor vehicle station?	—	—	—	
12. Does the installation dispense fuel to motor vehicles?	—	—	—	
13. List each fuel storage area and the fuel type.				
Fuel type    Quantity                  Fuel type    Quantity				
_____				
_____				
14. Does the installation have active aircraft operations?	—	—	—	
15. Does the installation have active aircraft maintenance operations?	—	—	—	
16. Does the installation have aerospace ground equipment (AGE) operations?	—	—	—	
17. Does the installation recycle/reclaim CFCs or Halons? Where?	—	—	—	
18. Please list any additional shop activities that generate any form of air pollution:				
_____				
_____				

(continued)

**Table 1 (continued)**

<b>Table 1: Sample Previsit Environmental Management Questionnaire</b>	<b>OPR</b>		<b>DATE</b>	
<b>ITEM</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>	
<b>Hazardous Materials Management</b>				
1. Does the installation store any flammable materials?	—	—	—	
2. Does the installation transport any hazardous materials off-installation?	—	—	—	
3. Does the installation have a procedure to ensure the proper labeling, packaging, and spill response for hazardous materials?	—	—	—	
4. Does the installation store:				
a. Acids?	—	—	—	
b. Caustics?	—	—	—	
c. Flammables?	—	—	—	
d. Combustibles?	—	—	—	
e. Compressed gases?	—	—	—	
f. Oxidizers?	—	—	—	
<b>Hazardous Waste Management</b>				
1. Does the installation produce any wastes classified as:				
a. Ignitable?	—	—	—	
b. Corrosive?	—	—	—	
c. Reactive?	—	—	—	
d. Toxic?	—	—	—	
2. Which of the following classifications does the installation fall under?				
Conditionally Exempt Small Quantity Generator (generates less than 100 kg/mo)				
Small Quantity Generator (generates 100 - 1000 kg /mo)				
Generator (generates more than 1000 kg/mo)				
3. Does the installation operate a TSDF on site?	—	—	—	
Permitted?_____				
Unpermitted?_____				
4. Does the installation treat or dispose of hazardous wastes onsite?	—	—	—	
If so, please specify waste type and treatment method:				
_____				

(continued)

**Table 1 (continued)**

<b>Table 1: Sample Previsit Environmental Management Questionnaire</b>	<b>OPR</b>	<b>DATE</b>		
<b>ITEM</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>	
5. Does the installation accept wastes from other installations for treatment, storage, or disposal?	—	—	—	
6. Does the installation engage in the transportation of hazardous wastes:				
a. Onbase?	—	—	—	
b. Of base?	—	—	—	
c. Central transport (transportation squadron)?	—	—	—	
d. Individual unit transport?	—	—	—	
7. Does the installation have a hazardous waste management (contingency) plan?	—	—	—	
8. Does the installation have a spill, prevention, and response (contingency) plan?	—	—	—	
9. Does the installation utilize other locations for the treatment, storage, or disposal of hazardous waste?	—	—	—	
Please specify:				
_____				
_____				
10. Does the installation use any nonhazardous solid waste (including used oil) as a supplemental fuel source?	—	—	—	
11. Does the installation have a contractor dispose of its hazardous waste?	—	—	—	
Which office monitors this contract?				
_____				
<b>Natural and Cultural Resources Management</b>				
1. Does the installation have an area designated as a natural resource, including "highly protected" and "more generally protected"?	—	—	—	
2. Does the installation have a plan for managing its natural resources?	—	—	—	
3. Does the installation have a plan in place for managing the preservation of Native American and Hawaiian human remains and cultural artifacts?	—	—	—	
4. Does the installation have an area which is designated as any of the following? (If so, please have maps indicating locations available for team on arrival):				
a. Cultural resource?	—	—	—	
b. Archeological resource?	—	—	—	
c. Historic structure?	—	—	—	

(continued)

**Table 1 (continued)**

<b>Table 1: Sample Previsit Environmental Management Questionnaire</b>	<b>OPR</b>		<b>DATE</b>	
<b>ITEM</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>	
<b>5. Are there any areas on the installation which have any of the following? (If so, please have maps indicating locations available for team on arrival):</b>				
a. Wetlands?	—	—		
b. Flood Plains?	—	—		
 <b>Noise Management (Environmental)</b>				
1. Does the installation have an active runway?	—	—		
2. Does the installation have any operations or maneuvers that produce environmental noise (i.e., target ranges, skeet range, helicopter pad)?	—	—		
 <b>Pesticide Management</b>				
1. Does the installation use pesticides in regulated quantities?	—	—		
2. Do installation personnel apply pesticides?	—	—		
3. Does the installation hire contractors to apply pesticides?	—	—		
4. Are pesticide wastes disposed of at the installation?	—	—		
5. Are pesticides stored on the installation?	—	—		
Please list locations:	<hr/> <hr/> <hr/>			
6. Are medical records kept for individuals involved in the management of pesticides?	—	—		
7. Where are pesticides prepared at the installation?	<hr/> <hr/>			
 <b>Petroleum, Oil and Lubricants (POL)</b>				
<b>Fuels and Lubricants</b>				
1. Does the installation have a motor pool?	—	—		
a. How many? _____				
b. Locations (if more than one)				

(continued)

**Table 1 (continued)**

<b>Table 1: Sample Previsit Environmental Management Questionnaire</b>	<b>OPR</b>		<b>DATE</b>	
<b>ITEM</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>	
<b>2. Does the installation store oil in large volumes?</b>	—	—	—	
<b>3. Does the installation have a spill prevention and response plan?</b>	—	—	—	
<b>4. Does the installation's spill plan include provisions pertaining to hazardous substances or hazardous wastes?</b>	—	—	—	
<b>5. Does the installation conduct spill response training?</b>	—	—	—	
<b>6. Does the installation use fuel bladders during field exercises?</b>	—	—	—	
<b>7. Does the installation have any oil/water separators? (Please have a map available for the team showing locations.)</b>	—	—	—	
<b>8. Does the installation use a hydrant system for aircraft fueling?</b>	—	—	—	
<b>9. Does the installation use fuel trucks for aircraft fueling?</b>	—	—	—	
<b>10. Does the installation have an aircraft fuel storage area?</b>	—	—	—	
<b>If yes, do storage tanks have properly sized and constructed     containment dikes equipped with draws?</b>	—	—	—	
<b>11. Does the installation have an AAFES-run or other type of gas station located on the base?</b>	—	—	—	
<b>If yes, how many USTs are located at the gas station and what size are they?</b>				
_____				
_____				
<b>12. Does the base have any other USTs used to store petroleum products?</b>	—	—	—	
<b>If yes, where are they located, how many are there, and what size are they?</b>				
_____				
_____				
<b>13. Does the installation have any USTs used for storing heating fuel located at individual buildings?</b>	—	—	—	
<b>If yes, how many USTs are located at the gas station and what size are they?</b>				
_____				
_____				

(continued)

**Table 1 (continued)**

<b>Table 1: Sample Previsit Environmental Management Questionnaire</b>	<b>OPR DATE</b>		
<b>ITEM</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>
<b>14. Does the installation have any underground tanks out of service?</b> If yes, provide locations. <hr/> <hr/> <hr/> <hr/> <hr/>	—	—	—
 <b>Solid Waste Management</b>			
<b>1. Does the installation have a solid waste management facility onsite?</b>	—	—	—
<b>2. Does the installation have a:</b>			
a. Resource Recovery Facility (DRMO) on the installation?	—	—	—
b. Resource Recovery Facility (DRMO) off the installation?	—	—	—
c. Sanitary Landfill?	—	—	—
d. Construction Debris Landfill?	—	—	—
e. Municipal Solid Waste Landfill?	—	—	—
f. Solid waste incinerator?	—	—	—
g. Solid waste recycling program?	—	—	—
<b>3. Does the installation have any unofficial landfill sites that are no longer in use?</b>	—	—	—
<b>4. Is waste transported off-installation for disposal:</b>			
a. In landfills?	—	—	—
b. In incinerators?	—	—	—
c. Others (specify): _____	—	—	—
<b>5. Does the installation dispose of ash residues or sludge:</b>			
a. Onbase?	—	—	—
b. Offbase?	—	—	—
<b>6. Is the installation monitored for:</b>			
a. Leachate?	—	—	—
b. Groundwater?	—	—	—

(continued)

**Table 1 (continued)**

<b>Table 1: Sample Previsit Environmental Management Questionnaire</b>		<b>OPR</b>	<b>DATE</b>																																																		
<b>ITEM</b>			<b>YES</b>	<b>NO</b>	<b>N/A</b>																																																
7. Does the installation currently dispose of, or has it been used for the disposal of asbestos?			—	—	—																																																
8. Does the installation generate pathological wastes?			—	—	—																																																
9. Does the installation dispose of pathological wastes on base by incineration?			—	—	—																																																
<b>Special Programs</b>																																																					
<b>PCBs</b>																																																					
1. Are PCB (polychlorinated biphenyl) or PCB-contaminated fluids in use or stored on the installation:																																																					
a. Transformers?			—	—	—																																																
b. Capacitors?			—	—	—																																																
c. Switch gear?			—	—	—																																																
d. Circuit Breakers?			—	—	—																																																
e. Other? _____			—	—	—																																																
2. Are there any PCB items in storage for disposal?																																																					
Item	Concentration																																																				
_____	_____																																																				
_____	_____																																																				
_____	_____																																																				
_____	_____																																																				
3. Does installation dispose of PCBs or PCB contaminated equipment on or offbase?																																																					
<table border="0" style="width: 100%;"> <tr> <td><b>Asbestos</b></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4. Does the installation have Air Force-owned primary or secondary schools?</td> <td></td> <td align="center">—</td> <td align="center">—</td> <td align="center">—</td> <td></td> </tr> <tr> <td>5. Has the installation conducted a complete base-wide asbestos facility survey?</td> <td></td> <td align="center">—</td> <td align="center">—</td> <td align="center">—</td> <td></td> </tr> <tr> <td>6. Does the installation have a written Asbestos Management Plan?</td> <td></td> <td align="center">—</td> <td align="center">—</td> <td align="center">—</td> <td></td> </tr> <tr> <td>7. Does the installation have a written Asbestos Operating Plan?</td> <td></td> <td align="center">—</td> <td align="center">—</td> <td align="center">—</td> <td></td> </tr> <tr> <td>8. Does the installation operate an in-house asbestos removal team?</td> <td></td> <td align="center">—</td> <td align="center">—</td> <td align="center">—</td> <td></td> </tr> <tr> <td>9. Has the installation undergone any asbestos removal projects in the past?</td> <td></td> <td align="center">—</td> <td align="center">—</td> <td align="center">—</td> <td></td> </tr> <tr> <td>10. Is there any asbestos on the installation that has been removed and is awaiting disposal at this time?</td> <td></td> <td align="center">—</td> <td align="center">—</td> <td align="center">—</td> <td></td> </tr> </table>						<b>Asbestos</b>						4. Does the installation have Air Force-owned primary or secondary schools?		—	—	—		5. Has the installation conducted a complete base-wide asbestos facility survey?		—	—	—		6. Does the installation have a written Asbestos Management Plan?		—	—	—		7. Does the installation have a written Asbestos Operating Plan?		—	—	—		8. Does the installation operate an in-house asbestos removal team?		—	—	—		9. Has the installation undergone any asbestos removal projects in the past?		—	—	—		10. Is there any asbestos on the installation that has been removed and is awaiting disposal at this time?		—	—	—	
<b>Asbestos</b>																																																					
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(continued)



**Table 1 (continued)**

<b>Table 1: Sample Previsit Environmental Management Questionnaire</b>	<b>OPR</b>		<b>DATE</b>	
<b>ITEM</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>	
<b>11. Will the installation have any demolition, remodeling or renovation projects underway at the time of the ECAMP assessment?</b>  Please identify those projects and buildings:  _____  _____  _____  _____	—	—	—	
<b>12. Does the installation maintain training records for asbestos workers?</b>  Location of records  _____	—	—	—	
<b>13. Does the installation dispose of asbestos on the installation?</b>  <b>Radon</b>	—	—	—	
<b>14. Is the installation located in a geographic area where high levels of radon are typically found?</b>	—	—	—	
<b>15. Has the installation been monitored for radon?</b>  Location of records  _____	—	—	—	
<b>16. Is the installation currently on the National Priority List (NPL)?</b>	—	—	—	
<b>17. Does the installation currently have any designated IRP sites?</b>	—	—	—	
<b>18. If IRP sites are present, does the installation maintain documentation of all interim and final remedial actions or decisions in the IRP program?</b>  Location of documents  _____	—	—	—	
<b>19. For installations with IRP sites, the installation maintain the Administrative Record which details the physical situation at the installation?</b>	—	—	—	
a. Is the location of the Record easily accessible to the public?	—	—	—	
b. Does the installation periodically advertize location of Records and Procedures for assessments?	—	—	—	
<b>Environmental Impact Analysis Process (EIAP)</b>				
<b>20. Does the base civil engineering office perform Environmental Planning functions?</b>	—	—	—	

(continued)

**Table 1 (continued)**

<b>Table 1: Sample Previsit Environmental Management Questionnaire</b>	<b>OPR</b>	<b>DATE</b>		
<b>ITEM</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>	
Do they maintain copies of AF Form 813, Request for Environmental Analysis?	—	—	—	
<b>21. Does the Environmental Protection Committee review, and approve or disapprove environmental documents during the EIAP?</b>	—	—	—	
<b>A-106</b>				
<b>22. Does the installation include all environmental projects listed in the Civil Engineering Contract Reporting System (CECORS) in the A-106 report?</b>	—	—	—	
<b>23. Does the installation have a single Point of Contact (POC) for the A-106 Pollution Abatement Plan?</b>	—	—	—	
<b>24. Who is responsible for the quality and dating of the automated A-106 (WIMS-ES)?</b>				
<b>25. Does the installation have a mechanism in place to ensure that the automated A-106 accurately reflects the project and requirement data maintained in other databases (CECORS, Programming Design and Construction (PDC), etc.)?</b>	—	—	—	
<b>26. Does the installation accurately reflect financial data (obligations, expenditures) in the A-106 systems?</b>	—	—	—	
<b>Water Quality</b>				
<b>Drinking Water</b>				
<b>1. Does installation operate a public water system?</b>	—	—	—	
<b>2. Does the installation operate a community water system?</b>	—	—	—	
<b>3. Does the installation operate a noncommunity water system?</b>	—	—	—	
<b>4. Does the installation operate a nontransient, noncommunity water system?</b>	—	—	—	
<b>5. Does any portion of the installation's drinking water supply come from onsite wells or surface water sources?</b>	—	—	—	
<b>6. Does the installation monitor onsite drinking water sources?</b>	—	—	—	
<b>7. Does the installation provide filtration of its drinking water?</b>	—	—	—	
<b>If yes, what type of filtration?</b> _____				
<b>Wastewater Discharge</b>				
<b>8. Does the installation have any discharges of the following:</b>				
<b>a. Stormwater runoff from operational or storage area?</b>	—	—	—	
<b>b. Stormwater runoff from undeveloped area?</b>	—	—	—	

(continued)

**Table 1 (continued)**

Table 1: Sample Previsit Environmental Management Questionnaire	OPR DATE		
	YES	NO	N/A
c. Dredge and fill solids drainage water?	—	—	—
d. Wastewater treatment installation effluent?	—	—	—
e. Process wastewater?	—	—	—
f. Heat or Power production cooling water?	—	—	—
g. Other? _____	—	—	—
9. Does the installation discharge into a Publicly Owned Treatment Works (POTW)?	—	—	—
If yes, please specify types of discharge: (i.e., process wastewater, sanitary wastewater, etc.)  _____  _____			
10. Does the installation make use of an onsite wastewater treatment system prior to effluent discharge?	—	—	—
11. Does the installation conduct any effluent monitoring?	—	—	—
12. Are monitoring samples analyzed by:			
a. Installation personnel?	—	—	—
b. Offsite contractor?	—	—	—
13. Does the installation have a separate storm water runoff system?	—	—	—
14. Does the installation have vehicle/aircraft washracks (or other designated vehicle/aircraft wash areas)?	—	—	—
<b>Pollution Prevention Management</b>			
1. Has the installation developed a pollution prevention management plan?	—	—	—
2. Are hazardous materials for the installation purchased centrally?	—	—	—
3. Does the installation purchase recycled products? If yes, what?	—	—	—
_____			
_____			
_____			
_____			
_____			

(continued)

**Table 1 (continued)**

<b>Table 1: Sample Previsit Environmental Management Questionnaire</b>	<b>OPR</b>	<b>DATE</b>			
<b>ITEM</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>		
<b>General Information</b>					
1. Does the installation contain water protection areas?	—	—	—		
2. Is the installation suspected of contributing to a groundwater contamination problem?	—	—	—		

(continued)

**Table 1 (continued)**

ALL PURPOSE CHECKLIST	PAGE	OF	PAGES
Previsit Environmental Management Questionnaire	OPR	DATE	
ITEM	YES	NO	N/A
<b>Records And Files To Be Compiled</b>			
Briefly state the installation mission, size, scope of operations, and activities. Include approximate base population, housing units, industrial operations, aerospace systems supported land area, and other significant factors:			
_____	--	--	--
_____	--	--	--
_____	--	--	--
_____	--	--	--
_____	--	--	--
_____	--	--	--
_____	--	--	--
_____	--	--	--
_____	--	--	--
_____	--	--	--
_____	--	--	--
_____	--	--	--
_____	--	--	--
_____	--	--	--

Signature of individual completing this form: \_\_\_\_\_

Date completed: \_\_\_\_\_

(continued)



## **Table 1 (continued)**

**ATTENTION:** The following records should be available for review by the assessment team either prior to the assessment or immediately upon arrival at the installation.

(NOTE: Not all installations will have, or are even required to have, all of the following documents.)

### **General**

1. Detailed maps of the installation indicating street names and building numbers. Enough for one for every member of the assessment team.
2. A phone list.
3. Copies of Notices of Violations (NOVs) issued to the installation in any of these areas.

### **Air Emissions Management**

1. Air emissions inventory
2. All air related permits
3. A list of steam generating units and boilers and their size, fuel used, and locations.

### **Hazardous Materials Management.**

1. A list of hazardous material storage/use areas
2. A waste minimization plan
3. MSDSs
4. Documentation of personnel training
5. The OHSPC Plan
6. A copy of any reports of spills
7. Copies of the Tier I or Tier II reports
8. Documentation on contaminated sites.

### **Hazardous Waste Management**

1. The Hazardous Waste Management Plan
2. A list of hazardous wastes generated at the installation
3. A list of waste generation/storage areas
4. USEPA Identification number
5. Manifests
6. Any permits
7. The biennial report
8. Personnel training records.

### **Natural and Cultural Resources Management**

1. The endangered species survey
2. The Natural Resources Management Plan
3. Any land management plans
4. Recent EAs, EISs, FNSIs or NOIs
5. Any cultural or archeological resources surveys
6. Management plans for cultural and archeological resources
7. A list of properties nominated for the National Register.

(continued)

## **Table 1 (continued)**

### **Pesticides Management**

1. The Pesticide Management Plan
2. A list of pesticide storage sites
3. Application records
4. MSDSs for pesticides
5. Personnel certifications for applicators
6. Contracts for pesticide application.

### **POL Management**

1. The SPCC plan
2. A list of POL storage areas
3. Upgrading and/or closure plans
4. A list of all USTs and their locations
5. Release detection documentation
6. UST integrity test results
7. Site contamination reports after tank removals.

### **Solid Waste Management**

1. Any contracts with waste haulers
2. Any recycling plans
3. All documentation pertaining to landfill operation or closure
4. Records on groundwater sampling resulting from monitoring wells.

### **Special Programs Management**

1. The PCB inventory
2. The PCB annual report
3. The results of the asbestos survey
4. The Asbestos Management Plan
5. The AICUZ Study
6. Noise complaints
7. Radon survey results.

### **Water Quality Management**

1. Copies of drinking water test results
2. Copies of reports to the state
3. All NPDES/SPDES permits
4. Maps of the storm, sanitary, and industrial sewers
5. A copy of pretreatment standards imposed on the installation
6. A list of maintenance shops/operations to include wash facilities
7. Locations of holding ponds, sedimentation pits, and open/end-of-pipe discharge points.

### **Pollution Prevention Management**

1. Pollution Prevention Management Plan
2. Purchase orders for recycled materials
3. CFC Halon purchase request.



<b>Table 2</b>				
<b>Major Activities/Operations</b>	<b>Sections</b>			
	<b>Air Emissions</b>	<b>Hazardous Materials Management</b>	<b>Hazardous Waste Management</b>	<b>Natural &amp; Cultural Resources</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
1. Incinerators	•		•	
2. Heat/Power Production	•		•	
3. AGE Operation	•		•	
4. Aircraft Operations	•			
5. Aircraft Maintenance			•	
6. Fuel Storage	•	•		
7. Surface Casting Operations	•		•	
8. Sanitary Wastewater				
9. Stormwater Runoff		•		
10. Sludge Disposal	•			
11. POL Dispensing				
12. Wastewater Treatment				
13. Vehicle Maintenance	•	•	•	
14. Shop Activities	•		•	
15. Solid Waste Generation				
16. Water Supply				
17. Toxic/hazardous Materials Use		•		
18. Firefighting Training	•			
19. PCB Electrical Equipment				
20. Pesticide/Herbicide Use				
21. Environmental Noise				
22. Emergency Planning		•		
23. Asbestos Removal				
24. Underground Storage Tanks		•		
25. Remodeling Activities				•
26. Construction Activities				•
27. Soil Removal				•

<b>Table 2</b>				
<b>Major Activities/Operations</b>	<b>Sections</b>			
	<b>Noise Management (Envmntl.)</b>	<b>Pesticides Management</b>	<b>POL Management</b>	<b>Solid Waste Management</b>
	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
1. Incinerators				•
2. Heat/Power Production			•	•
3. AGE Operation			•	
4. Aircraft Operations	•		•	
5. Aircraft Maintenance			•	
6. Fuel Storage			•	
7. Surface Casting Operations				
8. Sanitary Wastewater				
9. Stormwater Runoff		•	•	
10. Sludge Disposal				•
11. POL Dispensing			•	
12. Wastewater Treatment				•
13. Vehicle Maintenance				
14. Shop Activities				
15. Solid Waste Generation				•
16. Water Supply				
17. Toxic/hazardous Materials Use				
18. Firefighting Training			•	
19. PCB Electrical Equipment				
20. Pesticide/Herbicide Use		•		
21. Environmental Noise	•			
22. Emergency Planning				
23. Asbestos Removal				
24. Underground Storage Tanks			•	
25. Remodeling Activities				
26. Construction Activities				
27. Soil Removal				

<b>Table 2</b>			
<b>Major Activities/Operations</b>	<b>Special Programs Management 9</b>	<b>Water Quality Management 10</b>	<b>Pollution Prevention Management 11</b>
1. Incinerators			
2. Heat/Power Production		•	
3. AGE Operation			
4. Aircraft Operations			
5. Aircraft Maintenance		•	
6. Fuel Storage			
7. Surface Casting Operations		•	
8. Sanitary Wastewater		•	
9. Stormwater Runoff		•	
10. Sludge Disposal		•	
11. POL Dispensing			
12. Wastewater Treatment		•	
13. Vehicle Maintenance			
14. Shop Activities		•	
15. Solid Waste Generation			
16. Water Supply		•	
17. Toxic/hazardous Materials Use			
18. Firefighting Training		•	
19. PCB Electrical Equipment	•		
20. Pesticide/Herbicide Use			
21. Environmental Noise			
22. Emergency Planning			
23. Asbestos Removal	•		
24. Underground Storage Tanks			
25. Remodeling Activities	•		
26. Construction Activities			
27. Soil Removal			



**Table 3: Sample Checklist  
SOLID WASTE MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL INSTALLATIONS</b></p> <p><b>SW.1.</b> Actions or changes since previous review on solid waste management should be examined (MP).</p> <p><b>SW.2.</b> Copies of all relevant Federal, state, and local regulations on solid waste management are required to be maintained at the installation (AFR 19-1, para 11f).</p> <p><b>SW.3.</b> Copies of all relevant DOD and U.S. Air Force directives, and guidance documents on solid waste should be maintained at the installation (MP).</p>	<p>Determine whether noncompliance issues were resolved by examining a copy of the previous review report. (1)(2)</p> <p>Determine if the following regulations are maintained at the installation.(1)</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Compliance With Pollution Standards.</i></li> <li>- 7 CFR 330, <i>Federal Plant Pest Regulations, General, Plant Pests, Soil, Stone and Quarry Products, Garbage.</i></li> <li>- 40 CFR 240, <i>Guidelines for Thermal Processing of Solid Waste.</i></li> <li>- 40 CFR 241, <i>Guidelines for Land Disposal of Solid Wastes.</i></li> <li>- 40 CFR 243, <i>Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste.</i></li> <li>- 40 CFR 245, <i>Promulgation Resource Recovery Facility Guidelines.</i></li> <li>- 40 CFR 246, <i>Source Separation for Materials Recovery Guidelines.</i></li> <li>- 40 CFR 258, <i>Criteria for Municipal Solid Waste Landfills.</i></li> <li>- applicable state and local regulations.</li> </ul> <p>Verify that the Base Staff Judge Advocate reviews Federal, state, and local regulations that may affect ongoing and proposed activities and keeps the EPC informed as needed. (1)</p> <p>Determine if the following documents are maintained at the installation. (1)</p> <ul style="list-style-type: none"> <li>- AFR 19-1, <i>Pollution Abatement and Environmental Quality.</i></li> <li>- AFI 32-7042, <i>Solid and Hazardous Waste Compliance.</i></li> <li>- HQ UASF/CEV Policy Letter, <i>Interim Affirmative Procurement Guidance</i>, 30 December 1993.</li> <li>- HQ UASF/CE Policy letter, <i>Air Force Recycling Policy</i>, 13 October 1993.</li> </ul> <p>(NOTE: A consolidated listing of approved test methods should also be maintained at the installation: <i>Test Methods for Evaluating Solid Waste, Physical and Chemical Methods</i>, USEPA Publication SW-846, Document # PB87-120-291.)</p>

(1) Natural Resources Manager (or Environmental Coordinator) (2) Historic Preservation Officer (or Environmental Coordinator)

**Table 3: Sample Checklist  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.4.</b> Installations are required to comply with state and local solid waste regulations and compliance agreements negotiated with Federal, state, and local governments (EO 12088, Section 1-1).</p>	<p>Verify that the installation is complying with state and local solid waste requirements. (1)</p> <p>Verify that the installation is operating according to permits issued by the state or local agencies. (1)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- license or permit requirements for existing onsite landfills</li> <li>- requirements for filing a closure plan for onsite landfills specifying monitoring and inspection procedures</li> <li>- design and operation specifications for solid waste receptacles</li> <li>- disposal of solid waste offsite only at licensed or permitted facilities</li> <li>- design and policy procedures of thermal processing of solid waste</li> <li>- analysis for hazardous properties of ash residues and sludge from air pollution control devices at coal fired installation heating plant operations before sale or disposal</li> <li>- handling and disposal of medical, pathological, and infectious waste</li> <li>- recycling requirements</li> <li>- disposal of household hazardous wastes</li> <li>- yard waste</li> <li>- used tires.)</li> </ul> <p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreement.</p>
<p><b>SW.5.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if any new regulations concerning solid waste management have been issued since the finalization of the manual. (1)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)</p>

(1) Natural Resources Manager (or Environmental Coordinator) (2) Historic Preservation Officer (or Environmental Coordinator)

**Table 3: Sample Checklist  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.6.</b> Installations are required to have a complete Solid Waste Management Plan (AFI 32-7042, para 3.2).</p>	<p>Verify that the installation has a solid waste management plan. (1)</p> <p>Verify that the plan contains: (1)</p> <ul style="list-style-type: none"> <li>- an inventory and analysis of solid waste disposal technologies and methods</li> <li>- an inventory of solid waste streams and management methods</li> <li>- analysis of recovery, conservation, and recycling of solid waste</li> <li>- evaluation of onbase operating landfills (if applicable)</li> <li>- plan improvements.</li> </ul>

(1) Natural Resources Manager (or Environmental Coordinator) (2) Historic Preservation Officer (or Environmental Coordinator)





**Table 4  
HAZARDOUS WASTE MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SMALL QUANTITY GENERATORS (SQGs)</b></p> <p><b>General</b></p> <p><b>HW.20.</b> Generators of more than 100 kg [220.46 lb] but less than 1000 kg [2204.62 lb] of hazardous waste per month may qualify as a SQG which can accumulate hazardous waste onsite for 180 days without a permit if specific conditions are met (40 CFR 262.34 (d)(1), 262.34(d)(4), 262.34(e), and 262.34(f)).</p> <p><b>HW.21.</b> SQGs that generate, transport, or handle hazardous wastes must obtain a USEPA identification number (40 CFR 262.12(a), 262.12(b), and 265.11).</p>	<p>Inspect containers, storage, and records.</p> <p>Verify that no more than 1000 kg [2204.62 lb] of hazardous waste is generated in any month.</p> <p>Verify that the onsite accumulation time does not exceed 180 days.</p> <p>(NOTE: The 180 day time period is extended to 270 days if the waste must be transported more than 200 mi to a TSDF. This extension does not apply if a TSDF is available within 200 mi and the facility chooses to transport the waste to a farther away TSDF.)</p> <p>Verify that no more than 6000 kg [13,227.73 lb] is allowed to accumulate at the facility.</p> <p>Verify that containers are marked with the date accumulation began and the words HAZARDOUS WASTE.</p> <p>Verify that the containers and the areas where containers are stored meet the requirements outlined in the subsections pertaining to SQGS titled Containers, Container Storage, Satellite Accumulation Points, and Tank Systems Storage.</p> <p>(NOTE: When a SQG exceeds the quantity generation or amount accumulation it becomes subject to either Generator or TSDF requirements. When a SQG exceeds the storage time limitation, he becomes subject to all storage, facilities, and permitting requirements.)</p> <p>Examine documentation from USEPA for the base's generator identification number.</p> <p>Verify that correct identification number is used on all appropriate documentation (i.e., manifests).</p>

**Table 4  
HAZARDOUS WASTE MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.22.</b> A SQG must not offer its hazardous waste to transporters or to TSDFs that have not received an USEPA identification number (40 CFR 262.12(c)).</p> <p><b>HW.23.</b> SQGs of hazardous waste are required to use manifests and keep records of hazardous waste activity (40 CFR 262.20, 262.42(b), and 262.44).</p> <p><b>HW.24.</b> SQGs are required to keep records of waste analyses, tests, and waste determinations (40 CFR 262.40(c)).</p>	<p>Examine records pertaining to disposal contract awards and verify that all transporters of hazardous waste of TSDFs have a USEPA identification number.</p> <p>Verify that signed copies of returned manifests are kept for 3 yr.</p> <p>Verify that exception reports were submitted to the USEPA Regional Administrator when a signed manifest copy was not received within 60 days of the waste being accepted by the initial transporter.</p> <p>Verify that exception reports are kept for at least 3 yr.</p> <p>Verify that records of test results, waste analyses, and determinations are kept for 3 yr.</p> <p>(NOTE: The requirement to prepare a manifest does not apply if:</p> <ul style="list-style-type: none"> <li>- the waste is reclaimed under contractual agreement and:</li> <li style="padding-left: 20px;">- the type of waste and frequency of shipments are specified in the agreement</li> <li style="padding-left: 20px;">- the vehicle used to transport the waste to the recycling facility and to deliver regenerated material back to the generator is owned and operated by the reclaimer</li> <li>- the generator maintains a copy of the reclamation agreement for at least 3 yr after termination of the agreement.)</li> </ul> <p>(NOTE: Period of retention of records is extended automatically during the course of any unresolved enforcement action or as requested by the USEPA Administrator)</p> <p>Verify that appropriate records are kept for at least 3 yr from the date the waste was last sent to onsite or offsite TSDFs.</p> <p>(NOTE: Period of retention of records is extended automatically during the course of any unresolved enforcement action or as requested by the USEPA Administrator.)</p>

**Table 4**  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.25.</b> SQGs must submit a biennial report to the Regional Administrator by 1 March of even numbered years (40 CFR 262.40(b) and 262.41(a)).</p>	<p>Verify that the biennial report (USEPA Form 8700-13A) is complete and was submitted to the Regional Administrator in a timely manner.</p> <p>Verify that copies are kept for 3 yr.</p> <p>(NOTE: Reporting for exports of hazardous waste is not required.)</p> <p>(NOTE: This is not required if an annual report was submitted to the state.)</p> <p>(NOTE: Periods of retention of records may be extended automatically during the course of any unresolved enforcement action or as requested by the USEPA Administrator.)</p>
<p><b>HW.26.</b> SQGs are required to have an emergency coordinator and emergency response planning (40 CFR 262.34 (d)(5)).</p>	<p>Verify that the facility has an emergency coordinator.</p> <p>Verify that emergency information is posted next to the telephone:</p> <ul style="list-style-type: none"> <li>- name and telephone number of emergency coordinator</li> <li>- location of fire extinguishers and spill control materials</li> <li>- location of fire alarms (if present)</li> <li>- telephone number of fire department.</li> </ul> <p>Verify that waste handlers are familiar with waste handling and emergency procedures.</p>
<p><b>Containers</b></p> <p><b>HW.27.</b> Empty containers at SQGs previously holding hazardous wastes must meet the regulatory definition of <i>empty</i> before they are exempted from hazardous waste requirements (40 CFR 261.7).</p>	<p>Verify that for containers or inner liners holding hazardous wastes:</p> <ul style="list-style-type: none"> <li>- wastes are removed that can be removed using common practices</li> <li>- no more than 2.5 cm [1 in.] of residue remains</li> <li>- if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains</li> <li>- when the container is greater than 110 gal [416.40 L] no more than 0.3 percent by weight of the total container capacity remains.</li> </ul> <p>Verify that for containers that held compressed gas, the pressure in the container approaches atmosphere.</p>

**Table 4**  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>HW.27. (continued)</b>	<p>Verify that for containers or inner liners that held an acute hazardous waste listed in Table 3-5 that one of the following is done:</p> <ul style="list-style-type: none"> <li>- it is triple rinsed</li> <li>- it is cleaned by another method identified through the literature or testing as achieving equivalent removal</li> <li>- the inner liner is removed.</li> </ul>
<b>HW.28.</b> Containers used to store hazardous waste at SQGs must be in good condition and not leaking (40 CFR 262.34(d)(2) and 265.171).	<p>Verify that containers are not leaking, bulging, rusting, damaged, or dented.</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary.</p>
<b>HW.29.</b> Containers used at SQGs must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(d)(2) and 265.172).	<p>Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums.</p>
<b>HW.30.</b> Containers of hazardous waste at SQGs must be closed during storage and handled in a safe manner (40 CFR 262.34(d)(2) and 265.173).	<p>Verify that containers are closed except when it is necessary to add or remove waste (check bungs on drums and look for funnels).</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak.</p>
<b>HW.31.</b> The handling of incompatible wastes, or incompatible wastes and materials in containers at SQGs must comply with safe management practices (40 CFR 262.34(d)(2) and 265.177).	<p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers unless it is done so that it does not:</p> <ul style="list-style-type: none"> <li>- generate extreme heat or pressure, fire, or explosion, or violent reaction</li> <li>- produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health</li> <li>- produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions</li> <li>- damage the structural integrity of the device or facility</li> <li>- by any other like means threaten human health.</li> </ul>

**Table 4**  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.31. (continued)</b></p>	<p>(NOTE: Incompatible wastes as listed in Table 3-6 should not be placed in the same drum.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material.</p> <p>Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall or other device.</p>
<p><b>HW.32.</b> Containers of hazardous waste at SQGs should be managed in accordance with good management practices (MP).</p> <p><b>Satellite Accumulation Points</b></p>	<p>Inspect containers and storage areas to determine the following:</p> <ul style="list-style-type: none"> <li>- containers are not stored more than 2 high and have pallets between them</li> <li>- containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</li> <li>- at least 3 ft [0.91 m] of aisle space is provided between rows of containers.</li> </ul>
<p><b>HW.33.</b> All SQGs may accumulate as much as 55 gal of hazardous waste or 1 qt. of acutely hazardous waste in containers at or near any point of initial generation without complying with the requirements for on-site storage if specific standards are met (40 CFR 262.34(c)).</p>	<p>(NOTE: This type of storage is often referred to as a satellite accumulation point.)</p> <p>Verify that the satellite accumulation point is near the point of generation and is under the control of the operator of the waste generating process.</p> <p>Verify that the containers are in good condition and are compatible with the waste stored in them and that the containers are kept closed except when waste is being added or removed.</p> <p>Verify that the containers are marked HAZARDOUS WASTE or other appropriate identification.</p> <p>(NOTE: See Table 3-1, 3-2, 3-3, 3-4, and 3-5 for a guidance list of hazardous and acute wastes.)</p> <p>Verify that when waste is accumulated in excess of quantity limitations the following actions are taken by interviewing the shop managers:</p> <ul style="list-style-type: none"> <li>- the excess container is marked with the date the excess amount began accumulating</li> <li>- the waste is transferred to a 90 day or permitted storage area within 3 days.</li> </ul>

**Table 4**  
**HAZARDOUS WASTE MANAGEMENT**  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Container Storage Areas</b></p> <p><b>HW.34.</b> Containers of hazardous waste at SQGs should be kept in storage areas designated in the management plan (MP).</p> <p><b>HW.35.</b> SQG storage areas must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 262.34(d)(4) and 265.30 through 265.37).</p> <p><b>HW.36.</b> SQGs must conduct weekly inspections of container storage areas (40 CFR 262.34(d)(2) and 265.174).</p>	<p>Verify that all containers are identified and stored in appropriate areas.</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p> <p>Determine if the following required equipment is easily accessible and in working condition by inspecting the SQG facility:</p> <ul style="list-style-type: none"> <li>- internal communications or alarm system capable of providing immediate emergency instruction to facility personnel</li> <li>- a telephone or hand-held two way radio</li> <li>- portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals)</li> <li>- spill control equipment</li> <li>- decontamination equipment</li> <li>- fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, or automatic sprinklers, or water spray systems.</li> </ul> <p>Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency.</p> <p>Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility operation.</p> <p>Verify that police, fire departments, emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations as appropriate for the type of waste and potential need for such services.</p> <p>Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency as appropriate for the type of waste and potential need for such services.</p> <p>Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers.</p>

**Table 4  
HAZARDOUS WASTE MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Disposal of Restricted Wastes</b></p> <p><b>HW.37.</b> SQGs must test their wastes or use process knowledge to determine if they are restricted from land disposal (40 CFR 268.7).</p> <p><b>HW.38.</b> The Base Environmental Manager is responsible for completing the information required on the Hazardous Waste Profile Sheet concerning land disposal restrictions (Air Force Hazardous Waste Management Policy, 6 June 1991).</p> <p><b>HW.39.</b> When a SQG is managing a restricted waste a notice must be issued to the TSDF in writing of the appropriate treatment standards and prohibition levels (40 CFR 268.7(a) (1) through 268.7(a)(3) and 268.7(a) (10)).</p>	<p>Determine whether the generator tests for restricted wastes.</p> <p>Determine if the facility generates restricted wastes by reviewing test results (see Table- 3-7).</p> <p>Verify that the following information relating to land disposal restrictions is filled in on the Hazardous Waste Profile Sheet:</p> <ul style="list-style-type: none"> <li>- treatability groups</li> <li>- the USEPA hazardous waste code</li> <li>- all subcategories if there is more than one code</li> <li>- the five letter treatment code or the sections of the CFR where the treatment appears</li> <li>- whether or not a lab pack contains a waste identified as a restricted waste.</li> </ul> <p>Verify that for restricted waste that does not meet the applicable treatment standards or exceeds the applicable prohibition levels the notice is issued and includes:</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- for hazardous debris, the contaminants subject to treatment and the following statement "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45"</li> <li>- the waste analysis data, when available.</li> </ul> <p>Verify that for restricted waste that can be land disposed without further treatment (this does not include debris that does not contain hazardous waste) the notice includes:</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- the waste analysis data, when available</li> <li>- the signature of an authorized representative certifying that the waste complies with the treatment standards of 40 CFR 268.</li> </ul>

**Table 4**  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>HW.39. (continued)</b>	<p>Verify that, for restricted waste that is subject to an exemption from a prohibition of the type of land disposal used, the notice states that the waste is not prohibited from land disposal and includes:</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- the waste analysis data, when available</li> <li>- for hazardous debris, the contaminant subject to treatment</li> <li>- the date the waste is subject to prohibitions.</li> </ul> <p>(NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste subject to the agreement.)</p>
<b>HW.40.</b> SQGs that are managing prohibited wastes in tanks, containers, or containment buildings and treating the waste to meet applicable treatment standards. must develop and follow a written waste analysis plan (40 CFR 268.7(a)(4) and 268.7(a)(10)).	<p>Verify that the plan describes the procedures that the generator will carry out to comply with treatment standards.</p> <p>(NOTE: SQGs treating hazardous debris under the alternative treatment standards are not required to conduct waste analysis.)</p> <p>Verify that the plan is kept onsite and:</p> <ul style="list-style-type: none"> <li>- the plan is based on a detailed chemical and physical analysis of representative sample of the prohibited waste being treated</li> <li>- the plan is filed with the USEPA Regional Administrator or state authorized official at least 30 days prior to the treatment activity, with delivery verified.</li> </ul> <p>(NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste subject to the agreement.)</p>
<b>HW.41.</b> SQGs are required to keep specific documents pertaining to restricted wastes onsite (40 CFR 268.7(a)(5) through 268.7(a)(7) and 268.7(a)(10)).	<p>Verify that if the facility is using generator knowledge to determine whether a waste meets land disposal restriction requirements, the supporting data used in making this determination is retained in the facility operating record.</p> <p>Verify that if the facility has determined whether a waste is restricted using appropriate test methods, the waste analysis data is retained.</p> <p>Verify that if the facility has determined that they are managing a restricted waste that is excluded from the definition of a hazardous waste or solid waste or exempt from RCRA Subtitle C, a one-time notice is placed in the facilities files stating that the generated waste is excluded.</p> <p>Verify that a copy of all notices, certifications, demonstrations, waste analysis data and other documentation is kept for at least 5 yr from the date that the waste was last sent to onsite or offsite treatment, storage, or disposal.</p>



**Table 4**  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.41. (continued)</b></p> <p><b>HW.42.</b> The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).</p>	<p>Verify that SQGs with tolling agreement retain the agreement and copies of notification and certification for at least 3 yr after the agreement expires.</p> <p>Verify that land disposal restricted waste is not stored at the facility unless: the SQG is storing the wastes in tanks, containers, or containment buildings onsite only for the purpose of accumulating enough quantity of hazardous waste to facilitate proper recovery, treatment, or disposal and all appropriate standards for containers, tanks, and containment buildings are met.</p> <p>Verify that transporters do not store manifested shipments of land disposal restricted wastes for more than 10 days.</p> <p>(NOTE: The prohibition on storage does not apply to hazardous wastes that have met treatment standards.)</p> <p>Verify that liquid hazardous wastes containing PCBs at concentrations greater than 50 ppm are stored at a facility that meets the requirements of 40 CFR 761.65(b) (see Special Programs Management) and is removed from storage within 1 yr of the date it was first placed into storage.</p>



**Table 5: Customized Checklist  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SMALL QUANTITY GENERATORS (SQGs)</b></p> <p><b>General</b></p> <p><b>HW.20.</b> Generators of more than 100 kg [220.46 lb] but less than 1000 kg [2204.62 lb] of hazardous waste per month may qualify as a SQG which can accumulate hazardous waste onsite for 180 days without a permit if specific conditions are met (40 CFR 262.34 (d)(1), 262.34(d)(4), 262.34(e), and 262.34(f)).</p> <p><b>HW.23.</b> SQGs of hazardous waste are required to use manifests and keep records of hazardous waste activity (40 CFR 262.20, 262.42(b), and 262.44).</p>	<p>Inspect containers, storage, and records.</p> <p>Verify that no more than 1000 kg [2204.62 lb] of hazardous waste is generated in any month.</p> <p>Verify that the onsite accumulation time does not exceed 180 days.</p> <p>(NOTE: The 180 day time period is extended to 270 days if the waste must be transported more than 200 mi to a TSDF. This extension does not apply if a TSDF is available within 200 mi and the facility chooses to transport the waste to a farther away TSDF.)</p> <p>Verify that no more than 6000 kg [13,227.73 lb] is allowed to accumulate at the facility.</p> <p>Verify that containers are marked with the date accumulation began and the words HAZARDOUS WASTE.</p> <p>(NOTE: When a SQG exceeds the quantity generation or amount accumulation it becomes subject to either Generator or TSDF requirements. When a SQG exceeds the storage time limitation, he becomes subject to all storage, facilities, and permitting requirements.)</p> <p>Verify that signed copies of returned manifests are kept for 3 yr.</p> <p>Verify that exception reports were submitted to the USEPA Regional Administrator when a signed manifest copy was not received within 60 days of the waste being accepted by the initial transporter.</p> <p>Verify that exception reports are kept for at least 3 yr.</p> <p>Verify that records of test results, waste analyses, and determinations are kept for 3 yr.</p>



**Table 5: Customized Checklist  
HAZARDOUS WASTE MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.28.</b> Containers used to store hazardous waste at SQGs must be in good condition and not leaking (40 CFR 262.34(d)(2) and 265.171).</p>	<p>Verify that containers are not leaking, bulging, rusting, damaged, or dented.</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary.</p>
<p><b>HW.29.</b> Containers used at SQGs must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(d)(2) and 265.172).</p>	<p>Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums.</p>
<p><b>HW.30.</b> Containers of hazardous waste at SQGs must be closed during storage and handled in a safe manner (40 CFR 262.34(d)(2) and 265.173).</p>	<p>Verify that containers are closed except when it is necessary to add or remove waste (check bungs on drums and look for funnels).</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak.</p>
<p><b>HW.31.</b> The handling of incompatible wastes, or incompatible wastes and materials in containers at SQGs must comply with safe management practices (40 CFR 262.34(d)(2) and 265.177).</p>	<p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers unless it is done so that it does not:</p> <ul style="list-style-type: none"> <li>- generate extreme heat or pressure, fire, explosion, or violent reaction</li> <li>- produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health</li> <li>- produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions</li> <li>- damage the structural integrity of the device or facility</li> <li>- by any other like means threaten human health.</li> </ul> <p>(NOTE: Incompatible wastes as listed in Table 3-6 should not be placed in the same drum.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material.</p> <p>Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall, or other device.</p>

**Table 5: Customized Checklist  
HAZARDOUS WASTE MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.32.</b> Containers of hazardous waste at SQGs should be managed in accordance with good management practices (MP).</p> <p><b>Satellite Accumulation Points</b></p> <p><b>HW.33.</b> All SQGs may accumulate as much as 55 gal of hazardous waste or one quart of acutely hazardous waste in containers at or near any point of initial generation without complying with the requirements for onsite storage if specific standards are met (40 CFR 262.34(c)).</p> <p><b>Container Storage Areas</b></p> <p><b>HW.34.</b> Containers of hazardous waste at SQGs should be kept in storage areas designated in the management plan (MP).</p>	<p>Inspect containers and storage areas to determine the following:</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</li> <li>- at least 3 ft [0.91 m] of aisle space is provided between rows of containers.</li> </ul> <p>(NOTE: This type of storage is often referred to as a satellite accumulation point.)</p> <p>Verify that the satellite accumulation point is near the point of generation and is under the control of the operator of the waste generating process.</p> <p>Verify that the containers are in good condition and are compatible with the waste stored in them and that the containers are kept closed except when waste is being added or removed.</p> <p>Verify that the containers are marked HAZARDOUS WASTE or other appropriate identification.</p> <p>Verify that when waste is accumulated in excess of quantity limitations the following actions are taken by interviewing the shop managers:</p> <ul style="list-style-type: none"> <li>- the excess container is marked with the date the excess amount began accumulating</li> <li>- the waste is transferred to a 90 day or permitted storage area within 3 days.</li> </ul> <p>Verify that all containers are identified and stored in appropriate areas.</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p>

**Table 5: Customized Checklist  
HAZARDOUS WASTE MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.35.</b> SQG storage areas must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 262.34(d)(4) and 265.30 through 265.37).</p>	<p>Determine if the following required equipment is easily accessible and in working condition by inspecting the SQG facility:</p> <ul style="list-style-type: none"> <li>- internal communications or alarm system capable of providing immediate emergency instruction to facility personnel</li> <li>- a telephone or hand-held two way radio</li> <li>- portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals)</li> <li>- spill control equipment</li> <li>- decontamination equipment</li> <li>- fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, automatic sprinklers, or water spray systems.</li> </ul> <p>Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency.</p> <p>Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility operation.</p> <p>Verify that police, fire departments, emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations as appropriate for the type of waste and potential need for such services.</p> <p>Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency as appropriate for the type of waste and potential need for such services.</p>
<p><b>HW.36.</b> SQGs must conduct weekly inspections of container storage areas (40 CFR 262.34(d)(2) and 265.174).</p>	<p>Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers.</p>





**Section 1**

**AIR EMISSIONS MANAGEMENT**

## SECTION 1

### AIR EMISSIONS MANAGEMENT

#### A. Applicability

This section includes regulations, responsibilities, and compliance requirements associated with air pollution emissions from equipment and vehicles. The major sources of air pollution emissions include:

- Particulates, SO<sub>2</sub>, NO<sub>x</sub>, and CO from fuel burning at steam and hot water generation plants and boilers.
- Particulates and toxic air emissions from the operation of hazardous waste, general waste, classified material, and medical, pathological, and/or infectious waste incinerators.
- Particulates, CO, metals, and toxic air pollutant emissions from open burning and open detonation operations.
- The emission of volatile organic compound (VOC) vapors from the storage and transfer of certain petroleum fuels and chemicals (solvents), and the operation of degreasers and other processes (paint stripping and metal finishing) that use solvents.
- The emission of CO from vehicles operated on the facility.
- Fugitive particulate emissions from training activities and construction/demolition operations.

Most facilities have air emissions sources in one or more of these categories. Therefore this section is applicable to some extent at all facilities.

#### B. Federal Legislation

- *The Clean Air Act (CAA) Amendments of 1990.* This Act, Public Law (PL) 101-549 (42 U.S. Code (USC) 7401-7671q), is currently the effective, comprehensive Federal legislation regulating the prevention and control of air pollution.

The purposes of this Act are to:

1. protect and enhance the quality of the nation's air resources so as to promote the public health and welfare and the productivity of its population
2. initiate and accelerate a national research and development program to achieve the prevention and control of air pollution
3. provide technical and financial assistance to state and local governments regarding the development and execution of their air pollution prevention and control efforts
4. encourage and assist the development and operation of regional air pollution prevention and control programs (42 USC 7401(b))

5. achieve a substantial reduction in emission of hazardous air pollutants from area sources and an equivalent reduction in the public health risks associated with such sources including a reduction of not less than 75 per centum in the incidence of cancer attributable to emissions from such sources (42 USC 7412(k)(1))
6. reduce the adverse effects of acid deposition through reductions in annual emissions of SO<sub>2</sub> from 1980 emission levels, and of NO<sub>x</sub> emissions from 1980 emission levels, in the 48 contiguous states and the District of Columbia and to bring about such reductions by requiring affected sources to comply with prescribed emission limitations by specified deadlines. Limitations may be met through alternative methods of compliance provided by an emission allocation and transfer system
7. Encourage energy conservation, use of renewable and clean alternative technologies, and pollution prevention as a long-range strategy, consistent with the provisions of this Act, for reducing air pollution and other adverse impacts of energy production and use (42 USC 7651(b)).

A primary goal of this Act is to encourage or otherwise promote reasonable Federal, state, and local government actions for pollution prevention (42 USC 7401(c)).

Each department, agency, and instrument of the executive, legislative, and judicial branches of the Federal Government, and each officer, agent, or employee of such a unit, must comply with, all Federal, state, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of air pollution in the same manner, and to the same extent as any nongovernment entity. This applies to (42 USC 7418(a)):

1. any requirement whether substantive or procedural (including recordkeeping, reporting, and emission)
2. any requirement to pay a fee or charge imposed by any state or local agency to defray the costs of its air pollution regulatory program
3. the exercise of any Federal, state, or local administrative authority
4. any process and sanction, whether enforced in Federal, state, or local courts, or in any other manner.

Each department, agency, or instrument of the Federal Government must not engage in, support in any way or provide financial assistance for, license or permit, or approve any activity which does not conform to an implementation plan after it has been approved or passed under this Act. Any Federal agency may not approve, accept, or fund any transportation plan, program, or project unless such plan, program, or project has been found to conform to any applicable implementation plan in effect (42 USC 7506(c)(1)(2)).

If the President determines it to be in the paramount interest of the United States, he may exempt from compliance with the requirements of this Act any weaponry, equipment, aircraft, vehicles, or other classes or categories of property which are owned or operated by the Armed Forces of the United States and which are uniquely military in nature (42 USC 7418(b)).

### **C. State/Local Regulations**

The primary mechanisms regulating air pollutant emissions are the state or air quality control region (AQCR) regulations. These regulations will normally follow the Federal guidelines for state programs and will have many similar features. However, depending on the type and degree of air pollutant problems within the state/region, the individual regulations will vary. As an example, photochemical oxi-

dant (ozone) problems are widespread in California and, therefore, the individual AQCRs in that state have stringent VOC emission requirements. The state of North Dakota has no such problem and, therefore, has fewer and less stringent VOC regulations.

New source performance standards (NSPSs) are established for particular pollutants in industrial categories based upon adequately demonstrated control technology. A permit is normally required for new, expanded, or modified sources of air pollutants.

Some state regulations apply directly to some facilities and operations without requiring a permit. At a minimum, state regulations should be reviewed for the following activities:

1. fugitive dust emissions
2. control of particulate emissions from the transportation of refuse or materials in open vehicles
3. certification requirements for boiler operators
4. emissions and emission control requirements for the operation of existing fossil fuel-fired steam generators
5. open burning
6. vehicle exhaust emissions testing
7. spray painting of vehicles, buildings, and/or furniture
8. certification of vehicles transporting VOC liquids
9. paving of roads and parking lots
10. toxic air pollutants
11. operation of cold cleaners, degreasers, and open top vapor degreasers
12. vapor control requirements for fuel pumps.

#### **D. Department of Defense (DOD) Regulations**

- None that have not been implemented/superseded by Air Force Regulations.

#### **E. U.S. Air Force Regulations (AFRs)**

- Air Force Instruction (AFI) 32-7040, *Air Quality Compliance*. This instruction, dated 30 March 1994, identifies the requirements for an air quality compliance program.
- Air Force Regulation (AFR) 19-6, *Air Pollution Control Systems for Boilers and Incinerators*. This regulation provides guidance on how to select, design, operate, and maintain emission control devices on boilers and incinerators.
- AFR 19-7, *Environmental Pollution Monitoring*. This regulation, dated 19 April 1985, requires Base Medical Services to conduct and maintain an emissions inventory to the degree that the state requires such an inventory. This AFR is scheduled to be replaced with AFI 48-119.
- AFR 19-15, *Reduction in Use of Chlorofluorocarbons, Halons, and Other Substances that Deplete Stratospheric Ozone*. This policy directive establishes policies and procedures for reducing use of CFCs and Halons in units at all levels of command. This AFR is scheduled to be replaced by AFI 32-7108.

- Air Force Technical Manual Technical Order (TO) 00-20B-5, *USAF Motor Vehicle and Vehicular Equipment Inspections*. This TO establishes procedures for vehicle inspection and reporting on vehicle emissions.
- Air Force Policy Letter, *Air Force Ban on Purchases of Ozone Depleting Chemicals (ODCs)*. This policy letter, dated 7 January 1993, severely limits the purchase use and management of controlled ODCs.

## **F. Key Compliance Requirements**

- Steam Generating Units (greater than 29 MW (100 MBtu/h)) - Steam generating units with capacity greater than 29 MW (100 MBtu/h) that started construction or modification after 19 June 1984 are required to meet emissions limitation for particulates, SO<sub>2</sub>, and NO<sub>x</sub>. The limit which applies is dependent on the type of fuel being burned. Records are required to be kept of the amounts of fuel combusted each day (40 Code of Federal Regulations (CFR) 60.40b through 49b).
- Steam Generating Units (2.9 MW (10 MBtu/h) - 29 MW (100 MBtu/h))- Steam generating units that started construction, modification, or reconstruction after 3 June 1989 with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h) but less than 29 MW (100 MBtu/h) are required to limit emissions of SO<sub>2</sub> and particulates. Discharge rates are to be monitored and if there is no monitoring system, fuel is required to be sampled prior to combustion. Facilities are required to submit excess emission reports for any calendar quarter in which it exceeds opacity limits. If a facility does not exceed the limits in a given year, it is required to file semiannual reports confirming this fact. Facilities required to meet SO<sub>2</sub> emission limits are also required to submit quarterly reports (40 CFR 60.40c through 60.48c).
- Fuel Burning Facilities (greater than 73 MW (250 MBtu/h)) - Fuel burning facilities constructed or modified after 17 August 1971 with greater than 73 MW (250 MBtu/h) heat input are required to limit emissions of particulates, SO<sub>2</sub> and NO<sub>x</sub>. Monitoring of these substances is also required and fuel analysis done (40 CFR 60.44 and 60.45).
- Municipal Waste Combustor - Municipal waste combustors with a capacity greater than 225 Mg (250 tons) per day that started construction or modification after 20 December 1989 are required to limits the amounts of dioxin/furan, SO<sub>2</sub>, hydrogen chloride, CO, and NO<sub>x</sub> emitted. The chief facility operator and shift supervisors are required to be certified to operate the facility and there must be an operating manual that is updated yearly (40 CFR 60.50a through 60.58a).
- Incinerators - Incinerators with greater than 45 metric tons/day (50 tons/day) charging rate that started construction or modification after 17 August 1971 are required to meet emissions limitations for particulates and CO<sub>2</sub>. Additionally they are to maintain records of daily charging rates and hours of operation (40 CFR 60.50 through 60.54).
- Gasoline Dispensing - Leaded gasoline shall not be introduced into any motor vehicle that is labeled UNLEADED GASOLINE ONLY, or that is equipped with a gasoline tank filler inlet designed for introduction of unleaded gasoline. Fuel pumps are required to display signs stating the type of fuel in each pump and that only unleaded gas can be introduced into labeled vehicles. The nozzles of the pumps are required to be properly sized. Depending on whether the oxygenated gas is still in the control period, or the area has an oxygenated gasoline program with a credit program, pumps dispensing oxygenated gasoline are required to be labeled. During 1992 and later high ozone seasons

and regulatory control periods, gasoline shall not be sold, offered for sale, imported, dispensed, supplied, or transported that exceeds Reid vapor pressure standards in Appendix 1-1. No diesel fuel shall be distributed, transported, offered for sale, or dispensed for use in motor vehicles unless it is free of the dye 1,4-dialkylamino-antraquinone and has an acetane index of at least 40, or a maximum aromatic content of 35 volume percent and a sulfur percentage of less than 0.05 percent (40 CFR 80.22(a), 80.22(d), 80.22(e), 80.24(a)(1), 80.27(a)(2), 80.35, 80.80(d), and 80.29(a)).

- **Bulk Gasoline Terminals** - Bulk gasoline terminals with greater than 75,700 L [19,997.82 gal] gasoline throughput per day that deliver liquid product into greater tank trucks, and that started construction or modification after 17 December 1980 are required to ensure that vapor tightness documentation is available for each gasoline tank truck, and that the tank identification number is recorded as each gasoline tank truck is loaded (40 CFR 60.500 through 60.506).
- **Rotogravure Printing Presses** - Publication rotogravure printing presses, except for proof presses, that started construction or modification after 28 October, are required to ensure that gases are not being discharged containing VOC equal to more than 16 percent of the total mass of VOC solvent and water used at that facility during any one performance averaging period (40 CFR 60.430 through 60.435).
- **Petroleum Storage Vessels** - Storage vessels for petroleum liquids with a storage capacity greater than 151,416 L (40,000 gal) but less than 246,052 L (65,000 gal), that started construction or modification after 8 March 1974 but before 19 May 1978, or with a capacity greater than 246,052 L (65,000 gal) that started construction or modification after 11 June 1973 but before 19 May 1978, are required to meet specific standards for emissions and monitoring. These standards vary depending upon whether the true vapor pressure of the petroleum liquid is greater or less than 11.1 psia. Storage vessels with a storage capacity greater than 151,416 L (40,000 gal) constructed after 18 May 1978 are required to ensure that the vessel has an external floating roof, or a fixed roof with an internal floating type cover, and a vapor recovery system. (40 CFR 60.110 through 60.113 and 60.110a through 60.115a).
- **Volatile Organic Liquid (VOL) Storage Vessels** - Storage vessels for VOLs having a capacity of greater than or equal to 40 m<sup>3</sup> [10,566.88 gal] or which construction, reconstruction, or modification started after 23 July 1984 are required to meet specific inspection, documentation, and notification requirement standards. These include ensuring that certain inspections are made, notifying the U.S. Environmental Protection Agency (USEPA) in advance of performing gap measurements, and providing it certain records upon request (40 CFR 60.110b through 60.115b).
- **Fugitive Emissions** - The emission of VHAPs (vinyl chlorides and benzene) is required to be managed, monitored, and controlled according to specific requirements. These include taking certain actions when a leak is detected, ensuring that certain records are maintained, ensuring that pumps and compressors meet certain standards, and that pressure relief devices in gas/vapor service have no detectable emissions except during pressure releases. Valves and lines in VHAP service are required to be monitored monthly and repairs done within 15 days of leak detection. Systems and devices used to control VHAP emissions must recover vapors with 95 percent efficiency or greater. Enclosed combustion devices will be designed and operated to reduce VHAP and benzene emissions and closed-vent systems will have no detectable emissions (see 40 CFR 61.240 through 61.242-10, 61.246, and 61.247).
- **Sulfuric and Nitric Acid Plants** - These facilities are required to limit their emissions and install continuous monitoring systems (40 CFR 60.70 through 60.85).

- **Chlorofluoro-Carbons and Halons** - To protect the ozone, no person repairing or servicing motor vehicles for payment can service a motor vehicle air conditioner in any way that affects the refrigerant unless they have been trained and certified and are using approved equipment. As of 15 November 1992, no Class I or Class II substances suitable for use in motor vehicles as a refrigerant can be sold or distributed in any container that is less than 20 lb [9.07 kg] to any person unless that person is trained and certified. Facilities that sell Class I or Class II substances suitable for use as a refrigerant in containers of less than 20 lb [9.07 kg] are required to display a sign with certain wording. The servicing of appliances containing CFCs and Halons is required to be done in a manner to prevent emissions (40 CFR 82.34(a), 82.34(b), 82.42(a) through 82.42(c), and 80.150 through 80.166).
- **Other Sources** - Additional sources which are regulated for air emissions but not included in this manual due to the small number at Air Force installations include stationary gas turbines, beryllium incinerators, and sewage sludge incinerators.

### **G. Responsibility for Compliance**

- **The Installation Commander.** The Installation Commander is usually the person responsible for compliance and signs all permits.
- **The Base Civil Engineer (BCE).** The BCE is responsible for the maintenance of incinerators, fuel handling, and storage equipment, as well as the operation and maintenance of all fuel burners (including boilers). The heating and boiler plants are responsible for the operation of fuel burners and are part of the Operations Branch of Base Civil Engineering.
- **The Environmental Manager.** The environmental manager is responsible for the preparation of all air pollution emission source permit applications.
- **The Regional Hospital Or Base Clinic.** The regional hospital or base clinic is responsible for the operation of any pathological incinerators located in their facility.
- **The Fuels Management Branch.** The fuels management branch of base supply is responsible for the operation of all fuel handling, transportation (tanks and or pipelines), and storage facilities on base. They are also responsible for making sure that all fuels satisfy specifications including state mandated sulfur content. The fuels management branch is also responsible for the operations of the military service station that dispenses leaded or unleaded fuel.
- **The Vehicle Maintenance Branch.** The Automotive Maintenance branch of base Transportation is responsible for the emission testing and vehicle maintenance required by state and AFRs.
- **The Maintenance Squadrons.** The various maintenance squadrons at the base are responsible for the operation of degreasers and other industrial processes that are regulated or may require operating permits.
- **The Base Exchange.** The base exchange operates a service station that dispenses leaded fuels and is subject to the Federal requirements. The service station is normally operated by a contractor, but the labeling and nozzle size regulations still apply. The Government is responsible for compliance, but the contractor may also be responsible, depending on the contract wording.

- **The Bioenvironmental Engineer (BEE).** The BEE is responsible for monitoring ambient air quality and preparing the installation air emission inventory.

## H. Key Compliance Definitions

- **Ancillary Equipment** - the equipment used with a drycleaning machine in a drycleaning system including, but not limited to, emission control devices, pumps, filters, muck cookers, stills, solvent tanks, solvent containers, water separators, exhaust dampers, diverter valves, interconnecting piping, hoses, and ducts (40 CFR 63.321).
- **Annual Capacity Factor** - the ratio between the actual heat input to a steam generating unit from an individual fuel or combustion of fuels during a period of 12 consecutive calendar mo and the potential heat input to the steam generating unit from all fuels, had the steam generating unit been operated for 8700 h during that 12 mo period at the maximum design heat input capacity (40 CFR 60.41c).
- **Appliance** - any device which contains and uses a Class I or Class II substance as a refrigerant and which is used for household or commercial purposes, including any air conditioner, refrigerator, chiller, or freezer (40 CFR 82.152(b)).
- **Approved Equipment Testing Organization** - any organization which has applied for and received approval from the Administrator pursuant to 40 CFR 82.160 (40 CFR 82.152(b)).
- **Area Source** - any perchloroethylene drycleaning facility that is not a major source (40 CFR 63.321).
- **Articles** - clothing, garments, textiles, fabrics, leather goods, and the like, that are dry cleaned (40 CFR 63.321).
- **Benzene Service** - a piece of equipment that either contains or contacts a fluid (liquid or gas) that is at least 10 percent benzene by weight (40 CFR 61.111).
- **Bulk Gasoline Plant** - any gasoline distribution facility that has a throughput less than or equal to 75,000 L/day [19997.82 gal/day] (40 CFR 60.111b).
- **Bulk Gasoline Terminal** - any gasoline facility that receives gasoline by pipeline, ship, or barge, and has a throughput greater than 75,000 L/day [19997.82 gal/day] (40 CFR 60.501).
- **Carbon Adsorber** - a bed of activated carbon into which an air-perchloroethylene gas-vapor stream is routed and which adsorbs the perchloroethylene on the carbon (40 CFR 63.321).
- **Cartridge Filter** - a discrete filter unit containing both filter paper and activated carbon that traps and removes contaminants from petroleum solvent, together with the piping and ductwork used in installing this device (40 CFR 60.621).
- **Certified Refrigerant Recovery or Recycling Equipment** - equipment certified by an approved equipment testing organization to meet the standards in 40 CFR 82.158(b) or (d), equipment certified pursuant to 40 CFR 82.36(a), or equipment manufactured before 15 November 1993, that meets the standards in 40 CFR 82.158(c), (e), or (g) (40 CFR 82.152(c)).



- ***Closed-vent System*** - a system that is not open to the atmosphere and is composed of piping, connections, and, if necessary, flow inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device (40 CFR 61.241).
- ***Cofired Combustor*** - a unit burning municipal-type solid waste or refuse derived fuel with a nonmunicipal solid waste fuel and is subject to a Federally enforceable permit limiting the unit to combusting a fuel feed stream, 30 percent or less of the weight of which is comprised, in aggregate, of municipal-type solid waste or refuse-derived fuel as measured on a 24 h basis (40 CFR 60.51a).
- ***Cogeneration Steam Generating Unit*** - a steam generating unit that simultaneously produces both electrical (or mechanical) and thermal energy from the same primary energy source (40 CFR 60.41c).
- ***Coin-operated Drycleaning Machine*** - a drycleaning machine that is operated by the customer (that is, the customer places articles into the machine, turns the machine on, and removes articles from the machine) (40 CFR 63.321).
- ***Colorimetric Detector Tube*** - a glass tube (sealed prior to use), containing material impregnated with a chemical that is sensitive to perchloroethylene and is designed to measure the concentration of perchloroethylene in the air (40 CFR 63.321).
- ***Commercial Refrigeration*** - means, for the purposes of 40 CFR 82.156(i), the refrigeration appliances utilized in the retail food and cold storage warehouse sectors. Retail food includes the refrigeration equipment found in supermarkets, convenience stores, restaurants and other food service establishments. Cold storage includes the equipment used to store meat, produce, dairy products, and other perishable goods. All of the equipment contains large refrigerant charges, typically over 75 lb [34.02 kg] (40 CFR 82.152(d)).
- ***Commercial/Retail Waste*** - material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments or facilities (40 CFR 60.51a).
- ***Continuous Emissions Monitoring Systems (CEMS)*** - a monitoring system for continuously measuring the emissions of a pollutant from an affected facility (40 CFR 60.51a).
- ***Disposal*** - the process leading to and including (40 CFR 82.152(e)):
  1. the discharge, deposit, dumping or placing of any discarded appliance into or on any land or water
  2. the disassembly of any appliance for discharge, deposit, dumping or placing of its discarded component parts into or on any land or water
  3. the disassembly of an appliance for reuse of its component parts.
- ***Diverter Valve*** - a flow control device that prevents room air from passing through a refrigerated condenser when the door of the drycleaning machine is open (40 CFR 63.321).
- ***Drycleaning Cycle*** - the washing and drying of articles in a dry-to-dry machine or transfer machine system (40 CFR 63.321).
- ***Drycleaning Facility*** - an establishment with one or more drycleaning systems (40 CFR 63.321).

- **Drycleaning Machine** - a dry-to-dry machine or each machine of a transfer machine system (40 CFR 63.321).
- **Drycleaning Machine Drum** - the perforated container inside the drycleaning machine that holds the articles during drycleaning (40 CFR 63.321).
- **Drycleaning Systems** - a dry-to-dry machine and its ancillary equipment or a transfer machine system and its ancillary equipment (40 CFR 63.321).
- **Dryer** - a machine used to remove petroleum solvent from articles of clothing or other textile or leather goods, after washing and removing excess petroleum solvent, together with the piping and ductwork used in the installation of this device (40 CFR 60.621).
- **Dryer** - a machine used to remove perchloroethylene from articles by tumbling them in a heated air stream (40 CFR 63.321).
- **Dry-to-Dry Machine** - a one machine drycleaning operation in which washing and drying are performed in the same machine (40 CFR 63.321).
- **Emerging Technology** - any SO<sub>2</sub> control system that is not defined as a conventional technology and for which the owner or operator of the affected facility has received approval from the Administrator to operate as an emerging technology (40 CFR 60.41c).
- **Emission Inventory** - A detailed listing, by source and type, of all air pollutants emitted into the atmosphere (AFI 32-7040, Attachment 1, Section B).
- **Exhaust Damper** - a flow control device that prevents the air-perchloroethylene gas-vapor stream from exiting the drycleaning machine into a carbon adsorber before room air is drawn into the drycleaning machine (40 CFR 63.321).
- **Existing** - in relation to perchloroethylene drycleaners, it means commenced construction or reconstruction before 9 December 1991 (40 CFR 63.321).
- **Federally Enforceable** - all limitations and conditions enforceable by the Administrator, including those requirements developed pursuant to 40 CFR 60 and 61, requirements within any applicable state implementation plan, and any permit requirements established pursuant to 40 CFR 52.21 or under 40 CFR 51.18 and 40 CFR 51.24 (40 CFR 60.41b).
- **Fossil Fuel** - natural gas, petroleum, coal, and any form of solid liquid, or gaseous fuel derived from such materials for the purpose of creating useful heat (CFR 60.41a).
- **Fugitive Emissions** - air pollutants entering into the atmosphere from other than a stack chimney, vent, or other functionally equivalent opening. Example: vapors, dust, fumes (40 CFR 51.301j).
- **Gasoline Carrier** - any distributor who transports or stores, or causes the transportation or storage of gasoline or diesel fuel without taking title to or otherwise having any ownership of the gasoline, and without altering either the quality or quantity of the gasoline or diesel fuel (40 CFR 80.2).

- *Gasoline Distributor* - any person who transports or stores, or causes the transportation or storage of gasoline or diesel fuel at any point between any gasoline refinery or importer's facility and any retail outlet or wholesale purchaser consumer facility (40 CFR 80.2).
- *Heat Input* - heat derived from combustion of fuel in a steam generating unit and does not include the heat derived from preheated combustion air, recirculated flue gases, or exhaust gases from other sources (40 CFR 60.41c).
- *High-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point between -50 and 10 °C [-58 and 50 °F] at atmospheric pressure (29.9 in. [75.946 cm] Hg). This definition includes but is not limited to appliances using refrigerants -12, -22, -114, -500, or -502 (40 CFR 82.152(f)).
- *Household Waste* - includes material discarded by single and multiple residential dwellings, hotels, motels, and other similar permanent or temporary housing (40 CFR 60.51a).
- *Incinerator* - any furnace used in the process of burning solid waste for the purpose of reducing the volume of the waste by removing combustible matter (40 CFR 60.51).
- *Industrial Process Refrigeration* - for the purposes of 40 CFR 82.156(i), complex customized appliances used in the chemical, pharmaceutical, petrochemical and manufacturing industries. This sector also includes industrial ice machines and ice rinks (40 CFR 82.152(g)).
- *Institutional Waste* - includes materials discarded by hospitals, schools, nonmanufacturing activities at prisons, and government facilities (40 CFR 60.51a).
- *Large Municipal Waste Combustor (MWC)* - a MWC plant with a capacity of greater than 225 Mg/day (250 tons/day) of municipal solid waste (40 CFR 60.51a).
- *Lignite* - coal that is classified as lignite A or B according to the American Society for Testing and Materials (ASTM) Standards (40 CFR 60.41a).
- *Low-Loss Fitting* - any device that is intended to establish a connection between hoses, appliances, or recovery or recycling machines and that is designed to close automatically or to be closed manually when disconnected, minimizing the release of refrigerant from hoses, appliances, and recovery or recycling machines (40 CFR 82.152(h)).
- *Low-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point above 10 °C [50 °F] at atmospheric pressure (29.9 in. [75.946 cm] Hg). This definition includes, but is not limited to, equipment utilizing refrigerants -11, -113, and -123 (40 CFR 82.152(i)).
- *Major Maintenance, Service, or Repair* - any maintenance, service, or repair involving the removal of any or all of the following appliance components (40 CFR 82.152(j)):
  1. compressor
  2. condenser
  3. evaporator
  4. auxiliary heat exchanger coil.

- **Major Source** - any drycleaning facility that emits or has the potential to emit more than 9.1 Mg/yr (10 tons/yr) of perchloroethylene to the atmosphere. In lieu of measuring a facility's potential to emit perchloroethylene emissions or determining a facility's potential to emit perchloroethylene emissions, a drycleaning facility is a major source if (40 CFR 63.321):
  1. it includes only dry-to-dry machines and has a total yearly perchloroethylene consumption greater than 8000 L (2100 gal)
  2. it includes only transfer machine systems or both dry-to-dry and transfer machine systems and has a total yearly perchloroethylene consumption greater than 6800 L (1800 gal).
- **Management Practice** - practices that although they are not mandated by law, are encouraged to promote good operating procedures.
- **Maximum Heat Input Capacity of a Steam Generating Unit** - is determined by operating the facility at maximum capacity for 24 h and using the heat loss method described in Sections 5 and 7.3 of the American Society of Mechanical Engineers (ASME) *Power Test Codes* 4.1 (see 40 CFR 60.17(h)) no later than 180 days after initial startup of the facility and within 60 days after reaching maximum production rate at which the facility will be operated (40 CFR 60.51a).
- **Medical Waste** - when defined as applicable to municipal waste combustors, it is any solid waste generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in production or testing of biologicals. Medical waste does not include any hazardous waste identified under the *Resource Conservation and Recovery Act, Subtitle C* (RCRA-C) or any household waste as defined in RCRA-C (40 CFR 60.51a).
- **Modification** - in relation to New Source Performance Standards (NSPS), any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies except (40 CFR 60.14):
  1. maintenance, repair and replacement which the Administrator determines to be routine for a source category
  2. an increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility
  3. an increase in the hours of operation
  4. use of an alternate fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, the existing facility was designed to accommodate that alternate use. A facility will be designed to accommodate an alternative fuel an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications as assessed prior to the change.
- **Motor Vehicle Air Conditioner (MVAC)** - any appliance that is a motor vehicle air conditioner as defined in 40 CFR 82, subpart B (40 CFR 82.152(k)).
- **Muck Cooker** - a device for heating perchloroethylene-laden waste material to volatilize and recover perchloroethylene (40 CFR 63.321).

- ***Municipal-Type Solid Waste*** - household, commercial/retail, and/or institutional waste. Household, commercial/retail, and institutional wastes do not include sewage, wood pallets, construction and demolition wastes, or industrial process or manufacturing wastes. Municipal-type solid waste does include motor vehicle maintenance materials, limited quantities of household batteries, used motor oil, and tires. Municipal-type solid waste does not include wastes that are solely segregated medical wastes. However, any mixture of segregated medical wastes and other wastes which contains more than 30 percent medical waste is considered to be municipal-type solid waste (40 CFR 60.51a).
- ***Municipal Waste Combustor (MWC)*** - any device that combusts solid, liquid, or gasified municipal solid waste including, but not limited to, field-erected incinerators, modular incinerators, boilers, furnaces, and gasification/combustion units. This does not include combustion units, engines, or other devices that combust landfill gases collected by landfill gas collection systems (40 CFR 60.51a).
- ***MVAC-Like Appliance*** - mechanical vapor compression, open-drive compressor appliances used to cool the driver's or passenger's compartment of a nonroad motor vehicle. This includes the air conditioning equipment found on agricultural or construction vehicles. This definition is not intended to cover appliances using HCFC-22 refrigerant (40 CFR 82.152(l)).
- ***New*** - in relation to a perchloroethylene drycleaning facility, commenced construction or reconstruction on or after 9 December 1991 (40 CFR 63.321).
- ***Nitric Acid Production Unit*** - any facility producing nitric acid which is 30 to 70 percent in strength by either the pressure or atmospheric pressure process (40 CFR 60.70).
- ***Normally Containing A Quantity Of Refrigerant*** - containing the quantity of refrigerant within the appliance or appliance component when the appliance is operating with a full charge of refrigerant (40 CFR 82.152(m)).
- ***Opacity*** - the degree to which emissions reduce the transmission of light and obscure view of an object in the background (40 CFR 60.2).
- ***Opening An Appliance*** - any service, maintenance, or repair on an appliance that could be reasonably expected to release refrigerant from the appliance to the atmosphere unless the refrigerant were previously recovered from the appliance (40 CFR 82.152(n)).
- ***Particulate Matter Emissions*** - any airborne finely divided solid or liquid material except uncombined water, emitted to the ambient air (40 CFR 60.2).
- ***Perceptible Leaks*** - any perchloroethylene vapor or liquid leaks that are obvious from (40 CFR 63.321):
  1. the odor of perchloroethylene
  2. visual observation, such as pools or droplets of liquid
  3. the detection of gas flow by passing the fingers over the surface of the equipment.
- ***Perchloroethylene Consumption*** - the total volume of perchloroethylene purchased based upon purchase receipts or other reliable measures (40 CFR 63.321).
- ***Petroleum Drycleaner*** - a drycleaning facility that uses petroleum solvent in a combination of washers, dryers, filters, stills, and settling tanks (40 CFR 60.621).

- ***PM<sub>10</sub>*** - particulate matter with an aerodynamic diameter less than or equal to a nominal 10 µm (40 CFR 58.1).
- ***Process Stub*** - a length of tubing that provides access to the refrigerant inside a small appliance or room air conditioner and that can be resealed at the conclusion of repair or service (40 CFR 82.152(p)).
- ***Publication Rotogravure Printing*** - any number of rotogravure printing units capable of printing simultaneously on the same continuous web or substrate and includes any associated device for continuous cutting and folding the printed web, where the following sellable paper products are printed: catalogues; direct mail advertisements; display advertisements; magazines; miscellaneous advertisements including brochures, pamphlets, catalogue sheets, circular folders, and announcements; newspapers; periodicals; and telephone and other directories (40 CFR 60.431).
- ***Reclaim Refrigerant*** - to reprocess refrigerant to at least the purity specified in the ARI Standard 700-1988, *Specifications for Fluorocarbon Refrigerants* (appendix A to 40 CFR 82, subpart F) and to verify this purity using the analytical methodology prescribed in the ARI Standard 700-1988. In general, reclamation involves the use of processes or procedures available only at a reprocessing or manufacturing facility (40 CFR 182.52(q)).
- ***Reclaimer*** - a machine used to remove perchloroethylene from articles by tumbling them in a heated air stream (40 CFR 63.321).
- ***Reconstruction*** - in relation to perchloroethylene drycleaners it means replacement of a washer, dryer, or reclaimer, or replacement of any components of a drycleaning system to such an extent that the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source (40 CFR 63.321).
- ***Recover Refrigerant*** - to remove refrigerant in any condition from an appliance without necessarily testing or processing it in any way (40 CFR 182.52(r)).
- ***Recovery Efficiency*** - the percentage of refrigerant in an appliance that is recovered by a piece of recycling or recovery equipment (40 CFR 82.152(s)).
- ***Recycle Refrigerant*** - to extract refrigerant from an appliance and clean refrigerant for reuse without meeting all of the requirements for reclamation. In general, recycled refrigerant is refrigerant that is cleaned using oil separation and single or multiple passes through devices, such as replaceable core filter-driers, which reduce moisture, acidity, and particulate matter. These procedures are usually implemented at the field job site (40 CFR 82.152(t)).
- ***Refrigerated Condenser*** - a vapor recovery system into which an air-perchloroethylene gas-vapor stream is routed and the perchloroethylene is condensed by cooling the gas-vapor stream (40 CFR 63.321).
- ***Refuse Derived Fuel*** - combustible or organic portion of municipal waste that has been separated out and processed for use as fuel (40 CFR 60.51a).
- ***Reid Vapor Pressure (RVP)*** - the absolute vapor pressure of volatile crude oil and volatile nonviscous petroleum liquids except liquefied petroleum gases as determined by the ASTM, Part 17, 1973, D-323-72 (reapproved 1977) (40 CFR 60.111a).

- **Room Enclosure** - a stationary structure that encloses a transfer machine system, and is vented to a carbon adsorber or an equivalent control device during operation of the transfer machine system (40 CFR 63.321).
- **Self-Contained Recovery Equipment** - refrigerant recovery or recycling equipment that is capable of removing the refrigerant from an appliance without the assistance of components contained in the appliance (40 CFR 82.152(u)).
- **Small Appliance** - any of the following products that are fully manufactured, charged, and hermetically sealed in a factory with 5 lb [11.02 kg] or less of refrigerant (40 CFR 82.152(v)):
  1. refrigerators designed for home use
  2. freezers designed for home use
  3. room air conditioners (including window air conditioners and packaged terminal air conditioners)
  4. packaged terminal heat pumps
  5. dehumidifiers
  6. under-the-counter ice makers
  7. vending machines
  8. drinking water coolers.
- **Steam Generating Unit** - any furnace, boiler, or other device used for combusting fuel for the purpose of producing steam (including fossil fuel-fired steam generators associated with combined cycle gas turbines) nuclear steam generators are not included (40 CFR 60.41a).
- **Sulfuric Acid Production Unit** - any facility producing sulfuric acids by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans, or acid sludge, but does not include facilities where conversion to sulfuric acid is used primarily as a means of preventing emissions to the atmosphere of SO<sub>2</sub> or other sulfur compounds (40 CFR 60.81).
- **System-Dependent Recovery Equipment** - refrigerant recovery equipment that requires the assistance of components contained in an appliance to remove the refrigerant from the appliance (40 CFR 82.152(w)).
- **Technician** - any person who performs maintenance, service, or repair that could reasonably be expected to release Class I or Class II substances from appliances into the atmosphere, including but not limited to installers, contractor employees, in-house service personnel, and in some cases, owners. Technician also means any person disposing of appliances except for small appliances (40 CFR 82.152(x)).
- **Transfer Machine System** - a multiple-machine drycleaning operation in which washing and drying are performed in different machines. Examples include but are not limited to (40 CFR 63.321):
  1. a washer and dryer
  2. a washer and reclaimer
  3. a dry-to-dry machine and reclaimer.
- **True Vapor Pressure** - the equilibrium partial pressure exerted by a petroleum liquid as determined in accordance with methods described in American Petroleum Institute (API) Bulletin 2517, *Evaporation Loss From Floating Roof Tanks*, 1962 (40 CFR 60.111a).

- *Very High-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point below -50 °C [-58 °F] at atmospheric pressure (29.9 in. [75.95 cm] Hg). This definition includes but is not limited to equipment utilizing refrigerants -13 and -503 (40 CFR 82.152(y)).
- *Very Low Sulfur Oil* - an oil that contains no more than 0.5 weight percent sulfur or that, when combusted without SO<sub>2</sub> emission control, has a SO<sub>2</sub> emission rate equal to or less than 215 ng/J (0.5 lb/MBtu) heat input (40 CFR 60.41b).
- *VHAP Service* - a piece of equipment that either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight a volatile hazardous air pollutant (VHAP) (40 CFR 61.241).
- *VOC Service* - in relationship to fugitive emissions, this is when a piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight (40 CFR 61.241).
- *Volatile Hazardous Air Pollutant (VHAP)* - a substance regulated under 40 CFR 61; Subpart V for which a standard for equipment leaks of the substance has been proposed and promulgated. Benzene and vinyl chloride are VHAPs (40 CFR 61.241).
- *Volatile Organic Compound (VOC)* - any compound of carbon, excluding CO, CO<sub>2</sub>, carbonic acid, metallic carbides, or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions (40 CFR 51.100).
- *Volatile Organic Liquid (VOL)* - any organic liquid which can emit volatile organic compounds into the atmosphere except those VOLs that emit only those compounds which the Administration has determined do not contribute appreciably to the formation of ozone. These compounds are identified in USEPA statements on ozone abatement policy for the state implementation plan (SIP) (40 CFR 60.111b(k)).
- *Washer* - a machine used to clean articles by immersing them in perchloroethylene. This includes a dry-to-dry machine when used with a reclaimer (40 CFR 63.321).
- *Water Separator* - any device used to recover perchloroethylene from a water-perchloroethylene mixture (40 CFR 63.321).





**AIR EMISSIONS MANAGEMENT**  
**GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>CONTACT THESE PERSONS OR GROUPS:(a)</b>	<b>REFER TO PAGE NUMBER:</b>
All Installations	A.1 through A.7	(1)(2)	1-21
Steam Generating Units	A.8 through A.16	(1)(2)(3)	1-24
Municipal Waste Combustors	A.17 and A.18	(1)(2)(3)	1-32
Incinerators	A.19 and A.20	(1)(2)(3)	1-34
Thermal Processing Facilities	A.21	(1)(3)	1-36
Motor Vehicles	A.22	(5)	1-37
Gasoline	A.23 through A.28	(2)(4)(5)	1-37
Printing Presses	A.29	(1)(3)	1-40
POL Storage Vessels	A.30 and A.31	(1)(4)	1-41
VOL Storage Vessels	A.32 and A.33	(1)(3)(4)	1-43
Fugitive Emissions	A.34 through A.39	(1)(3)	1-45
Petroleum Solvent Drycleaning Operations	A.40	(3)	1-51
Perchloroethylene Drycleaning Operations	A.41 through A.52	(3)	1-52
Acid Production Units	A.53 and A.54	(3)	1-58
CFCs and Halons	A.55 through A.78	(1)(3)(4)(5)(6)(7) (8)	1-59

**(a) CONTACT/LOCATION CODE:**

- (1) Environmental Planning (BCE)
- (2) Bioenvironmental Engineering (BEE)
- (3) Air Pollution Source Operator
- (4) Fuels Management Branch
- (5) Transportation and Maintenance Branch
- (6) Base Supply
- (7) Maintenance Shops
- (8) Refrigeration Shops (BCE)



## **AIR EMISSIONS MANAGEMENT**

### **Records to Review During an ECAMP Assessment**

- State and local air pollution control regulations
- Agency air pollution control regulations
- Emissions inventory
- All air pollution source permits
- Plans and procedures applicable to air pollution control
- Emission monitoring records
- Opacity records
- Notices of noncompliance from regulatory authorities
- Instrument calibration and maintenance records
- Reports/complaints concerning air quality
- Air Emergency Episode Plan
- State and/or Federal regulatory inspections
- Regulatory inspection reports
- Documentation of preventive measure or action
- Results of air sampling at the conclusion of response action

### **Physical Features to Inspect During an ECAMP Assessment**

- All air pollution sources (fuel burners, incinerators, VOC sources, etc.) (*see next page*)
- Air pollution monitoring and control devices
- Air emission stacks
- Air intake vents
- Aerospace coating
- Auto refinishing
- Metal parts painting
- Fuel Storage
- Fuel transfer operations

### **People to Interview During an ECAMP Assessment**

- BCE (Environmental Planning)
- BEE
- Air Pollution source Operators
- Fuels Management Branch
- Transportation and Maintenance Branch
- Base Supply (LGS)

## Potential Air Pollution Sources Found at Air Force Installations

<b>Heat/Steam/Energy Production</b>	<b>Waste Disposal</b>
coal-fired power plants package boilers diesel generators emergency generators peak shaving generators turbines	incineration of medical/pathological or hazardous waste open burning/open detonation landfills surface impoundment landfarms/bioremediation
<b>Petroleum Product Storage and Transport</b>	<b>Firing Ranges</b>
tank farms gasoline service stations loading racks tanker transfer underground storage tanks aboveground storage tanks	artillery small caliber weapons
<b>Graphic Arts</b>	<b>Additional Sources</b>  air-conditioning/refrigeration shops pesticide/herbicide applications asphalt production wastewater treatment plants controlled forest and agricultural burning firefighter training burns smoke generators engine test cells/dynamometers ethylene oxide sterilizers laboratory hood vents sandblasting operations woodworking operations quarries plastics production explosive and munitions production acid production forging and annealing operation metal treatment and plating waferboard manufacturing foam packing operations unpaved roads storage piles storage silos
letterpress rotogravure offset lithography silkscreening	
<b>Degreasing Operations (Opns)</b>	
vapor degreasers cold solvent cleaning solvent dip tanks	
<b>Surface Coating Operations</b>	
paint booths metal parts coating lines furniture refinishing architectural coatings traffic striping	
<b>Additional Sources</b>	
paint stripping operations drycleaning operations photoprocessing operations training aid support centers (TASC) chemical recycling and recovery	

**COMPLIANCE CATEGORY:  
AIR EMISSIONS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL INSTALLATIONS</b></p> <p><b>A.1.</b> Actions or changes since previous assessment of air emissions should be reviewed (MP).</p> <p><b>A.2.</b> Copies of all relevant Federal, state, and local regulations on air emissions are required to be maintained at the installation (AFR 19-1, para 11f).</p> <p><b>A.3.</b> Copies of all relevant DOD, and U.S. Air Force directives, and guidance documents on air emissions should be maintained at the installation (MP).</p>	<p>Determine if noncompliance issues have been resolved by examining a copy of the previous review report. (1)(2)</p> <p>(NOTE: Regulations on asbestos management are addressed in Section 9, Special Pollutants Management.)</p> <p>Verify that copies of the following regulations are maintained and kept current at the installation: (1)</p> <ul style="list-style-type: none"> <li>- 40 CFR 60. <i>Standards of Performance for New Stationary Sources.</i></li> <li>- 40 CFR 61. <i>National Emission Standards for Hazardous Air Pollutants.</i></li> <li>- 40 CFR 80. <i>Regulation of Fuels and Fuel Additives.</i></li> <li>- 40 CFR 82. <i>Protection of Stratospheric Ozone.</i></li> <li>- 40 CFR 240. <i>Guidelines for the Thermal Processing of Solid Waste.</i></li> <li>- appropriate state and local regulations.</li> </ul> <p>Verify that the Base Staff Judge Advocate reviews Federal, state, and local regulations that affect ongoing and proposed activities and keeps the EPC informed as necessary. (1)</p> <p>Verify that copies of the following documents are maintained and kept current at the installation: (1)</p> <ul style="list-style-type: none"> <li>- AFI 32-7040, <i>Air Quality Compliance.</i></li> <li>- AFR 19-1, <i>Pollution Abatement and Environmental Quality.</i></li> <li>- AFR 19-7, <i>Environment Pollution Monitoring.</i></li> <li>- AFR 19-15, <i>Reduction in Use of Chlorofluorocarbons (CFCs), Halons, and Other Substances.</i></li> <li>- Air Force Policy Letter 7 January 1993, <i>Air Force Ban on Purchases of Ozone Depleting chemicals (ODCs).</i></li> </ul>

(1) Environmental Planning (BCE) (2) Bioenvironmental Engineering (BEE) (3) Air Pollution Source Operator (4) Fuels Management Branch (5) Transportation and Maintenance Branch (6) Base Supply (7) Maintenance Shops (8) Refrigeration Shop (BCE)

**COMPLIANCE CATEGORY:  
AIR EMISSIONS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.4.</b> Installations are required to comply with state and local air quality regulations and compliance agreements negotiated with Federal, state and local governments (CAA, 42 USC 7419(a)).</p>	<p>Verify that the installation is abiding by state and local air quality requirements. (1)</p> <p>Verify that the installation is operating according to permits issued by the state or local agencies, both the general and specific conditions, such as: (1)</p> <ul style="list-style-type: none"> <li>- exemption levels expressed in terms of potential or actual emissions</li> <li>- specific exemptions for items such as space heaters, emergency generators, laboratories, mobile sources, temporary sources, and construction activities</li> <li>- grandfather dates or dates when sources require permits</li> <li>- requirements for open burning.</li> </ul> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- air pollution episode standby plans</li> <li>- permits for construction and operation of sources of emissions</li> <li>- placement of control devices on fuel burning sources</li> <li>- incinerators with less than 50 tons per day heat input</li> <li>- incinerations of medical, pathological, and infectious waste</li> <li>- open burning and detonation</li> <li>- fire fighting training</li> <li>- motor vehicle emissions and inspections</li> <li>- use of vapor control systems at gas dispensing facilities</li> <li>- transfer of fuel in tank trucks</li> <li>- solvent metal cleaners such as degreasers and cold cleaners</li> <li>- perchloroethylene dry cleaners</li> <li>- fugitive dust emissions</li> <li>- control of particulate emissions from woodworking shops</li> <li>- transportation of refuse or materials in open vehicles</li> <li>- emissions and emission control requirements for the operation of existing fossil fuel-fired steam generators</li> <li>- the spray painting/coating of vehicles, buildings, and/or furniture</li> <li>- certification of vehicles transporting VOC liquids</li> <li>- certification for operators of boilers</li> <li>- paving of roads and parking lots</li> <li>- emissions inventories</li> <li>- toxic air pollutants</li> <li>- indoor air pollution.)</li> </ul> <p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreement. (1)</p>

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**COMPLIANCE CATEGORY:  
AIR EMISSIONS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>STEAM GENERATING UNITS</b></p> <p><b>A.8.</b> Each fossil fuel fired steam generating unit of more than 73 MW (250 MBtu/h) heat input rate and each fossil fuel and wood-residue fired steam generating unit capable of firing fossil fuel at a heat input rate of more than 73 MW (250 MBtu/h) heat input rate that started construction or modification after 17 August 1971 is required to meet specific emission standards (40 CFR 60.40 and 60.42 through 60.44).</p> <p><b>A.9.</b> Each fossil fuel fired steam generating unit of more than 250 MBtu/h (73 MW) heat input rate and each fossil fuel and wood-residue fired steam generating unit capable of firing fossil fuel at a heat input rate of more than 250 MBtu/h (73 MW) heat input rate that started construction or modification after 17 August 1971 is required to have specific types of monitoring instruments installed (40 CFR 60.40 and 60.45).</p>	<p>Verify that: (1)(3)</p> <ul style="list-style-type: none"> <li>- opacity emissions are less than 20 percent except one 6-min period of no greater than 27 percent per hour</li> <li>- particulate emissions are not in excess of 0.10 lb/MBtu</li> <li>- SO<sup>2</sup> emissions do not exceed levels outlined in Table 1-1</li> <li>- NO<sub>x</sub> emissions do not exceed levels outlines in Table 1-1.</li> </ul> <p>Verify that the individual conducting opacity monitoring is certified by the state as required by the state. (3)</p> <p>(NOTE: Any change to an existing fossil fuel fired steam generating unit to accommodate the use of combustible material does not bring that unit under the applicability of these requirements.)</p> <p>Verify that the following monitors are in place: (1)(3)</p> <ul style="list-style-type: none"> <li>- NO<sub>2</sub> continuous monitor</li> <li>- opacity monitor (except in gaseous fuel burners)</li> <li>- SO<sub>2</sub> monitor (except for fossil fuel-fired steam generators not using a fuel gas desulfurization device and gaseous fuel burners)</li> <li>- fuel sampling monitor when SO<sub>2</sub> monitor is not required</li> <li>- CO<sub>2</sub> or O<sub>2</sub> monitors (except when continuous monitoring systems are not required to be installed for SO<sub>x</sub> or NO<sub>x</sub>).</li> </ul> <p>Examine the monitor recording chart for normal operating procedures. (3)</p> <p>Verify that fuel consumption and electrical steam output instruments are: (3)</p> <ul style="list-style-type: none"> <li>- correctly installed and operating</li> <li>- calibrated every 24 h.</li> </ul> <p>Verify that monitoring records are maintained for 2 yr. (3)</p>

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**COMPLIANCE CATEGORY:  
AIR EMISSIONS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.9. (continued)</b></p>	<p>Verify that records of fuel analysis are maintained and contain: (1)(3)</p> <ul style="list-style-type: none"> <li>- sulfur content</li> <li>- ash content</li> <li>- heating value.</li> </ul> <p>(NOTE: Any change to an existing fossil fuel fired steam generating unit to accommodate the use of combustible materials shall not bring the unit under the applicability of these requirements.)</p>
<p><b>A.10.</b> Lignite fired steam generating units that started construction or modification after 22 December 1976 are required to meet specific emissions limitation for NO<sub>x</sub> (40 CFR 60.40(d), 60.44(a)(4) and 60.44(a)(5)).</p>	<p>Verify that NO<sub>x</sub> are not emitted in excess of 260 ng/J (0.60 lb/MBtu) heat input except for lignite mined in North Dakota, South Dakota or Montana which is burned in a cyclone fired unit which is allowed an emission rate of 340 ng/J (0.80 lb/MBtu) heat input. (1)(3)</p>
<p><b>A.11.</b> Steam generating units that started construction, modification, or reconstruction after 19 June 1984, with a heat input capacity of greater than 29 MW (100 MBtu/h) are required to meet specific emissions limitations for particulates and SO<sub>2</sub> (40 CFR 60.40b through 60.43b and 60.45b through 60.49b).</p>	<p>Determine if the facility burns coal, oil, wood, or a combination of fuels. (1)(3)</p> <p>Determine what percentage of the fuel mix each fuel type represents. (1)(3)</p> <p>Verify that facilities combusting coal or oil are not discharging gases into the atmosphere if the gases contain SO<sub>2</sub> in excess of 10 percent of the potential SO<sub>2</sub> emission rate (90 percent reduction) and that contain SO<sub>2</sub> in excess of the emission limit determined according to the formula in Table 1-2 unless: (3)</p> <ul style="list-style-type: none"> <li>- the facility combusts coal refuse alone in a fluidized bed combustion steam generating unit whereby an 80 percent reduction is required</li> <li>- the facility combusts coal and oil, either alone or in combination with any other fuel and uses emerging technology for SO<sub>2</sub> emissions control whereby gases are not be discharged that contain in excess of 50 percent of the potential SO<sub>2</sub> emission rate and that contain SO<sub>2</sub> in excess of the emission limit determined according to the formula in Table 1-2</li> </ul>

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**COMPLIANCE CATEGORY:  
AIR EMISSIONS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.11. (continued)</b></p>	<ul style="list-style-type: none"> <li>- they are in the following list whereby they cannot emit gases that contain SO<sub>2</sub> in excess of 520 ng/J (1.2 MBtu) heat input if the facility combusts coal or 215 ng/J (0.5 lb/MBtu) heat input if the affected facility combusts oil:               <ul style="list-style-type: none"> <li>- facilities that have an annual capacity factor for coal or oil of 30 percent or less and are subject to a Federally enforceable permit limiting the operation of the facility to an annual capacity factor of 30 percent or less</li> <li>- facilities located in noncontinental areas</li> <li>- affected facilities combusting coal or oil, alone or in combination with any other fuel, in a duct burner as a part of a combined cycle system where 30 percent or less of the heat input to the steam generating unit is from combustion of coal and oil in the duct burner and 70 percent or more of the heat input to the steam generating unit is from the exhaust gases entering the duct burner.</li> </ul> </li> </ul> <p>(NOTE: Typically, state regulations or state-issued permits set an emission limit for SO<sub>2</sub>.)</p> <p>Verify that the particulate matter standards outlined in Table 1-3 are being met. (3)</p> <p>Verify that records are being kept of the amounts of each fuel combusted during each day and the emissions. (1)(3)</p> <p>(NOTE: These particulate standards also apply to:</p> <ul style="list-style-type: none"> <li>- coal-fired facilities with a heat input capacity between 29 MW (100 MBtu/h) and 73 MW (250 MBtu/h) that were constructed, modified, or reconstructed after 19 June 1984, but before 19 June 1986</li> <li>- coal-fired facilities with a heat input capacity greater than 73 MW (250 MBtu/h) that started construction, modification, or reconstruction between 19 June 1984 and 19 June 1986</li> <li>- incinerators over 45 metric tons/day (50 tons/day) charging rate.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.12.</b> Steam generating units that started construction, modification, or reconstruction after 19 June 1984, with a heat input capacity of greater than 29 MW (100 MBtu/h) are required to meet specific emissions limitations for NO<sub>x</sub> (40 CFR 60.40b through 60.44b).</p>	<p>Verify that facilities that combust only coal, oil, or natural gas meet the NO<sub>x</sub> standards outlined in Table 1-4 unless the facility simultaneously combusts coal or oil in a mixture with natural gas, and wood, municipal solid waste, or any other fuel and has an annual capacity factor for coal or oil or a mixture of these fuels with natural gas of 10 percent or less, or the facility has a heat input capacity of 73 MW (250 MBtu/h) heat input or less that: (3)</p> <ul style="list-style-type: none"> <li>- only fires natural gas, distillate oil, or residual oil with a maximum nitrogen content of 0.30 weight percent</li> <li>- has a combined annual capacity factor of 10 percent or less for natural gas, distillate oil, and residual oil with a nitrogen content of 0.30 weight percent or less, and</li> <li>- are subject to a Federally enforceable requirement limiting operation of the facility to the firing of natural gas, distillate oil, and/or residual oil with a nitrogen content of 0.30 weight percent and limiting the operations to a combined annual capacity of 10 percent or less for natural gas, distillate oil, and residual oil and a nitrogen content of 0.30 weight percent.</li> </ul> <p>Verify that facilities that simultaneously combust mixtures of coal, oil, or natural gas do not discharge NO<sub>x</sub> in excess of the limit determined by using the formula found in Table 1-2 unless the facility combusts simultaneously coal or oil, or a mixture of these fuels with natural gas, and wood, municipal solid waste, or any other fuel and has an annual capacity factor for coal or oil, or mixture of these fuels with natural gas of 10 percent or less. (3)</p> <p>Verify that NO<sub>x</sub> are not discharged in excess of 130 ng/J (0.30 lb/MBtu) heat input if the facility simultaneously combusts natural gas with wood, municipal solid waste, or other solid fuel, except coal. (3)</p> <p>(NOTE: Exempted from the NO<sub>x</sub> standards are facilities that have an annual capacity factor for natural gas of 10 percent or less and are subject to a Federally enforceable requirements that limits operation of the affected facility to an annual capacity factor of 10 percent or less for natural gas.)</p> <p>Verify that facilities that simultaneously combust coal, oil, or natural gas with byproduct/waste do not discharge NO<sub>x</sub> in excess of the limit determined by using the formula in Table 1-2 unless the facility has an annual capacity factor for coal, oil, and natural gas of 10 percent or less and is subject to a Federally enforceable requirement that limits the operation of the facility to an annual capacity factor of 10 percent or less. (3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.13.</b> Steam generating units which started construction, modification, or reconstruction after 3 June 1989, with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h) but less than 29 MW (100 MBtu/h) are required to meet specific standards for emissions of SO<sub>2</sub> (40 CFR 60.40c and 60.42c).</p>	<p>Determine if the installation operates steam generating units which started construction, modification, or reconstruction after 3 June 1989, with a maximum heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h) but less than 29 MW (100 MBtu/h). (1)(3)</p> <p>Verify that facilities which combust only coal do not: (3)</p> <ul style="list-style-type: none"> <li>- discharge into the atmosphere gases containing SO<sub>2</sub> in excess of 10 percent of the potential SO<sub>2</sub> emission rate (a 90 percent reduction)</li> <li>- discharge gases containing SO<sub>2</sub> in excess of 520 ng/J (1.2 lb/MBtu) heat input.</li> </ul> <p>Verify that facilities which combust coal and use an emerging technology do not: (3)</p> <ul style="list-style-type: none"> <li>- discharge into the atmosphere gases containing SO<sub>2</sub> in excess of 50 percent of the potential SO<sub>2</sub> emission rate (a 50 percent reduction)</li> <li>- discharge gases that contain SO<sub>2</sub> in excess of 260 ng/J (0.60 lb/MBtu) heat input.</li> </ul> <p>Verify that facilities which combust coal in combination with other fuels do not: (3)</p> <ul style="list-style-type: none"> <li>- discharge into the atmosphere gases containing SO<sub>2</sub> in excess of 10 percent of the potential SO<sub>2</sub> emission rate (a 90 percent reduction)</li> <li>- discharge gases containing SO<sub>2</sub> in excess of the emissions limit determined by the formula outlined in Table 1-5.</li> </ul> <p>Verify that facilities which combust coal in combination with other fuels and use emerging technology do not: (3)</p> <ul style="list-style-type: none"> <li>- discharge gases containing SO<sub>2</sub> in excess of 50 percent of the potential SO<sub>2</sub> emission rate (a 50 percent reduction)</li> <li>- discharge gases containing SO<sub>2</sub> in excess of the emission limit determined by the formula outlined in Table 1-5.</li> </ul> <p>Verify that facilities which combust coal refuse alone or in a fluidized bed combustion steam generating unit do not: (3)</p> <ul style="list-style-type: none"> <li>- discharge gases containing SO<sub>2</sub> in excess of 20 percent of the potential SO<sub>2</sub> rate (an 80 percent reduction)</li> <li>- discharge gases containing SO<sub>2</sub> in excess of 520 n/J (1.2 lb/MBtu) heat input.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.13. (continued)</b></p>	<p>(NOTE: If the facility combusts coal with coal refuse the standards for facilities combusting coal are required to be met.)</p> <p>Verify that facilities which fire oil or any fuel other than coal with coal refuse do not: (3)</p> <ul style="list-style-type: none"> <li>- discharge into the atmosphere gases containing SO<sub>2</sub> in excess of 10 percent of the potential SO<sub>2</sub> emission rate (a 90 percent reduction)</li> <li>- discharge gases containing SO<sub>2</sub> in excess of the emissions limit determined by the formula in Table 1-5.</li> </ul> <p>Verify that a facility which meets one of the following criteria and combusts coal alone or in combination with any other fuel does not discharge SO<sub>2</sub> in excess of the emissions limit determined by the formula in Table 1-5: (3)</p> <ul style="list-style-type: none"> <li>- facilities with a heat input capacity of 22 MW (75 MBtu/h) or less</li> <li>- facilities that have an annual capacity for coal of 55 percent or less</li> <li>- facilities located in noncontinental areas</li> <li>- facilities that combust coal in a duct burner as a part of a combined cycle system where 30 percent or less of the heat entering the steam generating unit is from combustion of coal in the duct burner and 70 percent or more is from exhaust gases.</li> </ul> <p>Verify that facilities which combust oil meet one of the following: (3)</p> <ul style="list-style-type: none"> <li>- gases are not discharged that contain SO<sub>2</sub> in excess of 215 ng/J (0.50 lb/MBtu) heat input</li> <li>- no oil is combusted which contains greater than 0.5 weight percent sulfur.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.14.</b> Steam generating units which started construction, modification, or reconstruction after 3 June 1989, with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h) but less than 29 MW (100 MBtu/h) are required to meet specific standards for emissions of particulates (40 CFR 60.40c and 60.43c).</p>	<p>Verify that facilities which combust coal or mixtures of coal with other fuels and have a heat input capacity of 8.7 MW (30 MBtu) or greater do not discharge particulate matter in excess of the following: (3)</p> <ul style="list-style-type: none"> <li>- 22 ng/J (0.05 lb/MBtu) heat input if the facility combusts only coal or coal with other fuels and has an annual capacity factor for the other fuels of 10 percent</li> <li>- 43 ng/J (0.10 lb/MBtu) heat input if the facility combusts coal with other fuels, has an annual capacity factor greater than 10 percent for the other fuels.</li> </ul> <p>Verify that facilities which combust wood or mixtures of wood with other fuels, except coal, and have a heat input capacity of 8.7 MW (30 MBtu/h) or greater do not discharge particulate matter in excess of the following: (3)</p> <ul style="list-style-type: none"> <li>- 43 ng/J (0.10 lb/MBtu) heat input if the facility has an annual capacity factor for wood greater than 30 percent</li> <li>- 130 ng/J (0.30 lb/MBtu) heat input if the facility has an annual capacity factor for wood of 30 percent or less.</li> </ul> <p>Verify that facilities that combust coal, wood, or oil with a heat input capacity of greater than 8.7 MW (30 MBtu/h) do not discharge gases with greater than 20 percent opacity (6 min average), except for one 6-min period/h of not more than 27 percent opacity. (3)</p> <p>(NOTE: Particulate matter and opacity standards apply at all times except during periods of startup shutdown, or malfunction.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.15.</b> Steam generating units which started construction, modification, or reconstruction after 3 June 1989, with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h) but less than 29 MW (100 MBtu/h) are required to meet specific monitoring standards for SO<sub>2</sub> and particulate matter (40 CFR 60.46c and 60.47c).</p>	<p>Verify that continuous emissions monitoring systems are installed, calibrated, maintained, and operated for measuring SO<sub>2</sub> concentrations and either oxygen or CO<sub>2</sub> concentrations at the outlet of the SO<sub>2</sub> control device or the outlet of the steam generating unit if no control device is used. (3)</p> <p>Verify that if continuous emissions monitoring systems for SO<sub>2</sub> are not used, the fuel is sampled prior to combustion. (3)</p> <p>Verify that a continuous monitoring system is installed, calibrated, maintained, and operated for measuring opacity. (3)</p>
<p><b>A.16.</b> Steam generating units which started construction, modification, or reconstruction after 3 June 1989, with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h) but less than 29 MW (100 MBtu/h) are required to meet specific reporting requirements (40 CFR 60.48c).</p>	<p>Verify that the installation submits excess emissions reports for any calendar quarter in which opacity limits are exceeded. (1)(3)</p> <p>Verify that if there has been no excess opacity emissions, a semiannual report has been submitted stating there were no excess emissions. (1)(3)</p> <p>Verify that facilities subject to the SO<sub>2</sub> emissions limits submit quarterly reports including: (1)(3)</p> <ul style="list-style-type: none"> <li>- calendar dates covered in the report</li> <li>- each 30-day average SO<sub>2</sub> emission rate or 30-day average sulfur content</li> <li>- reasons for noncompliance</li> <li>- descriptions of any correction actions taken.</li> </ul> <p>Verify that fuel stationary gas turbines using water injection to control NO<sub>x</sub> emissions have installed and are operating a continuous monitoring system to monitor and record fuel consumption and the ratio of water to fuel being fired in the turbine. (3)</p> <p>Verify that the sulfur content and nitrogen content of the fuel being fired is being monitored. (3)</p>

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**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**MUNICIPAL WASTE  
COMBUSTORS**

**A.17.** Municipal waste combustors with a capacity greater than 225 Mg/day (250 tons/day) of municipal solid waste or refuse-derived fuel which started construction or modification after 20 December 1989, are required to meet specific operational standards (40 CFR 60.50a through 60.58a).

(NOTE: Exempted from these requirements are:

- affected facilities that combust tires or fuel derived solely from tires and do not combust any other municipal solid waste or refuse derived fuel
- cofired combustors
- cofired combustors that are subject to a Federally enforceable permit limiting the operation of the combustor to no more than 225 Mg/day (250 tons) of municipal solid waste or refuse derived fuel
- municipal waste combustors only combusting medical waste.)

Verify that gases are not discharged that contain the following constituents in excess of the least stringent amount listed: (1)(3)

- dioxin/furan in excess of 30 ng/dscm (12 grains/billion dscf), corrected to 7 percent oxygen (dry basis)
- SO<sub>2</sub> in excess of 20 percent of the potential SO<sub>2</sub> emission rate or 30 ppm by volume, corrected to 7 percent oxygen
- hydrogen chloride in excess of 5 percent of the potential hydrogen chloride emission rate (95 percent reduction by weight or volume), or 25 ppm by volume, corrected to 7 percent oxygen (dry basis)
- NO<sub>x</sub> emissions in excess of 180 ppm by volume corrected to 7 percent oxygen (dry basis).

Verify that facilities meet the operating standards for CO emissions outlined in Table 1-6. (3)

Verify that the following operating practices are implemented: (3)

- facilities do not operate at a load level greater than 110 percent of the maximum demonstrated municipal waste combustor unit load
- facilities do not operate at a temperature exceeding 17 °C (30 °F) above the maximum demonstrated particulate matter control device temperature.

Verify that actions are being taken to ensure that by 11 February 1993, or within 24 mo after the start-up of operation (whichever is later) each chief facility operator and shift supervisor is certified. (3)

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.18.</b> Municipal waste combustors with a capacity greater than 225 Mg/day (250 tons/day) of municipal solid waste or refuse-derived fuel which started construction or modification after 20 December 1989, are required to meet specific notification and record keeping requirements (40 CFR 60.50a through 60.58a).</p>	<p>(NOTE: Exempted from these requirements are:</p> <ul style="list-style-type: none"> <li>- affected facilities that combust tires or fuel derived solely from tires and do not combust any other municipal solid waste or refuse derived fuel</li> <li>- cofired combustors</li> <li>- cofired combustors that are subject to a Federally enforceable permit limiting the operation of the combustor to no more than 225 Mg/day (250 tons) of municipal solid waste or refuse derived fuel</li> <li>- municipal waste combustors only combusting medical waste.)</li> </ul> <p>Verify that an operating manual is at the facility which is updated yearly and indicates: (1)(3)</p> <ul style="list-style-type: none"> <li>- applicable standards</li> <li>- procedures for receiving, handling, and feeding municipal solid waste</li> <li>- start-up, shutdown, and malfunction procedures</li> <li>- operational provisions for meeting emission standards</li> <li>- response procedures for emergency situations</li> <li>- monitoring procedures</li> <li>- procedures for handling ash</li> <li>- reporting and record keeping requirements.</li> </ul> <p>Verify that if a new facility is starting to operate a notice to construct, planned start-up date, and fuels to be used at the facility was provided to the U.S. Environmental Protection Agency (USEPA). This notification requirement also applies to cofired combustors and facilities which burn tires only. (1)</p> <p>Verify that the following reports are submitted to the USEPA Administrator: (1)</p> <ul style="list-style-type: none"> <li>- quarterly compliance reports</li> <li>- quarterly excess emissions reports</li> <li>- annual performance tests results</li> <li>- quarterly reports of the daily weights of municipal solid waste and each other fuel fired when records of this information is required to be kept.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.20.</b> Incinerators that started construction or modification after 11 June 1973, that combust waste containing more than 10 percent sewage sludge (dry basis) produced by municipal sewage treatment plants, or those that started construction or modification after 11 June 1973, which charge more than 1000 kg (2205 lb) per day municipal sewage sludge (dry basis) are required to meet specific emission standards (40 CFR 60.150 through 60.156).</p>	<p>Verify that particulate matter is not discharged in excess of 0.65 g/kg dry sludge input (1.30 lb/ton dry sludge input). (3)</p> <p>Verify that the opacity of emissions does not exceed 20 percent. (3)</p> <p>Verify that, except on multiple hearth, fluidized bed, or electric sludge incinerators with a particulate emission rate less than or equal to 0.38 g/kg of dry sludge input (0.75 lb/ton), a continuously operating flow measuring device to determine either the mass or volume of sludge charged to the incinerator is in place, maintained, and properly calibrated. (1)(3)</p> <p>Verify that a weighing device is available to determine the mass of any municipal solid waste charged to the incinerator when sewage sludge and municipal solid waste are incinerated together. (3)</p> <p>Verify that incinerators equipped with a wet scrubbing device have a continuously operating monitoring device that is calibrated annually to measure and record the pressure drop of the gas flow through the wet scrubbing device. (3)</p> <p>Verify that a monitoring device, which is calibrated at least once every 24 h, is in place and continuously measures and records the oxygen content of the multiple hearth, fluidized bed, or electric sludge incinerator exhaust gas. (3)</p> <p>Verify that at least one continuously operating temperature measuring device is installed on every hearth in the cooling and drying zones of multiple hearth furnaces and two thermocouples are installed in each hearth in the combustion zone. (3)</p> <p>Verify that at least one continuously operating temperature measuring device is installed in the drying zone and one on the cooling zone, and a minimum of two in the combustion zones of electric furnaces.(3)</p> <p>Verify that a continuously operating fuel flow measuring device is operating on multiple hearth, fluidized bed, or electric sludge incinerators. (3)</p> <p>Verify that, for multiple hearth, fluidized bed, or electric sludge incinerators except those that emit particulates less than 0.38 g/kg of dry sludge input (0.75 lb/ton), a grab sample of the sludge is collected and analyzed every day for the dry sludge content and the volatile solids content. (2)(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>MOTOR VEHICLES</b></p> <p><b>A.22.</b> All Air Force vehicles will be tested with an infrared exhaust tester (for gasoline engines) or an opacity meter (for diesel engines) to certify exhaust emissions if required by state or local laws (AFTO 00-20B-5, Section 2-6).</p> <p><b>GASOLINE</b></p> <p><b>A.23.</b> Leaded gasoline shall not be introduced into any motor vehicle that is labeled <b>UNLEADED GASOLINE ONLY</b>, or that is equipped with a gasoline tank filler inlet designed for introduction of unleaded gasoline (40 CFR 80.22(a)).</p>	<p>Verify that the required testing is performed annually in conjunction with the annual safety inspection, or more often if required by local laws by interviewing the transportation maintenance chief. (5)</p> <p>Verify by inspection that the exhaust gas analyzer it is operable. (5)</p> <p>Determine schedule for calibration of the equipment, and verify that the schedule is met. (5)</p> <p>Verify that civilian and military mechanics know how to operate the infrared exhaust analyzer and/or opacity meter. (5)</p> <p>Verify if the testing is performed by a mechanic thoroughly trained in the operation of the specific engine analyzing equipment. (5)</p> <p>Verify that inspection results are properly recorded for Air Force vehicles by reviewing the Emission Test Records. (5)</p> <p>Determine what grades of gasoline are used, where they are dispensed, and what controls are in place to ensure proper fueling of vehicles. (4)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.24.</b> Fuel pumps are required to display specific signs. (40 CFR 80.22(d) and 80.22(e)).</p> <p><b>A.25.</b> Gasoline pumps dispensing oxygenated gasoline are required to meet specific labeling requirements (40 CFR 80.35)</p> <p><b>A.26.</b> During 1992 and later high ozone seasons and regulatory control periods gasoline shall not be sold, offered for sale, imported, dispensed, supplied, or transported that exceeds specific Reid vapor pressure standards (40 CFR 80.27(a)(2) and 80.27(d)).</p>	<p>Verify by inspecting the installation gas stations that: (4)(5)</p> <ul style="list-style-type: none"> <li>- signs stating the only unleaded gas should be introduced into labeled vehicles are displayed at each pump stand</li> <li>- nozzles are properly sized</li> <li>- each fuel pump is labeled indicating the type of fuel, i.e., UNLEADED GASOLINE or CONTAINS LEAD ANTIKNOCK COMPOUNDS.</li> </ul> <p>Determine if the installation is located in an area with an oxygenated gasoline program with a minimum oxygen content per 1 ga [3.79 L] or minimum oxygen content requirements in conjunction with a credit program. (2)(4)</p> <p>Verify that if the installation is located in such an area each gasoline pump dispensing oxygenated gasoline at a retail outlet has a label attached during the control period that states <i>The gasoline dispensed from this pump is oxygenated and will reduce CO pollution from motor vehicles.</i> (4)(5)</p> <p>Verify that if the installation is located in an area with an oxygenated gasoline program with a credit program and no minimum oxygen content requirement the fuel pump at a retail outlet in the control area has the following label <i>The fuel dispensed from this pump meets the requirements of the Clean Air Act as part of a program to reduce CO pollution from motor vehicles.</i> (4)(5)</p> <p>(NOTE: Consult with state and local authorities concerning control areas and control periods.)</p> <p>Verify that facilities are monitored as indicated: retailers and wholesale purchaser-consumers: during the high ozone season (1 June to 15 September of any year) importers, distributors, resellers, or carriers: during the regulatory control period (1 May to 15 September of any year). (4)(5)</p> <p>Verify that a standard of 9.0 psi [62.05 kPa] is not exceeded for all designated volatility attainment areas. (4)(5)</p> <p>Verify that the standards outlined in Table 1-7 are met for any designated volatility nonattainment areas (see 40 CFR 81). (4)(5)</p> <p>(NOTE: Gasoline which contains denatured, anhydrous ethanol of at least 9 percent and no more than 10 percent may exceed the Reid vapor pressure standards outlined in Table 1-7 by 1 psi.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.27.</b> As of 1 October 1993, no diesel fuel shall be distributed, offered for sale, transported, or dispensed for use in motor vehicles unless it is free of the dye 1,4-dialkylamino-anthraquinone and has a cetane index of at least 40 or a maximum aromatic content of 35 volume percent and a sulfur percentage less than 0.05 percent (40 CFR 80.24(a)(1) and 80.29(a)).</p>	<p>Verify that the dye, (which is blue green) is not used in the fuel. (4)(5)</p>
<p><b>A.28.</b> Bulk gasoline terminals with greater than 75,000 L [19,997.82 gal] gasoline throughput per day that deliver liquid product into gasoline tank trucks and that started construction or modification after 17 December 1980, are required to meet specific operating standards (40 CFR 60.500 through 60.506).</p>	<p>Verify that each facility has a vapor collection system designed to collect the total organic compound vapors displaced from tank trucks during product loading and to prevent the total organic compounds collected at on-loading racks from passing to another loading rack. (4)(5)</p> <p>Verify that emissions from the vapor collection system do not exceed 35 mg of total organic compound per liter of gasoline loaded except that facilities with existing vapor processing systems that were constructed or refurbished before 17 December 1980, may emit 80 mg of total organic compounds per liter of gasoline loaded. (4)(5)</p> <p>Determine if the following loading procedures are followed: (4)(5)</p> <ul style="list-style-type: none"> <li>- the tank identification number is recorded as each gasoline tank truck is loaded</li> <li>- each tank identification number is cross-checked with the file of tank vapor tightness documentation within 2 weeks after the tank is loaded</li> <li>- steps are taken to ensure that only vapor-tight tanks are loaded and vapor collection systems are operational.</li> </ul> <p>Verify that the vapor collection and liquid loading equipment is designed and operated to prevent gauge pressure in the delivery tank from exceeding 4500 pascals (Pa) (450 mm of water) during product loading. (4)(5)</p> <p>Verify that pressure vacuum vents in the vapor collection system do not open at a system pressure of less than 4500 Pa (450 mm of water). (4)(5)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL STORAGE VESSELS</b></p> <p><b>A.30.</b> Storage vessels for petroleum liquids with a storage capacity greater than 151,416 L (40,000 gal) but less than 246,053 L (65,000 gal), that started construction or modification after 8 March 1974, but before 19 May 1978, or with a capacity greater than 246,053 L (65,000 gal) that started construction or modification after 11 June 1973, but before 19 May 1978, are required to meet specific standards for emissions and monitoring (40 CFR 60.110 through 60.113).</p> <p><b>A.31.</b> Storage vessels for petroleum liquids with a storage capacity greater than 151,416 L (40,000 gal) constructed after 18 May 1978, are required to meet specific standards (40 CFR 60.110a through 60.115a).</p>	<p>Determine whether or not the installation has any petroleum storage tanks meeting these parameters. (1)(4)</p> <p>Determine what the vapor pressure is of the petroleum liquids being stored. (4)</p> <p>Verify that if the true vapor pressure of the petroleum stored is equal to or greater than 78 mm Hg (1.5 psia) but not greater than 11.1 psia the storage vessel is equipped with a floating roof and a vapor recovery system or their equivalents.(4)</p> <p>Verify that if the true vapor pressure of the petroleum liquid being stored is greater than 570 mm Hg (11.1 psia), the storage vessel is equipped with a vapor pressure recovery system or its equivalent. (4)</p> <p>Verify that if proper vapor recovery and return or disposal systems are not in place, a record is maintained of the petroleum liquid stored, the period of storage, and the maximum true vapor pressure of the liquid during the storage period. (4)</p> <p>(NOTE: Facilities storing petroleum liquids with a Reid vapor pressure of less than 6.9 kPa (1.0 psia) are not required to keep records.)</p> <p>Determine whether the installation has any liquid petroleum storage vessels meeting these parameters.(1)</p> <p>Determine the true vapor pressure of the liquids stored. (4)</p> <p>Verify that vessels storing petroleum liquid with a true vapor pressure equal to or greater than 10.3 kPa (1.5 psia) but less than 76.6 kPa (11.1 psia) are equipped with one of the following: (4)</p> <ul style="list-style-type: none"> <li>- an external floating roof meeting design requirements outlined in 40 CFR 60.112a</li> <li>- a fixed roof with an internal floating type cover equipped with a continuous closure device between the tank wall and edges</li> <li>- a vapor recovery system that collects all VOC vapors and gases discharged from the storage vessel and a vapor return or disposal system to process the VOC vapors and gases to reduce emissions by at least 95 percent by weight</li> <li>- an equivalent, approved system.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.31. (continued)</b></p>	<p>Verify that vessels storing petroleum liquids with a vapor pressure greater than 76.6 kPa (11.1 psia) are equipped with a vapor recovery system that collects all VOC vapors and gases and a vapor return or disposal system that is designed to process the VOC vapors to reduce emissions by at least 95 percent by weight. (4)</p> <p>Verify that the following testing is done: (4)</p> <ul style="list-style-type: none"> <li>- gap measurement for primary seals of external floating roofs is measured at least once every 5 yr</li> <li>- gap measurement for secondary seals of external floating roofs is measured at least once every year.</li> </ul> <p>Verify that the following records are kept: (1)(4)</p> <ul style="list-style-type: none"> <li>- records of gap measurement for at least 2 yr following the date of measurement</li> <li>- the petroleum liquid stored, the period of storage, and the maximum true vapor pressure during the storage unless the storage vessel has a vapor recovery and return or disposal system.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>VOL STORAGE VESSELS</b></p> <p><b>A.32.</b> Storage vessels for VOLs having a capacity of greater than or equal to 40 m<sup>3</sup> [10,566.88 gal] for which construction, reconstruction, or modification was started after 23 July 1984, are required to meet specific standards (40 CFR 60.110b through 60.115b).</p>	<p>(NOTE: These standards do not apply to pressure vessels designed to operate in excess of 204.9 kPa [29.72 psi] and without emissions to the atmosphere, vessels which are permanently attached to mobile vehicles, vessels located at bulk gasoline plants, vessels located at gasoline service stations.)</p> <p>Determine if any of the storage vessels on the installation meet these parameters. (1)</p> <p>Determine what the vapor pressure is of the liquids being stored in the vessels. (1)</p> <p>Verify that storage vessels with a design capacity greater than or equal to 151 m<sup>3</sup> [39,889.98 gal] containing VOL with a vapor pressure equal to or greater than 5.2 kPa [0.75 psi] but less than 76.6 kPa [11.11 psi] or storage vessels with a capacity greater than or equal to 75 m<sup>3</sup> [19,812.90 gal] but less than 151 m<sup>3</sup> [39,889.98 gal] containing VOL that has a maximum vapor pressure equal to or greater than 27.6 kPa [4.0 psi] but less than 76.6 kPa [22.22 psi] are equipped with one of the following: (1)(4)</p> <ul style="list-style-type: none"> <li>- a fixed roof in combination with an internal floating roof</li> <li>- an external floating roof</li> <li>- a closed vent system and control device that reduces emissions by 95 percent by weight</li> <li>- an approved equivalent system.</li> </ul> <p>Verify that storage vessels with a design capacity greater than or equal to 75 m<sup>3</sup> [19,812.90 gal] containing a VOL with a maximum true vapor pressure greater than or equal to 76.6 kPa [11.11 psi] are equipped with one of the following: (1)(4)</p> <ul style="list-style-type: none"> <li>- a closed vent system and control device that reduces emissions by 95 percent by weight</li> <li>- an approved equivalent alternative method.</li> </ul> <p>Verify that the accumulated areas or gaps do not exceed: (1)(4)</p> <ul style="list-style-type: none"> <li>- 212 cm<sup>2</sup>/m of tank diameter between the tank wall and the primary seal and the width of any portion of any gap does not exceed 3.81 cm [1.5 in.]</li> <li>- 21.2 cm<sup>2</sup>/m of tank diameter between the tank wall and the secondary seal and the width of any portion of any gap does not exceed 1.27 cm [0.5 in.]</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.33.</b> Storage vessels for VOLs having a capacity of greater than or equal to 40 m<sup>3</sup> [10,566.88 gal] for which construction, reconstruction, or modification was started after 23 July 1984, are required to meet specific inspection, documentation, and notification requirements standards (40 CFR 60.110b through 60.115b).</p>	<p>(NOTE: These standards do not apply to pressure vessels designed to operate in excess of 204.9 kPa [29.72 psi] and without emissions to the atmosphere, vessels which are permanently attached to mobile vehicles, vessels located at bulk gasoline plants, vessels located at gasoline service stations.)</p> <p>Verify that the following inspections are made: (1)(3)</p> <ul style="list-style-type: none"> <li>- internal floating roofs, primary seals, and secondary seals are inspected for holes, tears, or defects before filling the tank</li> <li>- vessels with a liquid-mounted or mechanical shoe primary seal have the internal floating roof and primary or secondary seals visually inspected at least once every 12 mo after the initial fill</li> <li>- vessels with a double-seal system are inspected at least every 5 yr</li> <li>- internal floating roofs, primary seals, secondary seals, gaskets, slotted membranes, and sleeve seals are to be inspected each time the storage vessel is emptied and degassed</li> <li>- when control equipment is installed, measurement of gap areas is done:             <ul style="list-style-type: none"> <li>- at least once every 5 yr for gaps between the tank wall and the primary seal</li> <li>- at least once a year for gaps between the tank wall and the secondary seal.</li> </ul> </li> </ul> <p>Verify that as problems are found, the vessel is either repaired or removed from service within 45 days.</p> <p>Verify that a procedure is in place to notify the USEPA in advance of performing gap measurement and provide them, upon request, with copies of the following records which are to be maintained for 2 yr: (1)(3)</p> <ul style="list-style-type: none"> <li>- inspection records</li> <li>- repair or removal from service of a vessel</li> <li>- operating plans - monitoring records</li> <li>- records showing the dimensions of storage vessels and capacity.</li> </ul> <p>Verify that for vessels with a design capacity greater than or equal to 151 m<sup>3</sup> [39,889.98 gal] storing a liquid with a maximum true vapor pressure greater than or equal to 3.5 kPa [0.51 psi] or with a design capacity greater than or equal to 75 m<sup>3</sup> [19,812.90 gal] but less than 151 m<sup>3</sup> [39,889.98 gal], storing a liquid with a true vapor pressure greater than or equal to 15.0 kPa [2.18 psi], a record is kept of the VOL stored, the period of storage, and the maximum true vapor pressure of that VOL during the storage period. (1)(3)</p> <p>(NOTE: This does not apply to vessels storing a waste mixture of indefinite or variable composition or vessels equipped with a closed vent system and control device.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.36.</b> The emission of VHAPs, which includes vinyl chlorides and benzene, from compressors in VHAP service are required to be monitored and controlled (40 CFR 61.240 through 61.242-1, and 61.242-3).</p>	<p>Determine where the installation operates compressors in VHAP service. (1)</p> <p>Verify that compressors meet the following: (3)</p> <ul style="list-style-type: none"> <li>- they are equipped with a seal system that includes a barrier fluid system and that prevents leakage of process fluids and meet one of the following:               <ul style="list-style-type: none"> <li>- operates with the barrier fluid at a pressure greater than the compressor stuffing box pressure</li> <li>- is equipped with a barrier fluid system that is connected by a closed-vent system to a control device</li> <li>- is equipped with a system that purges the barrier fluid into a process stream with zero VHAP emissions</li> </ul> </li> <li>- the barrier fluid is not in VHAP service</li> <li>- barrier fluid systems are equipped with a sensor to detect the failure of the seal system, barrier fluid system, or both and sensor are checked daily or have an audible alarm unless the compressor is located within the boundary of an unmanned plant site</li> <li>- leaks are repaired within 15 days.</li> </ul> <p>(NOTE: The following are exempt from the compressor requirements:</p> <ul style="list-style-type: none"> <li>- compressors equipped with closed vent systems for capturing and transporting leakage into a control device</li> <li>- compressors designated for no detectable emissions are exempt from all requirements if it is demonstrated to be operating with an instrument reading of less than 500 ppm above background and is tested for compliance annually.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.37.</b> The emission of VHAPs, which includes vinyl chlorides and benzene, from pressure relief devices, sampling connection systems, flanges and other connectors, and product accumulator vessels operating in VHAP service are required to be monitored and controlled (40 CFR 61.240 through 61.242-1, 61.242-4, 61.242-5, 61.242-8, and 61.242-9).</p>	<p>Determine where the installation operates sources in VHAP service. (1)</p> <p>Verify the pressure relief devices in gas/vapor service meet the following, except during pressure releases: (3)</p> <ul style="list-style-type: none"> <li>- they are operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background</li> <li>- after a pressure release, the device is returned to a state of no detectable emissions within 5 days.</li> </ul> <p>(NOTE: Pressure relief devices equipped with a closed-vent system capable of capturing and transporting leakage to a control device are exempted from the listed requirements.)</p> <p>Verify that sampling connectors are equipped with a closed-purge system or closed vent system that meets one of the following: (3)</p> <ul style="list-style-type: none"> <li>- it returns the purged process fluid directly to the process line</li> <li>- it collects and recycles the purged process fluid</li> <li>- it is designed and operated to capture and transport all of the purged process fluid to a control device.</li> </ul> <p>(NOTE: In-situ sampling systems are exempt from the requirements for sampling connectors.)</p> <p>Verify that pressure relief devices in liquid service and flanges and other connectors are monitored within 5 days if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method and repair is done within 15 days. (3)</p> <p>Verify that product accumulator vessels are equipped with a closed-vent system capable of capturing and transporting any leakage from the vessel to a control device. (3)</p>
<p><b>A.38.</b> Valves and lines in VHAP service, this includes vinyl chlorides and benzene, are required to be properly operating and monitored (40 CFR 61.242-6, 61.242-7, 61.243-1, 61.246, and 61.247).</p>	<p>Determine what valves and lines at the installation are in VHAP service.(1)</p> <p>Verify that open-ended valves or lines are equipped with a cap, blind flange, or second valve that seal the open end at all times except during operations requiring process fluid flow through the valve or line. (3)</p> <p>Verify that open-ended valves or lines with a second valve are operated so that the valve on the process fluid end is closed before the second valve is closed. (3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.38. (continued)</b></p>	<p>Verify that valves are properly operated and monitored: (3)</p> <ul style="list-style-type: none"> <li>- valves are monitored monthly except that valves for which a leak has not been detected for 2 successive mo may be monitored quarterly until a leak is detected</li> <li>- after notifying the USEPA Administrator the following practices may be used:               <ul style="list-style-type: none"> <li>- after two consecutive quarterly leak detection periods where the percentage of valves leaking is equal to or less than 2 percent, the operator may begin to skip 1 of quarterly leak detection periods</li> <li>- after five consecutive quarterly leak detection periods where the percentage of the valves leaking is equal to or less than 2 percent, the operator may begin to skip three quarterly leak detection periods</li> </ul> </li> <li>- repair is done within 15 days of leak detection.</li> </ul> <p>(NOTE: The following valves are exempted from specific requirements:</p> <ul style="list-style-type: none"> <li>- valves designated for no detectable emissions are exempt from the monthly monitoring requirements if there is no external actuating mechanism in contact with the process fluid and the valve is tested for compliance annually</li> <li>- valves designated as unsafe-to-monitor are exempt from the monthly monitoring requirements if it is demonstrated that the valve is unsafe to monitor and there is a written plan requiring monitoring of the valve during safe-to-monitor times</li> <li>- valves designated as difficult to monitor are exempt from the monthly monitoring requirements if it is demonstrated that the valve cannot be monitored without elevating the monitoring personnel more than 2 m [6.56 ft] above a support surface and a written plan is followed that requires monitoring of the valve at least once a year.)</li> </ul> <p>(NOTE: Repair may be delayed if the repair is technically infeasible or if the equipment is isolated.)</p> <p>Verify that when a leak is detected: (3)</p> <ul style="list-style-type: none"> <li>- a weatherproof and readily visible identification marked with the equipment identification number is attached to the leaking equipment</li> <li>- the identification is removed only after no leak has been detected for 2 mo or the leak is repaired</li> <li>- leaks detected for valves are be recorded in a log and maintained for 2 yr at a readily accessible location.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PETROLEUM SOLVENT DRYCLEANING OPERATIONS</b></p> <p><b>A.40.</b> Petroleum solvent dry cleaning dryers, washers, filters, stills, and settling tanks at petroleum drycleaning plants with a total manufacturers' rated dryer capacity equal to or greater than 38 kg (84 lb) that started construction or modification after 14 December 1982, except for dryers installed between 14 December 1982, and 21 September 1984, in a plant with an annual solvent consumption level less than 4700 gal [177,391.44 L], are required to meet specific standards of operation (40 CFR 60.620 through 60.625).</p>	<p>Verify that dryers are solvent recovery dryers. (3)</p> <p>Verify that the petroleum solvent filters are cartridge filters that are drained in their sealed housing for at least 8 h before their removal. (3)</p> <p>Determine if the facility has been granted approval from the USEPA to use alternate equipment or procedures to reduce VOC emissions.(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PERCHLORO-ETHYLENE DRYCLEANING OPERATIONS</b></p> <p><b>A.41.</b> Existing drycleaning systems that use perchloroethylene are required to use specific emissions control devices (40 CFR 63.322(a), 63.322(e), 63.322(f), 63.322(h), 63.323(a), and 63.323(b)).</p>	<p>(NOTE: Please see Table 1-8 for a chart outlining which facilities are required to comply with these standards.)</p> <p>Verify that the facilities provides one of the following: (3)</p> <ul style="list-style-type: none"> <li>- the air-perchloroethylene gas-vapor stream contained in each drycleaning machine is routed through a refrigerated condenser or an equivalent control device</li> <li>- the air-perchloroethylene gas-vapor stream contained within each drycleaning machine is routed through a carbon adsorber installed on the drycleaning machine installed prior to 22 September 1993.</li> </ul> <p>Verify that if a refrigerated condenser is used to achieve compliance, temperature measurements are made weekly and: (3)</p> <ul style="list-style-type: none"> <li>- for refrigerated condenser on a dry-to-dry machine or a reclaimer the temperature of the air-perchloroethylene gas-vapor stream on the outlet side is equal to or less than 7.2 °C (45 °F)</li> <li>- for a refrigerated condenser on a washer the difference in the temperatures of the air-perchloroethylene gas-vapor stream entering the refrigerated condenser and the air-perchloroethylene gas-vapor stream exiting the condenser is greater than or equal to 11.1 °C (20 °F).</li> </ul> <p>Verify that if a refrigerated condenser is installed on a dry-to-dry machine, dryer, or reclaimer to achieve compliance it is operated: (3)</p> <ul style="list-style-type: none"> <li>- so that the air-perchloroethylene gas-vapor stream contained within the drycleaning machine is not released or vented to the atmosphere while the drycleaning machine drum is rotating</li> <li>- with a diverter valve to prevent air drawn into the drycleaning machine when the door of the machine is open from passing through the refrigerated condenser.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.46.</b> Perchloroethylene drycleaning systems are required to be inspected for perceptible leaks (40 CFR 63.322(k) and 63.322(l)).</p>	<p>(NOTE: Please see Table 1-8 for a chart outlining which facilities are required to comply with these standards.)</p> <p>Verify that the following components are inspected weekly for perceptible leaks while the drycleaning system is operating: (3)</p> <ul style="list-style-type: none"> <li>- hose and pipe connections, fittings, couplings, and valves</li> <li>- door gaskets and seatings</li> <li>- filter gaskets and seatings</li> <li>- pumps</li> <li>- solvent tanks and containers</li> <li>- water separators</li> <li>- muck cookers</li> <li>- stills</li> <li>- exhaust dampers</li> <li>- diverter valves</li> <li>- cartridge filter housings.</li> </ul> <p>(NOTE: When total facility consumption is less than the following, inspections can be done biweekly:</p> <ul style="list-style-type: none"> <li>- a total perchloroethylene consumption of the drycleaning facility is less than 530 L/yr (140 gal/yr) for existing dry-to-dry machines and ancillary equipment located in a drycleaning facility that includes only dry-to-dry machines and each existing transfer machine system and its ancillary equipment, as well as each existing dry-to-dry machine and its ancillary equipment, located in a drycleaning facility that includes both transfer machine systems and dry-to-dry machines</li> <li>- a perchloroethylene consumption of the drycleaning facility of less than 760 L/yr (200 gal/yr) for each existing transfer machine system and its ancillary equipment located in a drycleaning facility that includes only transfer machine systems.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.47.</b> All perceptible leaks and temperature violations are required to be repaired within 24 h unless parts must be ordered (40 CFR 63.322(m) and 63.322(n)).</p> <p><b>A.48.</b> Receipts of perchloroethylene purchases and a log of detailing volume calculations and monitoring results is required to be kept at perchloroethylene drycleaning facilities for 5 yr (40 CFR 63.324(d)).</p> <p><b>A.49.</b> A copy of the design specifications and the operating manuals is required to be onsite for each perchloroethylene dry cleaning system and each emission control device (40 CFR 63.324(e)).</p>	<p>(NOTE: Please see Table 1-8 for a chart outlining which facilities are required to comply with these standards.)</p> <p>Verify that unless parts need to be ordered, repairs are made within 24 h of discovery of a leak. (3)</p> <p>Verify that parts are ordered within 2 working days of leak detection.(3)</p> <p>Verify that parts are installed within 5 working days after receipt. (3)</p> <p>(NOTE: Please see Table 1-8 for a chart outlining which facilities are required to comply with these standards.)</p> <p>Verify that receipts for the purchase of perchloroethylene are kept at the facility. (3)</p> <p>Verify that the log contains the following information: (3)</p> <ul style="list-style-type: none"> <li>- the volume of perchloroethylene purchased per month</li> <li>- the calculation and result of yearly perchloroethylene consumption that is determined on the first of each month</li> <li>- the dates when system components are inspected for leaks and the name or location where leaks are identified</li> <li>- the dates of repair and records of written or verbal orders for repair parts</li> <li>- the date and temperature sensor monitoring results</li> <li>- the date and colorimetric detector tube monitoring results if a refrigerated condenser is used to achieve compliance.</li> </ul> <p>(NOTE: Please see Table 1-8 for a chart outlining which facilities are required to comply with these standards.)</p> <p>Verify that there is a copy of the operating manual and design specifications for each drycleaning system and each emission control device at the facility. (3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.50.</b> An initial report on the types of machines and the yearly of consumption of perchloroethylene and the types of control devices used must have been submitted to the USEPA Administrator or delegated state authority by 18 June 1994 (40 CFR 63.324(a)).</p>	<p>(NOTE: Please see Table 1-8 for a chart outlining which facilities are required to comply with these standards.)</p> <p>Verify that the facility submitted an initial report signed by a responsible official and certified by a public notary that includes the following information: (3)</p> <ul style="list-style-type: none"> <li>- name and address of the owner/operator of the facility</li> <li>- the address of the drycleaning facility</li> <li>- a brief description of each type of machine at the facility</li> <li>- documentation of the yearly perchloroethylene consumption at the drycleaning facility for the previous year or an estimation of the perchloroethylene consumption</li> <li>- a description of the types of emission control devices and whether the control device is currently in use or will be purchased</li> <li>- documentation that room enclosures are in compliance.</li> </ul>
<p><b>A.51.</b> Specific types of perchloroethylene facilities are required to submit a statement of perchloroethylene consumption and compliance to the USEPA Administrator or delegated state authority (40 CFR 63.324(b)).</p>	<p>(NOTE: Please see Table 1-8 for a chart outlining which facilities are required to comply with these standards.)</p> <p>Verify that drycleaning systems that started construction or reconstruction on or after 9 December 1991, except for systems complying with section 112(i)(2) of the CAA submit this statement by 22 October 1993 to the USEPA Administrator. (3)</p> <p>Verify that drycleaning systems that started construction or reconstruction before 9 December 1991 submit this statement by 20 January 1994 to the USEPA Administrator. (3)</p> <p>(NOTE: Drycleaning facilities that do not fall into either of these two categories are required to submit notification by 18 June 1994.)</p> <p>Verify that the statement is signed by a responsible individual and certified by a notary public and contains the following: (3)</p> <ul style="list-style-type: none"> <li>- the yearly perchloroethylene solvent consumption limit based on the yearly solvent consumption</li> <li>- whether or not they are in compliance with 40 CFR 63.322.</li> </ul> <p>(NOTE: When these certified solvent consumption limits are exceeded a new statement must be submitted.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.52.</b> Perchloroethylene drycleaning facilities that exceed their reported solvent consumptions are required to submit a statement of compliance status to the USEPA Administrator or delegated State authority (40 CFR 63.324(c)).</p>	<p>(NOTE: Please see Table 1-8 for a chart outlining which facilities are required to comply with these standards.)</p> <p>Verify that the statement is submitted by 23 September 1996 for the following: (3)</p> <ul style="list-style-type: none"> <li>- each existing dry-to-dry machine and its ancillary equipment located in a drycleaning facility that includes only dry-to-dry machines</li> <li>- each existing transfer machine and its ancillary equipment, as well as each existing dry-to-dry machine and its ancillary equipment located in a drycleaning facility that includes both transfer machine systems and dry-to-dry machines</li> <li>- each existing transfer machine and its ancillary equipment located in a dry-to-drycleaning facility that includes only transfer machine systems.</li> </ul>
<p><b>ACID PRODUCTION UNITS</b></p> <p><b>A.53.</b> Nitric acid production units that started construction or modification after 17 August 1971, are required to meet specific standards (40 CFR 60.70 through 60.74).</p>	<p>Verify that gases are not discharged that contain NO<sub>x</sub> in excess of 1.5 kg per metric ton of acid produced (3 lb/ton) when the production is expressed as 100 percent nitric acid. (3)</p> <p>Determine if a continuous monitoring system for the measurement of NO<sub>x</sub> is in place. (3)</p>
<p><b>A.54.</b> Sulfuric acid production units which started construction or modification after 17 August 1971, are required to meet specific standards (40 CFR 60.80 through 60.85).</p>	<p>Verify that these facilities do not emit gases that contain SO<sub>2</sub> in excess of 2 kg per metric ton of acid produced (4 lb/ton) when the production is expressed as percent H<sub>2</sub>SO<sub>4</sub>. (3)</p> <p>Verify that the gases emitted do not exhibit 10 percent opacity or greater and they do not contain sulfuric acid mist, expressed as H<sub>2</sub>SO<sub>4</sub>, in excess of 0.075 kg per metric ton of acid produced (0.15 lb/ton) when the production is expressed as 100 percent H<sub>2</sub>SO<sub>4</sub>. (3)</p> <p>Determine if a continuous monitoring system is in place for the measurement of SO<sub>2</sub>. (3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>CFCs AND HALONS</b></p> <p><b>A.55.</b> Installations that procure and store chlorofluorocarbons (CFCs) and halons for mission critical applications when substitutes are not available or use them to service equipment, are required to produce and submit an annual summary of amounts procured so that the Air Force can submit the <i>CFC and Halon Annual Report</i> to the Assistant Secretary of Defense (Production and Logistics) (AFR 19-15).</p> <p><b>A.56.</b> The purchase of ODCs by installations and government owned contractor operated (GOCO) is restricted (AF Policy Letter 7 January 1993).</p>	<p>Determine if an annual summary is completed and submitted. (2)</p> <p>Verify that the form indicates the following: (1)</p> <ul style="list-style-type: none"> <li>- aggregate procurement (by thousand pounds of CFCs and halons for which they are the integrated item manager</li> <li>- data on significant noncentralized CFC and halon procurements.</li> </ul> <p>Verify that in areas where CFCs and halons are used or stored the following are met: (1)(4)(5)(7)(8)</p> <ul style="list-style-type: none"> <li>- dependence on CFCs and halons is being reduced</li> <li>- emissions are being minimized</li> <li>- conservation practices have been implemented including the use of recovery equipment, tracking of consumption by piece equipment for use in identification and scheduling for repair or replacement, and modification of equipment to facilitate CFC recovery</li> <li>- the installation has a plan for handling remaining demand after 1995 CFC and halon production phase out.</li> </ul> <p>Verify that installation is working toward the goals as stated in the 7 January AF ADC Policy. (1)</p> <p>(NOTE: This policy applies to the following substances:</p> <ul style="list-style-type: none"> <li>- Halons (Halon 1211, Halon 1301, Halon 1202, Halon 1011 and Halon 2402)</li> <li>- CFC-11, -12, -113, -114, -115, -13, -11, -112, -211, -212, -213, -214, -215, -216, and -217)</li> <li>- carbon tetrachloride and methyl chloroform which are used primarily as cleaning solvents</li> <li>- methyl bromine which is used as a pesticide and fumigant.)</li> </ul> <p>Verify that the installation is not purchasing newly produced halons unless a waiver has been approved. (1)(4)</p> <p>(NOTE: Halon needed to meet mission critical applications such as halons used on board aircraft which are required to meet flight safety, flight survivability, or flight certificating requirements will be recycled from existing stocks such as the Defense Logistics Agency's (DLA's) ODCs.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.58.</b> As of 15 November 1992, no Class I or Class II substances suitable for use in motor vehicles as a refrigerant (see Table 1-9) can be sold or distributed in any container that is less than 20 lb [9.07 kg] to any person unless that person is trained and certified (40 CFR 82.34(b), and 82.42(b)(3)).</p> <p><b>A.59.</b> Facilities such as the AAFES gas station which sell Class I or Class II substances suitable for use as a refrigerant in containers of less than 20 lb [9.07 kg] are required to display a specific sign (40 CFR 82.42(c)).</p> <p><b>A.60.</b> No person may, in the course of maintaining, servicing, or disposing of an appliance or industrial process, knowingly vent, release, or dispose of any Class I or Class II substances used as a refrigerant in an appliance or industrial process refrigeration in a manner that the substance enters the environment (42 USC 7671g(c)).</p>	<p>Determine if Supply, the AAFES gas station, or the AAFES Exchange carries any of the Class I or Class II substances listed in Table 1-9). (1)(3)(6)</p> <p>Verify these substances are only sold or distributed to certified individual by reviewing records of sales. (1)(3)(6)</p> <p>Verify that distribution and sales records for these substances are kept for 3 yr. (1)(3)(6)</p> <p>(NOTE: Sales of these substances can be made to an uncertified individual if the purchaser is purchasing small containers for resale only.)</p> <p>Verify that a sign is displayed stating the following: (3)(6)</p> <p align="center">"It is a violation of federal laws to sell containers of Class I and Class II refrigerant of less than 20 lb of such refrigerant to anyone who is not properly trained and certified to operate approved refrigerant recycling equipment."</p> <p>Verify that Class I or Class II substances are not knowingly vented, released, or disposed of in the environment. (1)(3)(5)(6)(7)(8)</p> <p>(NOTE: Minimal releases associated with good faith attempts to recapture and recycle or safely disposes of Class I or Class II substances are exempted.)</p> <p>(NOTE: As of November 1995, this prohibition also applies to the venting, release, or disposal of any substitute substances for Class I or II substance by any person maintaining, servicing, repairing or disposing of an appliance or industrial process refrigeration which contains and uses a substitute substance unless the USEPA decides that this does not pose a threat to the environment.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.61.</b> Installations are required to comply with restrictions concerning the use of CFC and halo substitutes (40 CFR 82.174(b) through 82.174(d)).</p> <p><b>A.62.</b> As of 1 January 2015 the use of Class II substances (see Table 1-9) is forbidden except in certain situations (42 USC 7671d(a)).</p> <p><b>A.63.</b> No person maintaining, servicing, repairing, or disposing of appliances can knowingly vent or release to the environment any Class I or Class II substance used as a refrigerant (40 CFR 82.150 and 82.154(a)).</p>	<p>Verify that no personnel at the installation, including at the AFEES station, uses a substitute which they know, or have reason to know was manufactured, processed, or imported in violation of Federal regulations.</p> <p>Verify that when a substitute is used, it is an acceptable substitute and is used according to the use restriction outlined in Table 1-10.</p> <p>Verify that unacceptable substitutes are not used (see Table 1-11).</p> <p>Verify that a program is underway to eliminate the use of Class II substances unless: (1)(3)(5)(6)(7)(8)</p> <ul style="list-style-type: none"> <li>- the substance has been reused or recycled</li> <li>- it is used and entirely consumed (except for trace quantities) in the production of other chemicals</li> <li>- it is used as a refrigerant in appliances manufactured prior to 1 January 2020.</li> </ul> <p>Determine if the installation is maintaining, servicing, repairing, or disposing of appliances containing refrigerants. (1)(3)(5)(6)(7)(8)</p> <p>Verify that Class I or II substances are not being vented to the atmosphere.</p> <p>(NOTE: De minimis releases that are associated with good faith attempts to recycle or recover refrigerants are not considered a violation.)</p> <p>(NOTE: These requirements apply to the following:</p> <ul style="list-style-type: none"> <li>- any person servicing, maintaining, or repairing appliances except for MVACs</li> <li>- persons disposing of appliances, including MVACs</li> <li>- refrigerant reclaimers, appliance owners, recycling and recovery equipment.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.64.</b> No person can open appliances, except MVACs, for maintenance, service, or repair and no person can dispose of appliances except small appliances, MVACs, and MVAC-like appliances unless specific requirements are met (40 CFR 82.154(b), 82.156(a)(5)).</p>	<p>Verify that the required practices outline in 40 CFR 82.156 (see checklist items A.64 and A.67 through A.76) are met. (1)(3)(5)(7)(8)</p> <p>Verify that equipment is used that is certified for the appliance in question. (1)(3)(5)(7)(8)</p>
<p><b>A.65.</b> Installations maintaining, servicing, or repairing appliances except for MVACs and installations disposing of appliances except for small appliances and MVACs are required to submit certification to the USEPA (40 CFR 82.162(a)).</p>	<p>Verify that the installation has submitted certification to the USEPA that it has acquired certified recovery or recycling equipment and is in compliance applicable requirements. (1)(3)(5)(7)(8)</p>
<p><b>A.66.</b> Installations recovering refrigerant from small appliances, MVACs, and MVAC-like appliances for purpose of disposal of these appliances are required to certify to the USEPA appropriate recovery equipment has been acquired (40 CFR 82.162(c)).</p>	<p>Verify that the installation has submitted certification to the USEPA that it has acquired appropriate recovery equipment. (1)(3)(5)(7)(8)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.67.</b> Installations opening appliances, except for small appliances and MVACs for maintenance, service, or repair and all persons disposing of appliances except for small appliances must have at least one piece of certified, self-contained recovery equipment available (40 CFR 82.156(b) and 82.156(e)).</p>	<p>Verify that the installation has at least one available piece of equipment. (1)(3)(7)(8)</p> <p>(NOTE: Refrigerant may be returned to the appliance from which it is recovered or to another appliance without being recycled or reclaimed, unless the appliance is a MVAC-like appliance.)</p>
<p><b>A.68.</b> System dependent equipment must not be used with appliances normally containing more than 15 lb [6.80 kg] of refrigerant (40 CFR 82.156(c)).</p>	<p>Verify that system dependent equipment is not used with appliances normally containing more than 15 lb [6.80 kg] of refrigerant. (1)(3)(5)(7)(8)</p>
<p><b>A.69.</b> When appliances are opened for service, maintenance or repair, except for MVACs, the refrigerant must be evacuated in either the entire unit or the part to be serviced, if the part can be isolated, to a system receiver or a certified recovery or recycling machine (40 CFR 82.150 and 82.156(a)).</p>	<p>Verify that refrigerant is evacuated to either a system receiver or certified recovery or recycling machine. (1)(3)(5)(7)(8)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.70.</b> When appliances, except for small appliances, MVACs, and MVAC-like appliances are disposed of, the refrigerant must be evacuated from the entire unit to a certified recovery or recycling machine (40 CFR 82.150 and 82.156(a)).</p> <p><b>A.71.</b> When appliances, except for small appliances, MVACs, and MVAC-like appliances, are opened for maintenance, service, or repair, they must be evacuated to specific levels before the appliance is opened (40 CFR 82.150, 82.156(a)(1), and 82.156(a)(2)).</p>	<p>Verify that if disposal is occurring, the refrigerant is being evacuated to a certified recovery or recycling machine.(1)(3)(5)(7)(8)</p> <p>Verify that evacuation is done to the levels in Table 1-12 prior to opening the appliance unless one of the following is met: (1)(3)(5)(7)(8)</p> <ul style="list-style-type: none"> <li>- evacuation of the appliance is not to be done after completion of the maintenance service, or repair and the maintenance service or repair is not major</li> <li>- the evacuation limits in Table 1-12 are not possible because of leaks in the equipment or the refrigerant being recovered would be substantially contaminated.</li> </ul> <p>Verify that if evacuation is not to be done after completion of the maintenance, service, or repair and the maintenance, service, or repair is not major, the appliance is: (1)(3)(7)(8)</p> <ul style="list-style-type: none"> <li>- evacuated to a pressure no higher than 0 psig before it is opened if it is a high or very high-pressure appliance</li> <li>- pressurized to 0 psig before it is opened if it is a low pressure appliance, without using methods, such as nitrogen, that require subsequent purging.</li> </ul> <p>Verify that if the evacuation limits in Table 1-12 are not possible because of leaks in the equipment or the refrigerant being recovered would be substantially contaminated, the person opening the appliance: (1)(3)(7)(8)</p> <ul style="list-style-type: none"> <li>- isolates leaking from non-leaking components whenever possible</li> <li>- evacuates leaking components to be opened to the lowest level that can be attained without substantially contaminating the refrigerant, in no case exceeding 0 psig.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.72.</b> Appliances, except for small appliances, MVACs and MVAC-like appliances, that are being disposed of must be evacuated to the levels in Table 1-12 (40 CFR 82.150 and 82.156(a)(3)).</p> <p><b>A.73.</b> Specific evacuation limits must be met when opening small appliances for maintenance, service, or repair (40 CFR 82.150 and 82.156(a)(4)).</p> <p><b>A.74.</b> Installations which take the final step in the disposal process of a small appliance, room air conditioning, MVACs, or MVAC-like appliances must meet specific standards (40 CFR 82.156(f), 82.166(i), and 82.166(m)).</p>	<p>Verify that appliances are evacuated to the levels listed in Table 1-12 prior to disposal. (1)(3)(5)(7)(8)</p> <p>Verify that when recycling and recovery equipment manufactured prior to 15 November 1993 is used, 80 percent of the refrigerant is recovered or the small appliance is evacuated to 4 in. Hg vacuum. (1)(3)(5)(7)(8)</p> <p>Verify that when recycling and recovery equipment manufactured on or after 15 November 1993 is used, 90 percent of the refrigerant in the appliance is recovered when the compressor in the appliance is operating or 80 percent of the refrigerant when the compressor is not operating or the small appliance is evacuated to 4 in. of mercury vacuum. (1)(3)(5)(7)(8)</p> <p>(NOTE: This includes but is not limited to scrap recyclers and landfill operators.)</p> <p>Verify that installations: (1)(3)(5)(7)(8)</p> <ul style="list-style-type: none"> <li>- recover any remaining refrigerant from the appliance</li> <li>- check that the refrigerant has been evacuated from the appliance or shipment of appliances previously by reviewing a signed statement from the person from whom the appliance or shipment of appliances is obtained that all refrigerant has been recovered.</li> </ul> <p>Verify that copies of signed statements are retained for 3 yr. (1)(3)(5)(7)(8)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.75.</b> Installations recovering refrigerant for purpose of disposal must meet specific standards (40 CFR 82.156(g) and 82.156(h)).</p>	<p>Verify that if the installation recovers refrigerant from MVACs and MVAC-like appliances for purpose of disposal of the appliance, the system pressure is reduced to or below 102 mm of mercury vacuum. (1)(3)(5)(7)(8)</p> <p>Verify that installations recovering refrigerant from small appliances for the purpose of disposal of the appliance does one of the following: (1)(3)(5)(7)(8)</p> <ul style="list-style-type: none"> <li>- recover 90 percent of the refrigerant when the compressor in the appliance is operating</li> <li>- recover 80 percent of the refrigerant in the appliance when the compressor in the appliance is not operating</li> <li>- evacuate the small appliance to 4 in. Hg vacuum.</li> </ul>
<p><b>A.76.</b> Leaking appliances must be repaired when specific limits are exceeded (40 CFR 82.156(i)).</p>	<p>Verify that if the installation owns commercial and industrial process refrigeration equipment, all leaks are repaired if the equipment is leaking at a rate such that the loss of refrigerant will exceed 35 percent of the total charge during a 12 mo period. (1)(3)(5)(7)(8)</p> <p>Verify that other appliances normally containing more than 50 lb [22.68 kg] of refrigerant are repaired if the appliance is leaking at a rate such that the loss of refrigerant will exceed 15 percent of the total charge during a 12-mo period. (1)(3)(5)(7)(8)</p> <p>(NOTE: Leaks are not required to be repaired if, within 30 days, the installation has developed a 1-yr retrofit or retirement plan for the leaking equipment. The plan, or a legible copy, must be kept at the site of the equipment.)</p> <p>Verify that leaks have been repaired within 30 days of discovery or within 30 days of when the leak should have been discovered, if the installation intentionally shielded themselves from information which would have revealed a leak. (1)(3)(5)(7)(8)</p>
<p><b>A.77.</b> Facilities on installations that sell or distribute any Class I or Class II substance for use as a refrigerant are required to retain invoices (40 CFR 82.166(a) and 82.166(m)).</p>	<p>Verify that facilities on the installation that sell or distribute any Class I or Class II substance for use as a refrigerant retains invoices indicating the name of the purchaser, the date of sale, and the quantity of refrigerant purchased. (1)(3)(5)(7)(8)</p> <p>Verify that records are retained for 3 yr. (1)(3)(5)(7)(8)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A.78.</b> Facilities at the installation servicing appliances normally containing 50 lb or more of refrigerant are required to supply the owner of the appliance with documentation as to how much refrigerant was added and the owner of the appliance must retain the servicing records (40 CFR 82.166(j) and 82.166(k)).</p>	<p>Verify that documentation of servicing and amounts of refrigerant added is provided to the appliance owner and retained for 3 yr. (1)(3)(5)(7)(8)</p>

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**Table 1-1**

**Emissions Limitations for Incinerators and Steam Generators of  
73 MW (250 Mbtu/h) or Greater**

<b>Source Category</b>	<b>Fuel Type</b>	<b>Pollutant</b>	<b>Emission Level</b>	<b>Monitoring Requirement</b>
<i>40 CFR 60.40 through 60.44</i>				
Steam generators > 73 MW ( 250 MBtu/h) constructed or modified after 17 August 1971	Solid Fossil Fuel	Particulate	43 ng/J (0.10 lb/MBtu)	None
		Opacity	20%; 27% 6 min/h	Continuous
		SO <sub>2</sub>	520 ng/J (1.2 lb/MBtu)	Continuous
		NO <sub>x</sub> (except lignite and coal refuse)	300 ng/J (0.70 lb/MBtu)	Continuous
	Liquid Fossil Fuel	SO <sub>2</sub>	340 ng/J (0.80 lb/MBtu)	Continuous
		NO <sub>x</sub>	129 ng/J (0.30 lb/MBtu)	Continuous
	Gaseous Fossil Fuel	NO <sub>x</sub>	86 ng/J (0.20 lb/MBtu)	Continuous
	Lignite	NO <sub>x</sub>	260 ng/J (0.60 lb/MBtu)	Continuous
	Lignite mined in ND SD, or MT burned in a cyclone fired unit	NO <sub>x</sub>	340 ng/J (0.80 lb/MBtu)	Continuous
<i>40 CFR 60.50 through 60.54</i>				
Incinerators > 45 metric tons (50 tons/day) constructed or modified after 17 August 1971	Incinerators	Particulate	0.18 g per dry standard cubic meter (dscm) (0.08 g per dry standard cubic foot (dscf)) corrected to 12% CO <sub>2</sub>	Record of daily charging rates and hours of operation



**Table 1-2**

**Formulas for Calculating Emissions Limitations  
(40 CFR 60.42b and 60.44b)**

Steam generating units that started construction, modification, or reconstruction after 19 June 1984 with a heat input capacity of greater than 29 MW (100 MBtu/h).

**SO<sub>2</sub> From Facilities Combusting Coal or Oil.**

$$E = \left( \frac{K_a H_a + K_b H_b}{H_a + H_b} \right)$$

where:

E = the SO<sub>2</sub> emission limit

K<sub>a</sub> = 520 ng/J (1.2 lb/MBtu)

K<sub>b</sub> = 340 ng/J (0.80 lb/MBtu)

H<sub>a</sub> = the heat input from the combustion of coal

H<sub>b</sub> = the heat input from the combustion of oil

**SO<sub>2</sub> From Facilities Combusting Coal or Oil Alone or With Other Fuel While Using Emerging Technology.**

$$E_s = \left( \frac{K_c H_c + K_d H_d}{H_c + H_d} \right)$$

where:

E<sub>s</sub> = the SO<sub>2</sub> emission limit (expressed in NO<sub>2</sub>), ng/J (lb/MBtu) heat input

K<sub>c</sub> = 260 ng/J (0.60 lb/MBtu)

K<sub>d</sub> = 170 ng/J (0.40 lb/MBtu)

H<sub>c</sub> = the heat input from the combustion of coal, J (MBtu)

H<sub>d</sub> = the heat input from the combustion of oil, J (MBtu)



**Table 1-2 (continued)**

**NO<sub>x</sub> Emissions From Facilities Simultaneously Combusting Coal, Oil, or Natural Gas With By-products/Waste.**

$$E_n = \frac{[(EL_{go} H_{go}) + (EL_{ro} H_{ro}) + (EL_c H_c)]}{(H_{go} + H_{ro} + H_c)}$$

where:

$E_n$  = the NO<sub>x</sub> emission limit (expressed as NO<sub>2</sub>), ng/J (lb /MBtu)

$EL_{go}$  = the appropriate emission limit from paragraph (a)(1) for combustion of natural gas or distillate oil, ng/J (lb /MBtu)

$H_{go}$  = the heat input from combustion of natural gas or distillate oil and gaseous by-product /waste, ng/J (lb/MBtu)

$EL_{ro}$  = the appropriate emission limit from paragraph (a)(2) for combustion of residual oil, ng/J (lb/MBtu)

$H_{ro}$  = the heat input from combustion of residual oil and/or liquid by-product/waste

$EL_c$  = the appropriate emission limit from paragraph (a)(3) for combustion of coal

$H_c$  = the heat input from combustion of coal.

**NO<sub>x</sub> Emissions From Facilities Simultaneously Combusting Mixtures of Coal, Oil, or Natural Gas.**

$$E_n = \frac{[(EL_{go} H_{go}) + (EL_{ro} H_{ro}) + (EL_c H_c)]}{(H_{go} + H_{ro} + H_c)}$$

where:

$E_n$  = the nitrogen oxides emission limit (expressed as NO<sub>2</sub>), ng/J (lb/MBtu)

$EL_{go}$  = the appropriate emission limit from paragraph (a)(1) for combustion of natural gas or distillate oil, ng/J (lb/MBtu)

$H_{go}$  = the heat input from combustion of natural gas or distillate oil

$EL_{ro}$  = the appropriate emission limit from paragraph (a)(2) for combustion of residual oil

$H_{ro}$  = the heat input from combustion of residual oil

$EL_c$  = the appropriate emission limit from paragraph (a)(3) for combustion of coal

$H_c$  = the heat input from combustion of coal.

**Table 1-3****Particulate Emission Standards  
(40 CFR 60.43b)**

Steam generating units with a heat input capacity of greater than 100 MBtu/h that started construction, modification, or reconstruction after 19 June 1984.

<b>FACILITY TYPE</b>	<b>PARTICULATE EMISSIONS</b>
Combusts only coal or coal and other fuels with an annual capacity factor for the other fuels of 10 percent or less.	22 ng/J (0.05 lb/MBtu) heat input
Combusts coal and other fuels and has an annual capacity factor greater than 10 percent and is subject to federally enforceable requirements limiting operations to an annual capacity factor greater than 10 percent for fuels other than coal.	43 ng/J (0.10 lb/MBtu) heat input
Combusts coal or coal and other fuels, was constructed after 19 June 1984 but before 25 November 1986 and has: a. an annual capacity factor for coal and coal and other fuels of 30 percent or less b. has a maximum heat input capacity of 73 MW (250 MBtu/h) c. has a federally enforceable requirement limiting operation of affected facility to an annual capacity factor of 30 percent or less for coal or coal and other solid fuels.	86 ng/J (0.20 lb/MBtu) heat input
Combusts oil or mixture of oil and uses a conventional or emerging technology to reduce sulfur dioxide emissions.	43 ng/J (0.10 lb/MBtu) heat input
Combusts wood or wood with other fuels except coal and has an annual capacity factor greater than 30 percent for wood.	43 ng/J (0.10 lb/MBtu) heat input
Combusts wood or wood with other fuels, except coal, with a maximum heat input capacity of 73 MW (250 MBtu/h) and has an annual capacity factor of 30 percent or less for wood and is subject to a federally enforceable requirement limiting operation to an annual capacity factor of 30 percent or less.	86 ng/J (0.20 lb/MBtu) heat input
Combusts municipal-type solid waste or mixtures of municipal-type solid waste with other fuels with an annual capacity factor of 10 percent or less for other fuels.	43 ng/J (0.10 lb/MBtu) heat input
Combusts municipal-type solid waste or mixtures of municipal-type solid waste with other fuels with an annual capacity factor of 30 percent or less for other fuels and has a maximum heat input capacity of 73 MW (250 MBtu/h) or less, constructed between 19 June 1984 and 25 November 1986, with a federally enforceable requirements limiting operating to an annual capacity factor of 30 percent.	86 ng/J (0.20 lb/MBtu) heat input



**Table 1-4**

**Emissions Standards For Nitrogen Oxides  
(40 CFR 60.44b)**

Fuel burning sources greater than 29 MW (100 MBtu/h) heat input that started construction, modification, or reconstruction after 19 June 1984.

<b>FUEL/STEAM GENERATING UNIT TYPE</b>	<b>NITROGEN OXIDE EMISSION LIMIT ng/J (lb/MBtu) (EXPRESSED AS NO<sub>2</sub>)</b>
	<b>HEAT INPUT</b>
(1) Natural gas and distillate oil except for low heat release rate	43 (0.10)
high heat release rate	86 (0.20)
(2) Residual oil	
low heat release rate	130 (0.30)
high heat release rate	170 (0.40)
(3) Coal	
mass feed stoker	210 (0.50)
<i>spreader-stoker and fluid bed combustion</i>	260 (0.60)
pulverized coal	300 (0.70)
lignite	260 (0.60)
lignite mined in ND, SD, or MT, and combusted in a slag tap furnace	340 (0.80)
coal derived synthetic fuels	210 (0.50)
(4) Duct burner used in combined cycle system	
natural gas and distillate oil	86 (0.20)
residual oil	170 (0.40)



**Table 1-5**

**Formula for Calculating SO<sub>2</sub> Emissions Limitations  
(40 CFR 60.42c(e)(2))**

The following applies to steam generating units for which construction, modification, or reconstruction started after 9 June 1989 with a maximum design heat input capacity of 29 MW (100 MBtu/h) or less, but greater than or equal to 2.9 MW (10 MBtu/h).

$$E = \left( \frac{K_a H_a + K_b H_b + K_c H_c}{H_a + H_b + H_c} \right)$$

where:

E = the SO<sub>2</sub> emission limit expressed in ng/J or lb/MBtu heat input

K<sub>a</sub> = 520 ng/J (1.2 lb/MBtu)

K<sub>b</sub> = 260 ng/J (0.60 lb/MBtu)

K<sub>c</sub> = 215 ng/J (0.50 lb/MBtu)

H<sub>a</sub> = the heat input from the combustion of coal, except coal combusted in a facility that combusts only coal and uses emerging technology, in J (MBtu)

H<sub>b</sub> = the heat input from the combustion of coal, except coal combusted in a facility that combusts only coal and uses emerging technology, in J (MBtu)

H<sub>c</sub> = the heat input from the combustion of oil, in J (MBtu).



**Table 1-6  
(40 CFR 60.56a, Table I)**

**Municipal Waste Combustor Operating Standards For Carbon Monoxide**

<b>Municipal Waste Combustor Technology</b>	<b>CO emission limit (ppm by volume)</b>
Mass burn waterwall	100
Mass burn refractory	100
Mass burn rotary waterwall	100
Modular starved air	50
Modular excess air	50
RDF stoker	150
Bubbling fluidized bed combustor	100
Circulating fluidized bed combustor	100
Coal/RDF mixed fuel fired combustor	150





**Table 1-7****Reid Vapor Pressure (RVP) for Installation Geographic Area  
(40 CFR 80.27)****Applicable Standards<sup>1</sup> 1992 and Beyond**

State	May	June	July	August	September
Alabama	9.0	7.8	7.8	7.8	7.8
Arizona	9.0	7.8	7.8	7.8	7.8
Arkansas	9.0	7.8	7.8	7.8	7.8
California	9.0	7.8	7.8	7.8	7.8
Colorado*	9.0	7.8	7.8	7.8	7.8
Connecticut	9.0	9.0	9.0	9.0	9.0
Delaware	9.0	9.0	9.0	9.0	9.0
District of Columbia	9.0	7.8	7.8	7.8	7.8
Florida	9.0	7.8	7.8	7.8	7.8
Georgia	9.0	7.8	7.8	7.8	7.8
Idaho	9.0	9.0	9.0	9.0	9.0
Illinois	9.0	9.0	9.0	9.0	9.0
Indiana	9.0	9.0	9.0	9.0	9.0
Iowa	9.0	9.0	9.0	9.0	9.0
Kansas	9.0	7.8	7.8	7.8	7.8
Kentucky	9.0	9.0	9.0	9.0	9.0
Louisiana	9.0	7.8	7.8	7.8	7.8
Maine	9.0	9.0	9.0	9.0	9.0
Maryland	9.0	7.8	7.8	7.8	7.8
Massachusetts	9.0	9.0	9.0	9.0	9.0
Michigan	9.0	9.0	9.0	9.0	9.0
Minnesota	9.0	9.0	9.0	9.0	9.0
Mississippi	9.0	7.8	7.8	7.8	7.8
Missouri	9.0	7.8	7.8	7.8	7.8
Montana	9.0	9.0	9.0	9.0	9.0
Nebraska	9.0	9.0	9.0	9.0	9.0
Nevada	9.0	7.8	7.8	7.8	7.8

**Table 1-7 (continued)**

**Applicable Standards<sup>1</sup> 1992 and Beyond**

State	May	June	July	August	September
New Hampshire	9.0	9.0	9.0	9.0	9.0
New Jersey	9.0	9.0	9.0	9.0	9.0
New Mexico	9.0	7.8	7.8	7.8	7.8
New York	9.0	9.0	9.0	9.0	9.0
North Carolina	9.0	7.8	7.8	7.8	7.8
North Dakota	9.0	9.0	9.0	9.0	9.0
Ohio	9.0	9.0	9.0	9.0	9.0
Oklahoma	9.0	7.8	7.8	7.8	7.8
Oregon	9.0	7.8	7.8	7.8	7.8
Pennsylvania	9.0	9.0	9.0	9.0	9.0
Rhode Island	9.0	9.0	9.0	9.0	9.0
South Carolina	9.0	7.8	7.8	7.8	7.8
South Dakota	9.0	9.0	9.0	9.0	9.0
Tennessee					
Knox County	9.0	9.0	9.0	9.0	9.0
All other volatility nonattainment areas	9.0	7.8	7.8	7.8	7.8
Texas	9.0	7.8	7.8	7.8	7.8
Utah	9.0	7.8	7.8	7.8	7.8
Vermont	9.0	9.0	9.0	9.0	9.0
Virginia	9.0	7.8	7.8	7.8	7.8
Washington	9.0	9.0	9.0	9.0	9.0
West Virginia	9.0	9.0	9.0	9.0	9.0
Wisconsin	9.0	9.0	9.0	9.0	9.0
Wyoming	9.0	9.0	9.0	9.0	9.0

\* The standard for 1992 and 1995 in the Denver-Boulder nonattainment area will be 9.0 for 1 June through 15 September.

<sup>1</sup> Standards are expressed in pounds per square inch (psi)

**Table 1-8**

**Compliance and Exemptions to 40 CFR 63.320 through 63.325  
Concerning Perchloroethylene Drycleaners**

<b>Facility Type</b>	<b>Applicable Citation</b>	<b>Checklist Item Numbers</b>	<b>Date</b>
Coin Operated Drycleaners	None	None	None
Dry cleaning systems that started construction or reconstruction on or after 9 December 1991, except for systems complying with Section 112(i)(2) of the CAA	63.320 through 63.325	1-41 through 1-52	22 September 1993
Drycleaning systems that started construction or reconstruction before 9 December 1991	63.322(c), (d), (i), (j), (k), (l), (m), 63.323(d) and 63.324(a), (b), (d)(1), (d)(2), (d)(3), (d)(4), and (e)	1-43, 1-45, 1-46, 1-47, 1-48, 1-49, 1-50, 1-51, 1-52	20 December 1993
	All other Citations	1-41, 1-42, 1-44, 1-47	23 September 1996
Existing dry-to-dry machines and ancillary equipment located in a drycleaning facility that includes only a dry-to-dry machines and each existing transfer machine system and its ancillary equipment, as well as each existing dry-to-dry machine and its ancillary equipment, located in a drycleaning facility that includes both transfer machines systems and dry-to-dry machines with a total perchloroethylene consumption of less than 530 L (140 gal) per year	63.322(c),(d), (i),(j),(k),(l), (m), 63.323(d), and 63.324(a), (b), (d)(1), (d)(2), (d)(3), (d)(4), (e)	1-43, 1-44, 1-46, 1-47, 1-48, 1-49, 1-50, 1-51, 1-52	22 September 1993
Existing transfer machine systems and ancillary equipment located in a drycleaning facility that includes only transfer machine systems with perchloroethylene consumption at the facility of less than 760 L (200 gal) per year.	63.322(c), (d), (i), (j), (k), (l) (m), 63.323(d) and 63.324(a), (b), (d)(1), (d)(2), (d)(3), (d)(4), and (e)	1-43, 1-45, 1-46, 1-47, 1-48, 1-49, 1-50, 1-51, 1-52	22 September 1993

(NOTE: If the total yearly consumption of perchloroethylene at a drycleaning facility is initially less than the amounts stipulated above, but later exceeds those amounts, the existing drycleaning system in the facility are required to comply within 180 days of the date that the facility determined it exceeded the baseline amounts or by 23 September 1996, whichever is later.)



**Table 1-9**

**Controlled Substances and Ozone Depletion Weights  
(40 CFR 82, Appendix A and Appendix B)**

Controlled Substance	Ozone Depletion Weight
<i>Class I</i>	
<b>Group I</b>	
CFC-1 <sub>3</sub> - Trichlorofluoromethane (CFC-11)	1.0
CF <sub>2</sub> C1 <sub>2</sub> - Dichlorodifluoromethane (CFC-12)	1.0
C <sub>2</sub> F <sub>3</sub> C1 <sub>3</sub> - Trichlorotrifluoroethane (CFC-113)	0.8
C <sub>2</sub> F <sub>4</sub> C1 <sub>2</sub> - Dichlorotetrafluoroethane (CFC-114)	1.0
C <sub>2</sub> F <sub>5</sub> C1 - (Mono)chloropentafluoroethane (CFC-115)	0.6
All isomers of the above chemicals	
<b>Group II</b>	
CF <sub>2</sub> C1Br - Bromochlorodifluoromethane (Halon 1211)	3.0
CF <sub>3</sub> Br - Bromotrifluoromethane (Halon 1301)	10.0
C <sub>2</sub> F <sub>4</sub> Br <sub>2</sub> - Dibromotetrafluoroethane (Halon 2402)	6.0
All isomers of the above chemicals	
<b>Group III</b>	
CF <sub>3</sub> C1 - Chlorotrifluoromethane (CFC-13)	1.0
C <sub>2</sub> FC1 <sub>5</sub> - (CFC-111)	1.0
C <sub>2</sub> F <sub>2</sub> C1 <sub>4</sub> - (CFC-112)	1.0
C <sub>3</sub> FC1 <sub>7</sub> - (CFC-211)	1.0
C <sub>3</sub> F <sub>2</sub> C1 <sub>6</sub> - (CFC-212)	1.0
C <sub>3</sub> F <sub>3</sub> C1 <sub>5</sub> - (CFC-213)	1.0
C <sub>3</sub> F <sub>4</sub> C1 <sub>4</sub> - (CFC-214)	1.0
C <sub>3</sub> F <sub>5</sub> C1 <sub>3</sub> - (CFC-215)	1.0
C <sub>3</sub> F <sub>6</sub> C1 <sub>2</sub> - (CFC-216)	1.0
C <sub>3</sub> F <sub>7</sub> C1 - (CFC-217)	1.0
All isomers of the above chemicals	
<b>Group IV</b>	
CCl <sub>4</sub> - Carbon Tetrachloride	1.1

(continued)

**Table 1-9 (continued)**

Controlled Substance	Ozone Depletion Weight
<b>Group V</b>	
C <sub>2</sub> H <sub>3</sub> Cl <sub>3</sub> -1,1,1-Trichloroethane (Methyl Chloroform) All isomers of the above chemicals	0.1
<b>Group VI</b>	
CH <sub>3</sub> Br - Bromomethane (Methyl Bromide)	0.7
<b>Group VII</b>	
CHFBr <sub>2</sub>	1.00
CHF <sub>2</sub> Br (HBFC-22B1)	0.74
CH <sub>2</sub> FBr	0.73
C <sub>2</sub> HFBr <sub>4</sub>	0.3 - 0.8
C <sub>2</sub> HF <sub>2</sub> Br <sub>3</sub>	0.5 - 1.8
C <sub>2</sub> HF <sub>3</sub> Br <sub>2</sub>	0.4 - 1.6
C <sub>2</sub> HF <sub>4</sub> Br	0.7 - 1.2
C <sub>2</sub> H <sub>2</sub> FBr <sub>3</sub>	0.1 - 1.1
C <sub>2</sub> H <sub>2</sub> F <sub>2</sub> Br <sub>2</sub>	0.2 - 1.5
C <sub>2</sub> H <sub>2</sub> F <sub>3</sub> Br	0.7 - 1.6
C <sub>2</sub> H <sub>3</sub> FBr <sub>2</sub>	0.1 - 1.7
C <sub>2</sub> H <sub>3</sub> F <sub>2</sub> Br	0.2 - 1.1
C <sub>2</sub> H <sub>4</sub> FBr	0.07 - 0.1
C <sub>3</sub> HFBr <sub>6</sub>	0.3 - 1.5
C <sub>3</sub> HF <sub>2</sub> Br <sub>5</sub>	0.2 - 1.9
C <sub>3</sub> HF <sub>3</sub> Br <sub>4</sub>	0.3 - 1.8
C <sub>3</sub> HF <sub>4</sub> Br <sub>3</sub>	0.5 - 2.2
C <sub>3</sub> HF <sub>5</sub> Br <sub>2</sub>	0.9 - 2.0
C <sub>2</sub> HF <sub>6</sub> Br	0.7 - 3.3
C <sub>3</sub> H <sub>2</sub> FBR <sub>5</sub>	0.1 - 1.9
C <sub>3</sub> H <sub>2</sub> F <sub>2</sub> BR <sub>4</sub>	0.2 - 2.1
C <sub>3</sub> H <sub>2</sub> F <sub>3</sub> Br <sub>3</sub>	0.2 - 5.6
C <sub>3</sub> H <sub>2</sub> F <sub>4</sub> Br <sub>2</sub>	0.3 - 7.5
C <sub>3</sub> H <sub>2</sub> F <sub>5</sub> BR	0.9 - 1.4
C <sub>3</sub> H <sub>3</sub> FBR <sub>4</sub>	0.06 - 1.9
C <sub>3</sub> H <sub>3</sub> F <sub>2</sub> Br <sub>3</sub>	0.1 - 3.1

(continued)

Table 1-9 (continued)

Controlled Substance	Ozone Depletion Weight
$C_3H_3F_3Br_2$	0.1 - 2.5
$C_3H_3F_4Br$	0.3 - 4.4
$C_3H_4FBr_3$	0.03 - 0.3
$C_3H_4F_2Br_2$	0.1 - 1.0
$C_3H_4F_3Br$	0.07 - 0.8
$C_3H_5FBr_2$	0.04 - 0.4
$C_3H_5F_2Br$	0.07 - 0.8
$C_3H_6FB$	0.02 - 0.7
<i>Class II</i>	
CHFC1 <sub>2</sub> - Dichlorofluoromethane (HCFC-21)	*[res.]
CHF <sub>2</sub> Cl - Chlorodifluoromethane (HCFC-22)	0.05
CH <sub>2</sub> FC1 - Chlorofluoromethane (HCFC-31)	[res.]
C <sub>2</sub> HFC1 <sub>4</sub> - (HCFC-121)	[res.]
C <sub>2</sub> HFC1 <sub>2</sub> Cl <sub>3</sub> - (HCFC-122)	[res.]
C <sub>2</sub> HF <sub>3</sub> Cl <sub>2</sub> - (HCFC-123)	0.02
C <sub>2</sub> HF <sub>4</sub> Cl - (HCFC-124)	0.02
C <sub>2</sub> H <sub>2</sub> FC1 <sub>3</sub> - (HCFC-131)	[res.]
C <sub>2</sub> H <sub>2</sub> F <sub>2</sub> Cl <sub>2</sub> - (HCFC-132b)	[res.]
C <sub>2</sub> H <sub>2</sub> F <sub>2</sub> Cl - (HCFC-133a)	[res.]
C <sub>2</sub> H <sub>3</sub> FC1 <sub>2</sub> - (HCFC-141b)	0.12
C <sub>2</sub> H <sub>3</sub> F <sub>2</sub> Cl - (HCFC-142b)	0.06
C <sub>3</sub> HFC1 <sub>6</sub> - (HCFC-221)	[res.]
C <sub>3</sub> HF <sub>2</sub> Cl <sub>5</sub> - (HCFC-222)	[res.]
C <sub>3</sub> HF <sub>3</sub> Cl <sub>4</sub> - (HCFC-223)	[res.]
C <sub>3</sub> HF <sub>4</sub> Cl <sub>3</sub> - (HCFC-224)	[res.]
C <sub>3</sub> HF <sub>5</sub> Cl <sub>2</sub> - (HCFC-225ca)	[res.]
C <sub>3</sub> HF <sub>5</sub> Cl <sub>2</sub> (HCFC-225cb)	[res.]
C <sub>3</sub> HF <sub>6</sub> Cl - (HCFC-226)	[res.]
C <sub>3</sub> H <sub>2</sub> FC1 <sub>5</sub> - (HCFC-231)	[res.]
C <sub>3</sub> H <sub>2</sub> F <sub>2</sub> Cl <sub>4</sub> - (HCFC-232)	[res.]
C <sub>3</sub> H <sub>2</sub> F <sub>3</sub> Cl <sub>3</sub> - (HCFC-233)	[res.]
C <sub>3</sub> H <sub>2</sub> F <sub>4</sub> Cl <sub>2</sub> - (HCFC-234)	[res.]
C <sub>3</sub> H <sub>2</sub> F <sub>5</sub> Cl - (HCFC-235)	[res.]
C <sub>3</sub> H <sub>3</sub> FC1 <sub>4</sub> - (HCFC-241)	[res.]

(continued)



**Table 1-9 (continued)**

<b>Controlled Substance</b>	<b>Ozone Depletion Weight</b>
C <sub>3</sub> H <sub>3</sub> F <sub>2</sub> Cl <sub>3</sub> - (HCFC-242)	[res.]
C <sub>3</sub> H <sub>3</sub> F <sub>3</sub> Cl <sub>2</sub> - (HCFC-243)	[res.]
C <sub>3</sub> H <sub>3</sub> F <sub>4</sub> Cl - (HCFC-244)	[res.]
C <sub>3</sub> H <sub>4</sub> FCl <sub>3</sub> - (HCFC-251)	[res.]
C <sub>3</sub> H <sub>4</sub> F <sub>2</sub> Cl <sub>2</sub> - (HCFC-252)	[res.]
C <sub>3</sub> H <sub>4</sub> F <sub>3</sub> Cl - (HCFC-253)	[res.]
C <sub>3</sub> H <sub>5</sub> FCl <sub>2</sub> - (HCFC-261)	[res.]
C <sub>3</sub> H <sub>5</sub> F <sub>2</sub> Cl - (HCFC-262)	[res.]
C <sub>3</sub> H <sub>6</sub> FCl - (HCFC-271)	[res.]
All isomers of the above chemicals	[res.]

**\*[res.] means reserve. It designates that the ozone depletion weight number has been reserved for a future rating.**

**Table 1-10**

**Acceptable Substitutes  
(40 CFR 82.170 through 82.194)**

<b>SUBSTITUTES ACCEPTABLE SUBJECT TO NARROWED USE LIMITS</b>			
<b>End-use</b>	<b>Substitute</b>	<b>Decision</b>	<b>Comments</b>
Electronics cleaning w/ CFC-113, MCF	Perfluoro-carbons (PFCs) (C5F12, C6F12, C6F14, C7F16, C8F18, C5F11NO, C6F13NO, C7F15NO, and C8F16).	Acceptable for high-performance, precision-engineered applications only where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.	The principle environmental characteristic of concern for PFCs is that they have long atmospheric lifetimes and high global warming potentials. Although actual contributions to global warming depend upon the quantities of PFCs emitted, the effects are for practical purposes irreversible. Users must observe this limitation on PFC acceptability by conducting a reasonable evaluation of other substitutes to determine that PFC use is necessary to meet performance or safety requirements. Documentation of this evaluation must be kept on file. For additional guidance regarding applications in which PFCs may be appropriate, users should consult the Preamble for this rulemaking.
Precision cleaning w/ CFC-113, MCF	Perfluoro-carbons (C5F12, C6F12, C6F14, C7F16, C8F18, C5F11NO, C6F13NO, C7F15NO, and C8F16).	Acceptable for high-performance, precision-engineered applications only where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.	The principle environmental characteristic of concern for PFCs is that they have long atmospheric lifetimes and high global warming potentials. Although actual contributions to global warming depend upon the quantities of PFCs emitted, the effects are for practical purposes irreversible. Users must observe this limitation on PFC acceptability by conducting a reasonable evaluation of other substitutes to determine that PFC use is necessary to meet performance or safety requirements. Documentation of this evaluation must be kept on file. For additional guidance regarding applications in which PFCs may be appropriate, users should consult the Preamble for this rulemaking.

<b>FIRE SUPPRESSION AND EXPLOSION PROTECTION STREAMING AGENTS</b>				
<b>End-use</b>	<b>Substitute</b>	<b>Decision</b>	<b>Conditions</b>	<b>Comments</b>
Halon 1211 Streaming Agents	[CFC Blend]	Acceptable in nonresidential uses only		Use of CFCs are controlled under CAA section 610 which bans use of CFCs in pressurized dispensers, and therefore are not permitted for use in portable for extinguishers. USEPA will list this agent as proposed unacceptable in the next Significant New Alternatives Policy (SNAP) proposed rulemaking. Because CFCs are a Class I substance, production will be phased out by 1 January 1996.  See additional comments 1.2.

(continued)

**Table 1-10 (continued)**

<b>FIRE SUPPRESSION AND EXPLOSION PROTECTION STREAMING AGENTS (continued)</b>				
<b>End-use</b>	<b>Substitute</b>	<b>Decision</b>	<b>Conditions</b>	<b>Comments</b>
	HBFC-22B1		Acceptable in nonresidential uses only.	Proper procedures regarding the operation of the extinguisher and ventilation following dispensing the extinguishant is recommended. Worker exposure may be a concern in small office areas. HBFC-22B1 is considered an interim substitute for Halon 1211. Because the HBFC22B1 has an ODP of 0.74, production will be phased out (except for essential uses on 1 January 1996). This agent was submitted to the Agency as a Premanufacture Notice (PMN) and is presently subject to requirements contained in a <i>Toxic Substance Control Act (TSCA)</i> Consent Order. See additional comments 1.2.
	C <sub>6</sub> F <sub>14</sub>	Acceptable for nonresidential uses where other alternatives are not technically feasible due to performance or safety requirements.  a. due to the physical or chemical properties of the agent, or.  b. where human exposure to the extinguishing agent may approach cardiosensitization levels or result in other unacceptable health effects under normal operating conditions		Users must observe the limitations on PFC acceptability by making reasonable effort to undertake the following measures: i. conduct an evaluation of foreseeable conditions of end use ii. determine that the physical or chemical properties or other technical constraints of the other available agents preclude their use iii. determine that human exposure to the other alternative extinguishing agents may approach or result in cardiosensitization or other unacceptable toxicity effects under normal operating conditions. Documentation of such measures must be available for review upon request.  The principal environmental characteristic of concern for PFCs is that they have high GWPs and long atmospheric lifetimes. Actual contributions to global warming depend upon the quantities of PFCs emitted.  For additional guidance regarding applications in which PFCs may be appropriate, users should consult the description of potential uses which is included in the preamble to this rulemaking.  See additional comments 1. 2.

**Additional Comments:**

1. Discharge testing and training should be strictly limited only to that which is essential to meet safety or performance requirements.
2. The agent should be recovered from the fire protection system in conjunction with testing or servicing, and recycled for later use or destroyed.

(continued)

**Table 1-10 (continued)**

<b>FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS</b>				
<b>End-use</b>	<b>Substitute</b>	<b>Decision</b>	<b>Conditions</b>	<b>Comments</b>
Halon 1301 Total Flooding Agents.	HBFC-22B1	Acceptable	<p>Until OSHA establishes applicable workplace requirements:</p> <p>Where egress from an area cannot be accomplished within 1 min, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 0.3%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 1.0%.</p> <p>HBFC-22B1 concentrations greater than 1.0% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 5.3%, while its cardiotoxic LOAEL is 1%. Thus, it is unlikely that this agent will be used in normally occupied areas.</p> <p>HBFC-22B1 can be considered only an interim substitute for Halon 1301. HBFC-22B1 has an ODP of 0.74; thus, production will be phased out January 1, 1996.</p> <p>This agent was submitted to the Agency as a Premanufacture Notice (PMN) and is presently subject to requirements contained in a Toxic Substance Control Act (TSCA) Consent Order.</p> <p>See additional comments 1.2.3.4.</p>
	HCFC-22	Acceptable	<p>Until OSHA establishes applicable workplace requirements:</p> <p>Where egress from an area cannot be accomplished within 1 min, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 2.5%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 5.0%.</p> <p>HCFC-22 concentrations greater than 5.0% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 13.9% while its cardiotoxic LOAEL is 5.0%. Thus, it is unlikely that this agent will be used in normally occupied areas.</p> <p>See additional comments 1.2.3.4.</p>

(continued)

**Table 1-10 (continued)**

<b>FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS (continued)</b>				
<b>End-use</b>	<b>Substitute</b>	<b>Decision</b>	<b>Conditions</b>	<b>Comments</b>
	HCFC-124	Acceptable	<p>Until OSHA establishes applicable workplace requirements:                      Where egress from an area cannot be accomplished within 1 min, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 1.0%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL OF 2.5%.</p> <p>HCFC-123 concentrations greater than 2.5% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 8.4% while its cardiotoxic LOAEL is 2.5%. Thus, it is unlikely that this agent will be used in normally occupied areas. See additional comments 1,2,3,4.</p>
	[HCFC BLEND] A	Acceptable	<p>Until OSHA establishes applicable workplace requirements:                      Where egress from an area cannot be accomplished within 1 min, the employer shall not use [HCFC Blend] A in concentrations exceeding its cardiotoxic NOAEL of 10.0%.</p> <p>Where egress takes greater than 30 s but less than 1 min, the employer shall not use [HCFC Blend] A in a concentration greater than its cardiotoxic LOAEL of 10.0%.</p> <p>[HCFC Blend] A concentrations greater than 10 percent are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on full-scale testing is approximately 8.6%.                      The agent should be recovered from the fire protection system in conjunction with testing or servicing, and should be recycled for later use or destroyed. See additional comments 1,2,3,4.</p>

(continued)

**Table 1-10 (continued)**

<b>FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS (continued)</b>				
<b>End-use</b>	<b>Substitute</b>	<b>Decision</b>	<b>Conditions</b>	<b>Comments</b>
	HFC-23	Acceptable	<p>Until OSHA establishes applicable workplace requirements: Where egress from an area cannot be accomplished within 1 min, the employer shall not use HFC-23 in concentrations exceeding 30%.</p> <p>Where egress takes greater than 30 s but less than 1 min, the employer shall not use HFC-23 in a concentration greater than 50.0%.</p> <p>HFC-23 concentrations greater than 50 percent are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p> <p>The design concentration must result in an oxygen level of at least 16%.</p>	<p>The comparative design concentration based on cup burner values is approximately 14.4% while data indicates that its cardiotoxicity NOAEL is 30% without added oxygen and 50% with added oxygen. Its LOAEL is likely to exceed 50%.</p> <p>See additional comments 1, 2, 3, 4.</p>
	HFC-125	Acceptable	<p>Until OSHA establishes applicable workplace requirements: Where egress from an area cannot be accomplished within 1 min, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 7.5%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 10.0%.</p> <p>HFC-125 concentrations greater than 10.0% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 11.3% while its cardiotoxic LOAEL is 10.0%. Thus, it is unlikely that this agent will be used in normally occupied areas.</p> <p>See additional comments 1, 2, 3, 4.</p>

(continued)

**Table 1-10 (continued)**

<b>FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS (continued)</b>				
<b>End-use</b>	<b>Substitute</b>	<b>Decision</b>	<b>Conditions</b>	<b>Comments</b>
	HFC-134a	Acceptable	<p>Until OSHA establishes applicable workplace requirements: Where egress from an area cannot be accomplished within 1 min, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 4.0%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 8.0%.</p> <p>HFC-134a concentrations greater than 8.0% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 12.6% while its cardiotoxic LOAEL is 8.0%. Thus, it is unlikely that this agent will be used in normally occupied areas.</p> <p>See additional comments 1, 2, 3, 4.</p>
	HFC-227ea	Acceptable	<p>Until OSHA establishes applicable workplace requirements: Where egress from an area cannot be accomplished within 1 min, the employer shall not use HFC-227ea in concentrations exceeding its cardiotoxic NOAEL of 9.0%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 10.5%.</p> <p>HFC-227ea concentrations greater than 10.5% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 7.0% while data indicate that its cardiotoxicity LOAEL is probably greater than 10.5%. USEPA is accepting 10.5% as its LOAEL.</p> <p>This agent was submitted to the Agency as a Premanufacture Notice (PMN) agent and is presently subject to requirements contained in a TSCA Significant New Use Rule (SNUR).</p> <p>See additional comments 1, 2, 3, 4.</p>

(continued)





**Table 1-10 (continued)**

<b>FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS (continued)</b>				
<b>End-use</b>	<b>Substitute</b>	<b>Decision</b>	<b>Conditions</b>	<b>Comments</b>
	[IG-541]	Acceptable	<p>All personnel must be evacuated before concentration of C<sub>4</sub>F<sub>10</sub> exceeds 40%.</p> <p>Design concentration must result in oxygen levels of at least 16%.</p> <p>Documentation of such measures must be available for review upon request.</p> <p>Until OSHA establishes applicable workplace requirements:</p> <p>The design concentration must result in at least 10% oxygen and no more than 5% CO<sub>2</sub>.</p> <p>If the oxygen concentration of the atmosphere falls below 10%, personnel must be evacuated and egress must occur within 30 s.</p>	<p>The principal environmental characteristic of concern for PFCs is that they have high global warming potentials (GWPs) and long atmospheric lifetimes. Actual contributions to global warming depend upon the quantities of PFCs emitted.</p> <p>For additional guidance regarding applications in which PFCs may be appropriate, users should consult the description of potential uses which is included in this rulemaking.</p> <p>See additional comments 1, 2, 3, 4.</p> <p>Studies have shown that healthy, young individuals can remain in a 10% to 12% oxygen atmosphere for 30 to 40 min without impairment. However, in a fire emergency, the oxygen level may be reduced below safe levels, and the combustion products formed by the fire are likely to cause harm. Thus, the Agency does not contemplate personnel remaining in the space after system discharge during a fire without Self Contained Breathing Apparatus (SCBA) as required by OSHA.</p> <p>See additional comments 1.2.</p>

**Additional Comments:**

1. Must conform with OSHA 29 CFR 1910 Subpart L Section 1910.160 of the U.S. Code.
2. Per OSHA requirements, protective gear (SCBA) must be available in the event personnel must reenter the area.
3. Discharge testing should be strictly limited only to that which is essential to meet safety or performance requirements.
4. The agent should be recovered from the fire protection system in conjunction with testing or servicing, and recycled for later use or destroyed.

(continued)

**Table 1-10 (continued)**

Fire Suppression And Explosion Protection Total Flooding Agents Substitutes Acceptable Subject to Narrowed Use Limits				
End-use	Substitute	Decision	Conditions	Comments
Halon 1301 Total Flooding Agents.	C <sub>4</sub> F <sub>10</sub>	Acceptable where other alternatives are not technically feasible due to performance or safety requirements: a. Due to their physical or chemical properties, or b. Where human exposure to the extinguishing agents may approach cardiotoxicity levels or result in other unacceptable health effects under normal operating conditions.	Until OSHA establishes applicable workplace requirement: For occupied areas from which personnel cannot be evacuated in 1 min, use is permitted only up to concentrations not exceeding the cardiotoxicity NOAEL of 40%.  Although no LOAEL has been established for this product, standard OSHA requirements apply, i.e. for occupied areas from which personnel can be evacuated or egress can occur between 30 and 60 s, use is permitted up to a concentration not exceeding the LOAEL. All personnel must be evacuated before concentration of C <sub>4</sub> F <sub>10</sub> exceeds 40%. Design concentration must result in oxygen levels of at least 16%.	The comparative design concentration based on cup burner values is approximately 6.6%. Users must observe the limitations on PFC approval by undertaking the following measures:  (i) Conduct an evaluation of foreseeable conditions of end use (ii) Determine that human exposure to the other alternative extinguishing agents may approach or result in cardiotoxicity or other unacceptable toxicity effects under normal operating conditions (iii) Determine that the physical or chemical properties or other technical constraints of the other available agents preclude their use. Documentation of such measures must be available for review upon request. The principal environmental characteristic of concern for PFCs is that they have high GWPs and long atmospheric lifetimes. Actual contributions to global warming depend upon the quantities of PFCs emitted. For additional guidance regarding applications in which PFCs may be appropriate, users should consult the description of potential uses which is included in the preamble to this rulemaking. See additional comments 1, 2, 3, 4.

**Additional Comments:**

1. Must conform with OSHA 29 CFR 1910 Subpart L Section 1910.160 of the U.S. Code.
2. Per OSHA requirements, protective gear (SCBA) must be available in the event personnel must reenter the area.
3. Discharge testing should be strictly limited only to that which is essential to meet safety or performance requirements.
4. The agent should be recovered from the fire protection system in conjunction with testing or servicing, and recycled for later use or destroyed.



**Table 1-11**

**Unacceptable CFC and Halon Substitutes  
(40 CFR 82.170 through 82.194, Appendix A)**

<b>End Use</b>	<b>Substitute</b>	<b>Decision</b>	<b>Comments</b>
Metals cleaning w/CFC-113	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment. USEPA will grant, if necessary, narrowed use acceptability listings for CFC-113 past the effective date of the prohibition.
Metals cleaning w/MCF	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment.
Electronics cleaning w/CFC-113	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment. USEPA will grant, if necessary, narrowed use acceptability listings for CFC-113 past the effective date of the prohibition.
Electronics cleaning w/MCF	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment.
Precision Cleaning w/CFC-113	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment. USEPA will grant, if necessary, narrowed use acceptability listings for CFC-113 past the effective date of the prohibition.
Precision Cleaning w/MCF	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment.
<b>Refrigerants</b>			
CFC-11 centrifugal chillers (retrofit).	HCFC-141b	Unacceptable	Has a high ODP relative to other alternatives.
CFC-12 centrifugal chillers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-11, CFC-12, CFC-113, CFC-114, R-500 centrifugal chillers (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
	HCFC-141b	Unacceptable	Has a high ODP relative to other alternatives.

(continued)

**Table 1-11 (continued)**

End Use	Substitute	Decision	Comments
CFC-12 reciprocating chillers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 reciprocating chillers (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-11.CFC-12. R-502 industrial process refrigeration (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
CFC-11.CFC-12. R-502 industrial process refrigeration (new equipment/NIKs)	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
CFC-12, R-502 ice skating rinks (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 ice skating rinks (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 cold storage warehouses (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 cold storage warehouses (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-500.R-502 refrigerated transport (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-500.R-502 refrigerated transport (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 retail food refrigeration (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 retail food refrigeration (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 commercial ice machines (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.

(continued)

**Table 1-11 (continued)**

<b>End Use</b>	<b>Substitute</b>	<b>Decision</b>	<b>Comments</b>
CFC-12, R-502 commercial ice machines (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 vending machines (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 vending machines (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 water coolers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 water coolers (new equipment/NIKs)	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 household refrigerators (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 household refrigerators (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 household freezers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 household freezers (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-500 residential dehumidifiers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-500 residential dehumidifiers (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 motor vehicle air conditioners (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.

(continued)

**Appendix 1-11 (continued)**

<b>End Use</b>	<b>Substitute</b>	<b>Decision</b>	<b>Comments</b>
CFC-12 motor vehicle air conditioners (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12 Hydrocarbon blend A	Unacceptable Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
<b><i>Foams</i></b>			
CFC-11 Polyolefin	HCFC-141b (or blends thereof)	Unacceptable	HCFC-141b has an ODP of 0.11, almost equivalent to that of methyl chloroform, a Class I substance. The Agency believes that non-ODP alternatives are sufficiently available to render the use of HCFC-141b unnecessary in polyolefin foams.
<b><i>Fire Suppression and Explosion Protection Streaming Agents</i></b>			
Halon 1211 Streaming Agents	[CFC-11]	Unacceptable	This agent has been suggested for use on large outdoor fires for which nonozone depleting alternatives are currently used.

**Table 1-12**

**Required Levels of Evacuation for Appliances  
 (Except for small appliances, MVACS, and MVAC-like appliances)  
 (40 CFR 82.156, Table 1)**

**Inches of Hg Vacuum  
 (Relative to Standard and Atmospheric Pressure of 29.9 in. Hg)**

Type of Appliance	Using recovery or recycling equipment manufactured or imported before 15 November 1993	Using recovery or recycling equipment manufactured or imported on or after 15 November 1993
HCFC-22 appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant	0	0
HCFC-22 appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant	0	0
HCFC-22 appliance, or isolated component of such appliance, normally containing 200 lb or more of refrigerant	4	10
Other High-pressure appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant	4	10
Other High-pressure appliance, or isolated component of such appliance, normally containing 200 lb or more of refrigerant	4	15
Very High-pressure appliance	0	0
Low-pressure appliance	25	25 mm Hg absolute





<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>AIR EMISSIONS MANAGEMENT</b> <b>U.S. ECAMP</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA C RMA	<b>REVIEWER COMMENTS:</b>		

**Section 2**

**HAZARDOUS MATERIALS MANAGEMENT**

## SECTION 2

### HAZARDOUS MATERIALS MANAGEMENT

#### A. Applicability

This section primarily addresses the proper spill contingency and response requirements related to hazardous materials. Oil, pesticides, and asbestos are hazardous materials which require special management practices at Air Force (AF) installations, and are addressed in separate sections. Radioactive substances and the general category of hazardous wastes are also not included in this section.

#### B. Federal Legislation

- *The Occupational Safety and Health Act (OSHA) of 1970.* This Act, last amended in November 1990, 29 U.S. Code (USC) 651-678, is a Federal statute which governs the issues related to occupational safety and health. The purpose and policy of this Act are to assure every working man and woman in the nation safe and healthful working condition and to preserve our human resources by, among other things, providing for the development and publication of occupational safety and health standards, providing for an effective enforcement program, and providing for appropriate reporting procedures with respect to occupational safety and health procedures will help achieve the objectives of this Act and accurately describe the nature of the occupational safety and health (29 USC 651(b)(9)(10)(12)).
- *The Hazardous Materials Transportation Act of 1975.* This Act, as last amended in November 1990, 49 USC 1801-1819, et. al., is the Federal legislation which governs the transportation of hazardous materials in the nation. The policy of Congress is to improve the regulatory and enforcement authority of the Secretary of Transportation to protect the Nation adequately against the risks to life and property which are inherent in the transportation of hazardous materials in commerce (49 USC 1801).
- *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980.* This Act was amended by the *Superfund Amendments and Reauthorization Act (SARA) of 1986*, 42 USC 9601-11050, 10 USC 2701-2810 et. al. CERCLA/SARA regulates the prevention, control, and compensation relating to environmental pollution.
- *The Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA).* This Act was designed to promote emergency planning and preparedness at both the state and local level. It provides citizens and local governments with information regarding the potential hazards in their community. EPCRA requires the use of emergency planning and designates state and local governments as recipients for information regarding chemicals and toxins used in the community.
- *Executive Order (EO) 12088, Federal Compliance with Pollution Standards.* This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of the Air Force responsible for seeing to it that the facilities, programs, and activities that the Air Force funds meet applicable Federal, state, and local environmental requirements and for correcting situations that are not in compliance with such requirements. In addition, the EO requires that the Air Force ensure that sufficient funds for environmental compliance are included in the budget.

- EO 12856, *Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements*. This EO requires the heads of Federal agencies to develop a written pollution prevention strategy for their agencies. Military departments are covered under the auspices of the DOD. The head of each agency shall ensure that each of its covered facilities develops a pollution prevention plan no later than the end of 1995. Federal agencies are required to conduct assessments of their facilities as necessary to ensure development of these plans and of the facilities pollution prevention program. Each Federal agency will also develop voluntary goals to reduce the agency's total releases of toxic chemicals to the environment, and offsite transfers of such chemicals for treatment and disposal are publicly reported.
- The National Fire Code, *Flammable and Combustible Liquids Code NFPA 30*, prohibits the storage of Class I and Class II liquids in plastic containers in general-purpose warehousing.

### C. State/Local Regulations

Hazardous materials may be regulated on the state level as well as local agencies (county/city fire departments) who may require flammable/combustible materials to meet certain storage requirements. Usually, these local ordinances will follow the National Fire Protection Association (NFPA) *Fire Protection Guide on Hazardous Materials* (Pamphlets 325A, 325M, 49, 491F and 704M).

### D. Department of Defense (DOD) Regulations

- None that have not been implemented/superseded by Air Force Regulations.

### E. U.S. Air Force Regulations (AFRs)

- Air Force Instruction (AFI) 32-7044, *Storage Tank Compliance*. This instruction, dated 9 February 1994, identifies compliance requirements for underground and aboveground storage tanks and associated piping that store petroleum and hazardous substances except hazardous waste.
- AFI 32-4002, *Hazardous Material Emergency Planning and Response Compliance*. This instruction, dated 1994, helps users plan for and respond to Federal, state, local, and DOD emergencies involving hazardous materials.
- Air Force Regulation (AFR) 19-1, *Pollution Abatement and Environmental Quality*. This regulation, dated 9 January 1978, provides guidance for writing oil and hazardous substance contingency plans. This AFR is scheduled to be replaced by Air Force Policy Directive (AFPD) 23-2.
- AFR 19-8, *Environmental Protection Committee and Environmental Reporting*. This regulation addresses the role of the EPC in reviewing the Oil and Hazardous Substances Pollution Contingency plan. This AFR is to be replaced by AFI 32-7104.
- AFR 75-2, *Defense Traffic Management Regulation*. This regulation addresses the transportation of hazardous materials.
- Air Force Manual (AFM) 67-1, *Storage and Related Operations*. This manual requires the installation to have a comprehensive list of all chemicals used or generated on the installation.

- HQ USAF/CVA Policy Letter, *Air Force Implementation of Title III of SARA*. This policy letter, 14 January 1991, states "installations should participate in local emergency planning committees and must participate if they exceed the Threshold Planning Quantity (TPQ) of any Extremely Hazardous Substance (EHS)".

#### **F. Key Compliance Requirements**

- **Planning and Documentation** - Facilities should maintain a master listing of hazardous materials storage sites. When the facility needs outside fire protection help, it should tell the local fire department the types of hazardous chemicals it uses, the areas where it uses them, what it uses them for, and the amount it uses. Facilities are required to have material safety data sheet (MSDS) files for each hazardous chemical it stores and uses, not including such items as hazardous waste, tobacco, or drugs and cosmetics meant for personal use (29 CFR 1910.1200(b) and 1910.1200(g)).
- **Personnel Training** - Facilities are required to provide all employees with written information about hazardous chemicals to which they are exposed. Personnel who work with hazardous materials are required to be trained in the use of and potential hazards of such materials. All employees and supervisors working on sites exposed to hazardous materials or other hazards are required to be trained before engaging in these activities (29 CFR 1910.1200).
- **Hazardous Substance Release Reporting** - Air Force installations are required to notify the National Response Center (NRC) immediately if it releases hazardous substances in excess of or equal to reportable quantities. Facilities with continuous and stable releases have limited notification requirements. If a facility produces, uses, or stores extremely hazardous chemicals, and has a reportable release of these substances, it is required to notify the community emergency coordinator or local planning committee or Governor if there is no planning committee (40 CFR 302.1 through 302.6, and 302.8, 40 CFR 355.40).
- **Emergency Planning** - A facility with extremely hazardous substances in amounts equal or greater than the limits found in Table 2-1 are required to notify the emergency response commission and designate a representative to participate in local emergency planning (40 CFR 355.10 through 355.30 and 355 Appendix A.)
- **Right-to-Know Requirements** - Facilities required by OSHA to have a MSDS for a hazardous chemical are required to submit the MSDS sheets to the emergency commission and fire department with jurisdiction over the facility. MSDSs will be updated within 3 mo after discovery of significant new information (40 CFR 370.20 through 370.28).
- **Hazardous Substance Release Reporting** - Air Force facilities are required to notify the NRC immediately if it releases hazardous substances in excess of or equal to reportable quantities. Facilities with continuous and stable releases have limited notification requirements. If a facility produces, uses, or stores extremely hazardous chemicals, and has a reportable release of these substances, it is required to notify the community emergency coordinator, local planning committee, or Governor if there is no planning committee (40 CFR 302.1 through 302.6, and 302.8, 40 CFR 355.40).
- **Hazardous Materials Storage** - Containers for hazardous chemicals are required to be labeled or tagged with the identity of the substance and appropriate warning markings. Areas where hazardous materials are stored or used around the facility are required to be kept free from accumulations of materials that create a hazard, such as leaking containers, or a placement of containers in a manner

that would create hazards such as tripping, fire, or pests. Substances that together may create a fire hazard must be separated (29 CFR 1910.176(c), 1910.1200(b) and 1200(f)).

- **Hazardous Materials in Laboratories** - Facilities that use hazardous chemicals in laboratories are required to have a Chemical Hygiene Plan which is reviewed annually. Such facilities are also required to provide employees with information and training about the hazardous chemicals in their work areas. Records about the exposure of employees are to be kept along with medical records (29 CFR 1910.1450(e), 1910.1450(f), 1910.1450(h), 1910.1450(j)).
- **Storage of Flammable/Combustibles** - In general, containers of flammable combustible liquids are to be stored and handled so as to not damage the container or label, block exits, or create a fire hazard (29 CFR 1910.106(d)).
- **Flammable Combustible Storage Cabinets** - Storage cabinets are to be fire resistant and labeled **FLAMMABLE - KEEP FIRE AWAY**. No more than 60 gal [227.12 L] of Class I or Class II liquids and no more than 120 gal [454.23 L] of Class III liquids can be stored in a cabinet (29 CFR 1910.106(d)(3)).
- **Flammable Combustible Storage Rooms** - Storage rooms inside a building are to be fire resistant and have a raised sill or ramp to prevent the flow of spilled material from exiting the room. Ventilation and clear aisles must be provided and dispensing must be done by an approved pump or self-closing faucet (29 CFR 1910.106(d)(4)).
- **Flammable/Combustible Warehouses or Storage Buildings** - These structures will have 3 ft [0.91 m] wide aisles for access to doors, windows, or standpipe connections. Materials will be stacked using pallets or dunnage when needed for stabilization and fire protection must be provided (29 CFR 1910.106(d)(5)(iv)).
- **Outside Storage of Flammable Combustible Liquids** - Containers of flammable/combustible liquids can be stored outside if no more than 1100 gal [4163.95 L] of liquid are stored adjacent to a building. More than 1100 gal [4163.95 L] can be stored if there are 10 ft [3.05 m] or more between buildings and the nearest flammable container. The storage area must be graded to divert spill or surrounded by a curb (29 CFR 1910.106(d)(6)).
- **Storage of Flammable/Combustibles in Industrial Areas** - Specific guidelines, requirements, or operating standards apply wherever flammable/combustible materials are stored, dispensed, used in industrial plants, are in incidental storage, or in use in unit operations. This includes availability of portable fire extinguishers, precautions being taken to prevent ignition, and use of maintenance and operating practices to control leakage and prevent accidental escape of flammable/combustible liquids (29 CFR 1910.106(e)(2) through 1910.106(e)(9)).
- **Flammable Combustible Liquid Storage Tanks** - Storage tanks that hold flammable/combustible liquids must not be below ground or inside buildings. They are to be built of steel except in certain circumstances. Outside aboveground tanks for flammable liquids are to meet requirements for distance between tanks, firefighting access, and containment. When flammable vapor may be present from storage tanks, heat sources will be kept from the tanks. Tanks are required to have been strength-tested before being used (29 CFR 1910.106(b)).

- **Compressed Gases** - Regardless of where the cylinders are stored, **NO SMOKING** signs should be posted and actions taken to prevent fire. Compressed gases are required to be stored according to the Compressed Gas Association Pamphlet P-1-1965 (29 CFR 1910.101).
- **Hazardous Materials Transportation** - The regulations in Title 49, Subchapter C of the Code of Federal Regulations detail requirements for the transportation of hazardous materials. 49 CFR 171.1(c) stipulates that these requirements apply when materials are being transported in *commerce*. According to a representative from the Department of Transportation (DOT), commerce is defined in terms of making a profit in this instance, therefore Subchapter C does not apply to Federal agencies.
- **Substandard Hazardous Substance Underground Storage Tanks (USTs)** - Substandard UST systems must be upgraded, closed, or removed from service by 22 December 1998. If a release detection system is not available for the UST, it must be phased out in 1 to 5 yr (40 CFR 280.21(a) through 280.21(c)).
- **New or Upgraded Hazardous Substance USTs** - New or upgraded USTs are required to be fitted with spill and overfill prevention equipment. Notice must be given to the appropriate authority within 30 days when a UST system is brought into service after 8 May 1986. If the UST is installed after 22 December 1988, it must be constructed so that it will remain structurally sound for its operating life. Installation of UST must be done by a certified installer and UST systems must be made of or lined with, materials compatible with the substance stored (40 CFR 280.20, 280.21(d), 280.22, and 280.32).
- **Spill and Overfill Prevention for Hazardous Substance USTs** - The filling of a UST must include the prevention of overfilling and spilling of the substance. If a spill does occur, facilities with UST systems are required to contain and immediately clean up a spill or overfill and report it to the implementing agency within 24 h if spills or overfills of hazardous substances that result in a release to the environment in excess of the reportable quantity.
- **Corrosion Protection and Repairs for Hazardous Substance USTs** - Corrosion protection on USTs must operate continuously to provide corrosion protection to the metal components that routinely contains regulated substances and are in contact with the ground. UST systems with impressed current cathodic protection are required to be inspected every 60 days by a qualified cathodic protection tester. Repairs to USTs must be performed according to industry code. Tanks and piping that have been replaced or repaired are required to be tested for tightness within 30 days. Records of repairs shall be maintained for the life of the tank (40 CFR 280.31, 280.33, 280.43, and 280.44).
- **Release Detection for Hazardous Substance USTs** - Facilities with new and existing USTs are required to provide a method, or combination of methods of release detection. Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs which store fuel solely for use by emergency power generators. Release detection records are required to be kept as follows (40 CFR 280.40 through 280.45):
  1. all written performance claims pertaining to any release detection system used for 5 yr from the date of installation
  2. the results of any sampling testing or monitoring for 1 yr
  3. the results of tank tightness testing, until the next test is done
  4. written documentation of calibration maintenance, and repair of release detection equipment permanently located onsite, at least 1 yr after the servicing is done
  5. schedules of required calibration and maintenance provided by the release detection equipment manufacturer, 5 yr after the date of installation.



Depending on the age, size, and construction of the tank, acceptable methods of release detection include the following:

1. inventory control
2. manual tank gauging
3. tank tightness testing
4. automatic tank gauging
5. vapor monitoring
6. groundwater monitoring
7. interstitial monitoring.

Existing UST system tanks must implement release detection requirements based on when the system was installed. The table below identifies the deadline for providing release detection:

**Deadlines for Release Detection:**

UST System Installation Date	Leak Detection Required by 22 December of:
All others	1992
1980-December 1988	1993

- Release Detection for Underground Piping Associated with Hazardous Substance UST Systems - 40 CFR 280, Subpart D, establishes separate release detection requirements for underground piping depending on whether it conveys substances under pressure or suction. These include:
  1. Pressurized piping must be equipped with an automatic line leak detector and have an annual line tightness test conducted; or pressurized piping must be equipped with an automatic line leak detector and a permanent release detection system that allows monthly monitoring. Permanent release detection methods acceptable for piping include: vapor monitoring, interstitial monitoring, and groundwater monitoring. The deadline for implementing release detection requirements on pressurized piping is 22 December 1990.
  2. Suction piping either must have a line tightness test conducted every 3 yr or must use a permanent release detection system that allows monthly monitoring. Deadlines for implementing release detection requirements on suction piping are based on when the UST system was installed. The table above identifies the deadline for providing release detection. For suction piping constructed to certain standards, no release detection monitoring is required. It must meet five criteria:
    - a. below-grade piping must operate at less than atmospheric pressure
    - b. below-grade piping must be sloped to drain back into the tank when suction is released
    - c. only one check valve can be included in each suction line
    - d. check valve shall be located directly below and as close as practical to the suction pump
    - e. criteria in paragraphs b through d must be verifiable.
- Reporting and Recordkeeping Requirements for Hazardous Substance USTs - Facilities are required to submit notifications of new USTs, release reports, planned or complete corrective actions, and notice of closure or change-in-service when applicable. Records are required to be available at the UST site or at a readily available alternative site. Records are to be kept of the following:
  1. corrosion expert's analysis of site corrosion potential if corrosion protection equipment is not

used

2. documentation of operation of corrosion protection equipment
  3. documentation of repairs
  4. closure records
  5. results of any site investigations (40 CFR 280.34, 280.45, and 280.74).
- **Change in Service or Closure of Hazardous Substance USTs** - USTs which are put out of service temporarily must have continued maintenance. If the UST has been out-of-service for near or over 1 yr, plans must be made for permanent closure. The facility must notify the implementing agency (USEPA) for any closure or change in service 30 days in advance or within a reasonable time frame as determined by the implementing agency. UST closure must be done by either removing the tank from the ground or leaving it in place with the contents removed and filled with an insert solid material and closing it to all future outside access. If a tank is undergoing a change-in-service, it must be emptied and cleaned and a site assessment conducted. Prior to the completion of permanent closure or change-in-service, measurements must be made for the presence of a release where contamination is most likely to be present at the site. Facilities with UST systems closed prior to 22 December 1988 must assess the excavation zone and close the UST according to current standards if releases from the UST may pose a current or potential threat to human health and the environment (40 CFR 280.70 through 280.73).

#### **G. Responsibility for Compliance**

- **Base Civil Engineering (BCE)/Environmental Management (EM).** The BCE is responsible for the storage and handling of all hazardous materials used by the civil engineering shops in properly designated facilities. The BCE is also responsible for reporting release of reportable quantities of hazardous substance to NRC and/or USEPA and appropriate state authorities.
- **The Director of Base Medical Services.** The Director of Base Medical Services, through the Bioenvironmental Engineering (BEE) Section, is responsible for reviewing potential hazardous commodities referred by base supply and directing the assignment of the appropriate IEX, IRMC, or HHF. The BEE maintains MSDSs for all items used on the installation.
- **Base Fire Department.** The Base Fire Department provides support in emergency response spill events, exercises, and fire protection activities. In addition, the department is responsible for making periodic fire safety inspections of flammable/combustible storage and handling areas on the installation.
- **Base Supply (LGS).** LGS has primary responsibility to receive, store, and issue all hazardous items ordered through the Standard Base Supply System. LGS identifies inspected hazardous commodities by referencing the most current version of Federal Standard 313 and DODR 4145.19-1 and refers these commodities to the BEE Section for determination of the specific health hazard. LGS ensures the receipt of receiving documents and coordinates with the BEE to ensure their receipt of the MSDS. LGS ensures the proper maintenance and operation of flammable or combustible materials storage facilities, acid storage facilities, and compressed gas storage facilities. LGS ensures that all issues of hazardous materials are properly labeled.
- **Base Safety Manager.** The Base Safety Manager is responsible for conducting workplace safety evaluations and inspections of the handling and storage of hazardous materials. The Safety Manager provides the appropriate manager with a report of findings and recommended corrective

actions, and is also responsible for ensuring the prompt and accurate investigation of any hazardous material mishaps that result in injury or property damage.

- **Hazardous Materials Pharmacy.** When applicable, the Hazardous Materials Pharmacy is responsible for requisitioning, receiving, dispensing, issuing and storing hazardous materials for their customer organizations. The pharmacy manager is responsible for the maintenance of the compatible storage, spill containment, venting, and dispensation systems within the facility. The pharmacy is also responsible for receiving MSDSs and providing them to the hazardous materials user. The pharmacy manager shall ensure all pharmacy personnel are trained in the use, handling, and transportation of hazardous materials.

## H. Key Compliance Definitions

- *Aboveground Release* - any release to the surface of the land or to surface water. This includes, but is not limited to, releases from the aboveground portion of a UST system and aboveground releases associated with overfills and transfer operations as the regulated substance moves to or from an UST system (40 CFR 280.12).
- *Aerosol* - a material which is dispensed from its container as a mist, spray, or foam by a propellant under pressure (29 CFR 1910.106(a)(1)).
- *Ancillary Equipment* - any devices including, but not limited to, such devices as pipings, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of regulated substances to and from the UST (40 CFR 280.12).
- *Approved* - listed or approved by Underwriters Laboratories, Inc., Factory Mutual Engineering Corporation, The Bureau of Mines, National Institute of Occupational Safety and Health (NIOSH), The American National Standards Institute (ANSI), NFPA, or other nationally recognized agencies which list, approve, test or develop specifications for equipment to meet fire protection, health or safety requirements (29 CFR 1910.106(a)(35)).
- *Atmospheric Tank* - a storage tank which has been designed to operate at pressures from atmospheric through 0.5 psig (29 CFR 1910.106(a)(2)).
- *Barrel* - a volume of 42 U.S. gallons (29 CFR 1910.106(a)(33)).
- *Basement* - a story of a building or structure having one-half or more of its height below ground level and to which access for fire fighting purposes is unduly restricted (29 CFR 1910.106(a)(4)).
- *Belowground Release* - any release to the subsurface of the land and to groundwater. This includes, but is not limited to, releases from the below ground portion of a UST system and belowground releases associated with overfills and transfer operations as the regulated substance moves to or from a UST (40 CFR 280.12).
- *Boiling Point* - the temperature at which a liquid starts to boil when at atmospheric pressure (14.7 psia [760 mm]), as determined by ASTM test D-86-72) (29 CFR 1910.106(a)(5)).
- *Bulk Plant* - that portion of the property where flammable or combustible liquids are received by tank vessel, pipelines, tank car, or tank vehicle, and are stored or blended in bulk for the purpose of

distributing such liquids by tank vessel pipeline, car, tank vehicle, or container (29 CFR 1910.106(a)(7)).

- **Cathodic Protection** - a technique to prevent corrosion of a metal surface by making that surface the cathode of an electrochemical cell. For example, a tank system can be cathodically protected through the application of either galvanic anodes or impressed current (40 CFR 280.12).
- **Cathodic Protection Tester** - a person who can demonstrate understanding of the principles and measurements of all common types of cathodic protection systems as applied to buried or submerged metal piping and tank systems. At a minimum, such persons must have education and experience in soil resistivity, stray current, structure-to-soil potential, and component electrical isolation measurements of buried metal piping and tank systems (40 CFR 280.12).
- **CERCLA** - *Comprehensive Environmental Response Compensation and Liability Act of 1980* as amended (40 CFR 280.12).
- **Closed Container** - a container so sealed with a lid or other closing device that neither liquid and/or vapor will escape from it at ordinary temperatures (29 CFR 1910.106(a)(9)).
- **Combustible Liquid** - a liquid having a flashpoint at or above 100 °F (37.8 °C). Combustible liquids are categorized as Class II or Class III liquids and are further subdivided as follows (29 CFR 1910.106(a)(18)):
  1. Class II liquids are those having a flashpoint at or above 100 °F (37.8 °C), and below 140 °F (60 °C) except any mixture having components with flashpoints of 200 °F (93.3 °C) or higher, the volume of which makes up 99 percent or more of the total volume of the mixture
  2. Class III A liquids are those having flashpoints at or above 140 °F (60 °C), and below 200 °F (93.3 °C) except any mixture having components with flashpoints of 200 °F (93.3 °C) or higher, the total volume of which make up 99 percent of more of the total volume of the mixture
  3. Class III B liquids are those having flashpoints at or above 200 °F (93.3 °C).
- **Compatible** - the ability of two or more substances to maintain their respective physical and chemical properties upon contact with one another for the design life of the tank system under conditions likely to be encountered in the UST (40 CFR 280.12).
- **Connected Piping** - all underground piping including valves, elbows, joints, flanges, and flexible connectors attached to a tank system through which regulated substances flow. For the purpose of determining how much piping is connected to any individual UST system, the piping that joins two UST systems should be allocated equally between them (40 CFR 280.12).
- **Consumptive Use** - with respect to heating oil means consumed on the premises (40 CFR 280.12).
- **Corrosion Expert** - a person who, by reason of thorough knowledge of the physical sciences and the principles of engineering and mathematics acquired by a professional education and related practical experience, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be accredited or certified as being qualified by the National Association of Corrosion Engineers (NACE) or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks (40 CFR 280.12).

- **Decontamination Crew** - Determines and establishes the proper decontamination procedures prior to anyone entering a cordoned hazardous area. all decontamination activities are coordinated with the Hazard Group Supervisor, Safety and Health, and Information (AFI 32-4002, Section C).
- **Deferred USTs** - USTs which are exempt from meeting the requirements in 40 CFR 280 except those concerning release response and corrective action for UST systems containing hazardous substances in 40 CFR 280.60 through 280.67. These tanks include (40 CFR 280.10(e):
  1. wastewater treatment tank systems
  2. any UST systems containing radioactive material that are regulated under the *Atomic Energy Act of 1954*
  3. any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR Part 50, Appendix A
  4. airport hydrant fuel distribution systems
  5. UST system with field-constructed tanks.
- **Dielectric Material** - a material that does not conduct direct electrical current. Dielectric coatings are used to electrically isolate UST systems from the surrounding soils. Dielectric bushings are used to electrically isolate portions of the UST system (e.g., tank from piping) (40 CFR 280.12).
- **Disaster Control Group** - The disaster response force element that goes to the scene of a major accident or natural disaster to provide command and control under the direction of the on-scene commander (AFI 32-4002, Section C).
- **Electrical Equipment** - underground equipment that contains dielectric fluid that is necessary for the operation of equipment such as transformers and buried electric cable (40 CFR 280.12).
- **Excavation Zone** - the volume containing the tank system and backfill material bounded by the ground surface, walls, and floor of the pit and trenches into which the UST system is placed at the time of installation (40 CFR 280.12).
- **Excluded USTs** - these are USTs which are not required to meet the requirements found in 40 CFR 280 and include:
  1. any UST system holding hazardous wastes listed under Subtitle C of the *Solid Waste Disposal Act* (SWDA), or a mixture of such hazardous waste and other regulated substances
  2. any wastewater treatment tank system that is part of a wastewater treatment facility regulated under Section 402 or 307(b) of the *Clean Water Act* (CWA)
  3. equipment of machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment
  4. any UST system whose capacity is 110 gal [416.40 L] or less
  5. any UST system that contains a de minimis concentration of a regulated substance
  6. any emergency spill or overflow containment UST system that is expeditiously emptied after use (40 CFR 280.10(b)).
- **Existing Tank System** - a tank system used to contain an accumulation of regulated substances or for which installation has commenced on or before 22 December 1988. Installation is considered to have commenced if (40 CFR 280.12):
  1. the owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system
  2. a. either a continuous onsite physical construction or installation program has begun, or

- b. the owner or operator has entered into any contractual obligations:
1. which cannot be canceled or modified without substantial loss
  2. for physical construction at the site or installation of the tank system to be completed within a reasonable time.
- **Extremely Hazardous Substance** - all substances listed in Appendices A and B in 40 CFR Part 355 [see the column titled *Extremely Hazardous Substances* in Table 2-1] (40 CFR 355.20).
  - **Fire Area** - that portion of a building separated from the remainder by construction having a rated fire resistance of at least 1 h and having all communicating openings properly protected by an assembly having a fire resistance rating of at least 2 h (29 CFR 1910.106(a)(12)).
  - **Flammable Aerosol** - an aerosol that is required to be labeled FLAMMABLE under the *Federal Hazardous Substance Labeling Act* (15 USC 1261). These aerosols are considered Class IA liquids (29 CFR 1910.106(a)(19)).
  - **Flammable Liquid** - a liquid with a flashpoint below 100 °F (37.8 °C) except any mixture having components with flashpoints of 100 °F (37.8 °C) or higher, the total of which make up 99 percent or more of the total volume of the mixture. Flammable liquids are categorized as Class I liquids, and are further subdivided as follows (29 CFR 1910.106(a)(19)):
    1. Class IA are those that have a flashpoint below 73 °F (22.8 °C) and boiling point below 100 °F (37.8 °C).
    2. Class IB are those that have flashpoints below 73 °F (22.8 °C) and boiling points at or above 100 °F (37.8 °C).
    3. Class IC are those that have flashpoints at or above 73 °F (22.8 °C) and below 100 °F (37.8 °C).
  - **Flashpoint** - the minimum temperature at which a liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. Flashpoints are established using several standard closed cup test methods (29 CFR 1910.106(a)(14)).
  - **Flow-through Process Tank** - a tank that forms an integral part of a production process through which there is a steady, variable, recurring, or intermittent flow of materials during the operation of the process. Flow-through process tanks do not include tanks used for the storage of material prior to their introduction into the production process or for the storage of finished products or by-products from the production (40 CFR 280.12).
  - **Follow-on Element** - the nonemergency response elements of a disaster response force that deploy to the accident scene after the initial response element to expand command and control and perform support functions (AFI 32-4002, Section C).
  - **Free-product** - a regulated substance that is present as a nonaqueous phase liquid (e.g., liquid not dissolved in water) (40 CFR 280.12).
  - **Gathering Lines** - any pipeline, equipment, facility, or building used in the transportation of oil or gas during oil or gas production (40 CFR 280.12).
  - **Hazardous Chemical** - in relationship to laboratories, a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific

principles that acute or chronic health effects may occur in exposed employees (29 CFR 1910.1450(b)).

- **Hazardous Material (HAZMAT)** - All hazardous substances, petroleum, natural gas, synthetic gas, acutely toxic chemicals, and other toxic chemicals including hazardous wastes (AFI 32-4002, Section C).
- **Hazardous Substance** - any substance designated pursuant to 40 CFR 302 [see the column titles *Hazardous Substance RQ* in Table 2-1] (40 CFR 302.3).
- **Hazardous Substance UST System** - any UST system that contains a hazardous substance defined in section 101(14) of the CERCLA of 1980 (but not including any substance regulated as a hazardous waste under subtitle C) or any mixture of such substances and petroleum, and which is not a petroleum UST system (40 CFR 280.12).
- **Hydraulic Lift Tank** - a tank holding hydraulic fluid for a closed-loop mechanical system that uses compressed air or hydraulic fluid to operate lifts, elevators, and other similar devices (40 CFR 280.12).
- **Incident Commander (IC)** - Normally the senior fire official on-scene responsible for all decisions relating to the management of the immediate incident scene. The IC reports to the OSC (AFI 32-4002, Section C).
- **Institutional Occupancy** - the occupancy or use of a building or structure or any portion thereof by persons harbored or detained to receive medical, charitable or other care or treatment or by persons involuntarily detained (29 CFR 1910.106(a)(16)).
- **Laboratory** - a facility where the laboratory use of hazardous chemicals occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a nonproduction basis (29 CFR 1910.1450(b)).
- **Laboratory Scale** - work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person (29 CFR 1910.1450(b)).
- **Laboratory Use of a Hazardous Chemical** - handling or use of such chemicals in which all of the following conditions are met (29 CFR 1910.106(a)(17)):
  1. chemical manipulations are carried out on a laboratory scale
  2. multiple chemical procedures or chemicals are used
  3. the procedures involved are not part of a production process, nor in any way simulate a production process
  4. protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.
- **Liquid** - any material with a fluidity greater than that of 300 penetration asphalt when tested in accordance with ASTM Test D-5-73. When not otherwise identified, the term *liquid* will include both flammable and combustible liquid (29 CFR 1910.106(a)(17)).
- **Liquid Trap** - sumps, well cellars, and other traps used in association with oil and gas production, gathering, and extracting operations (including gas production plants), for the purpose of collecting

oil, water, and other liquids. These liquid traps may temporarily collect liquids for subsequent disposition or reinjection into a production or pipeline stream, or may collect and separate liquids from a gas stream (40 CFR 280.12).

- *Low Pressure Tank* - a storage tank which has been designed to operate at pressures above 0.5 psig but not more than 15 psig (29 CFR 1910.106(a)(21)).
- *Maintenance* - the normal operational upkeep to prevent a UST system from releasing product (40 CFR 280.12).
- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Material Safety Data Sheet (MSDS)* - written or printed material which contains information on hazardous chemicals such as common name, physical hazards, and health hazards (29 CFR 1200(c)).
- *New Tank System* - a tank system that will be used to contain an accumulation of regulated substances and for which installation has commenced after 22 December 1988 (40 CFR 280.12).
- *Noncommercial Purposes with Respect to Motor Fuel* - not for resale (40 CFR 280.12).
- *Office Occupancy* - the occupancy, use of a building or structure, or any portion thereof for the transaction of business, or the rendering or receiving of professional services (29 CFR 1910.106(a)(24)).
- *On the Premises Where Stored (heating oil)* - UST systems located on the same property where the stored heating oil is used (40 CFR 280.12).
- *Operator* - any person in control of or having responsibility for the daily operation of the UST system (40 CFR 280.12).
- *Overfill Release* - a release that occurs when a tank is filled beyond its capacity, resulting in a discharge of the regulated substance to the environment (40 CFR 280.12).
- *Person* - an individual, trust, firm, joint stock company, Federal agency, corporation, state, municipality, commission, political subdivision of a state, or any interstate body. *Person* also includes a consortium, a joint venture, a commercial entity, and the U.S. Government (40 CFR 280.12).
- *Pipe or Piping* - a hollow cylinder or tubular conduit that is constructed of nonearthen materials (40 CFR 280.12).
- *Pipeline Facilities* - (including gathering lines) are new and existing pipe rights-of-way and any associated equipment, facilities, or buildings (40 CFR 280.12).
- *Portable Tank* - a closed container having a liquid capacity over 60 gal [227.12 L] and not intended for fixed installation (29 CFR 1910.106(a)(25)).



- *Pressure Vessel* - a storage tank or container designed to operate at pressures above 15 psig (pounds per square inch gauge) (29 CFR 1910.106(a)(29)).
- *Protection for Exposure* - adequate fire protection for structures on property adjacent to tanks, where there are employees of the establishment (29 CFR 1910.106(a)(27)).
- *Recoverable Product* - product which has served its intended purpose or which contains foreign matter which renders it unfit for original or alternate use, but through processing or refining can be reclaimed for other use by the Air Force or commercial industry (40 CFR 280.12).
- *Regulated Substance*
  1. any substance defined in section 101(14) of the CERCLA of 1980 (but not including any substance regulated as a hazardous waste under Subtitle C)
  2. petroleum, including crude oil or any fraction thereof that is liquid at standard conditions of temperature and pressure (60 °F [15.56 °C] and 14.7 lb/psia).

(NOTE: The term *regulated substance* includes, but is not limited to, petroleum and petroleum based substances comprised of a complex blend of hydrocarbons derived from crude oil through processes of separation, conversion, upgrading, and finishing, such as motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils) (40 CFR 280.12).

- *Release* - any spilling, leaking, emitting, discharging, escaping, leaching, or disposing from an UST into groundwater, surface water, or subsurface soils (40 CFR 280.12).
- *Release Detection* - determining whether a release of a regulated substance has occurred from the UST system into the environment or into the interstitial space between the UST system and its secondary barrier or secondary containment around it (40 CFR 280.12).
- *Repair* - to restore a tank or UST system component that has caused a release of product from the UST system (40 CFR 280.12).
- *Residential Tank* - a tank located on property used primarily for dwelling purposes (40 CFR 280.12).
- *Safety Can* - an approved flammable liquid container having a spring-closing lid, spout cover and other features designed to safely relieve internal pressure and to provide safe storage for the liquid (29 CFR 1910.106(a)(29)).
- *SARA - Superfund Amendments and Reauthorization Act* (40 CFR 280.12).
- *Select Carcinogens* - any substance which meets one of the following criteria (29 CFR 1910.106(1450(b))):
  1. it is regulated by OSHA as a carcinogen
  2. it is listed under the category "known to be carcinogens" and the Annual Report on Carcinogens published by the National Toxicology Program (NTP)
  3. it is listed under Group 1 (carcinogenic to humans) by the International Agency for Research on Cancer Monographs (IARC)
  4. it is listed in either Group 2A or 2B by IARC or under the category "reasonably anticipated to be carcinogens" by NTP, and causes statistically significant tumor incidences in experimental animals under specific situations.

- **Septic Tank** - a water-tight covered receptacle designed to receive or process, through liquid separation or biological digestion, the sewage discharged from a building sewer. The effluent from such receptacle is distributed through the soil and settled solids and scum from the tank are pumped out periodically and hauled to a treatment facility (40 CFR 280.12).
- **Stormwater or Wastewater Collection System** - piping, pumps, conduits, and any other equipment necessary to collect and transport the flow of surface water runoff resulting from precipitation, or domestic, commercial, or industrial wastewater to and from retention areas or any areas where treatment is designated to occur. The collection of stormwater and wastewater does not include treatment except where incidental to conveyance (40 CFR 280.12).
- **Surface Impoundment** - a natural topographic depression, manmade excavation, or diked area formed primarily of earthen materials (although may be lined with manmade materials) that is not an injection well (40 CFR 280.12).
- **Tank** - a stationary device designed to contain an accumulation of regulated substances and constructed of nonearthen materials (e.g. concrete, steel, plastic) that provide structural support (40 CFR 280.12).
- **Toxic Chemical** - a chemical or chemical category listed in 40 CFR 372.65 [see the column titled Toxic chemicals in Table 2-1] (40 CFR 372.3).
- **Underground Area** - an underground room such as a basement, cellar, shaft, or vault providing enough space for physical inspection of the exterior of the tank situated on or above the surface of the floor (40 CFR 280.12).
- **Underground Release** - any below ground release (40 CFR 280.12).
- **Underground Storage Tank (UST)** - any one or a combination of tanks (including underground pipes connected thereto) that is used to contain an accumulation of regulated substances, and the volume of which (including the volume of underground pipes connected thereto) is 10 percent or more beneath the surface of the ground. This term does not include any: (40 CFR 280.12)
  1. farm or residential tank of 1100 gal [4163.95 L] or less capacity used for storing motor fuel for noncommercial purposes
  2. tank used for storing heating oil for consumptive use on the premises where stored
  3. septic tanks
  4. pipeline facility (including gathering lines) which are regulated by other acts
  5. surface impoundment, pit, pond, or lagoon
  6. stormwater or waste water collection system
  7. flow-through process tank
  8. liquid trap or associated gathering lines directly related to oil or gas production and gathering operations
  9. storage tank situated in an underground area if the storage tank is situated upon or above the surface of the floor such as basements or tunnels
  10. tanks holding 110 gal [106.21 L] or less, or
  11. emergency spill and overfill tanks.

(NOTE: The definition of UST does not include any pipes connected to any tank which is described in para (1) through (9) of this definition.)

- *Upgrade* - the addition or retrofit of some systems such as cathodic protection, lining, or spill and overfill controls to improve the ability of a UST system to prevent the release of product (40 CFR 280.12).
- *UST System or Tank System* - UST, connected underground piping, underground ancillary equipment, and containment system, if any (40 CFR 280.12).
- *Vapor Pressure* - the pressure, measured in psia exerted by a volatile liquid (29 CFR 1910.106(a)(30))
- *Wastewater Treatment Tank* - a tank that is designed to receive and treat influent wastewater through physical, chemical, or biological methods (40 CFR 280.12).

## HAZARDOUS MATERIALS MANAGEMENT

### GUIDANCE FOR CHECKLIST USERS

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	<b>REFER TO CHECKLIST ITEMS:</b>	<b>CONTACT THESE PEOPLE OR GROUPS:(a)</b>	<b>REFER TO PAGE NUMBER:</b>
All Installations	HM.1 through HM.16	(1)(2)(3)(4)(5)(6)	2-21
Personnel Training	HM.17 through HM.19	(1)(3)(5)	2-29
Emergency Planning	HM.20 through HM.31	(1)(2)(3)(4)(6)	2-31
Releases of Hazardous Materials	HM.32 through HM.35	(1)(2)(3)(4)	2-37
Hazardous Materials in Laboratories	HM.36 through HM.39	(1)(2)	2-40
Flammable/Combustible Liquids Storage			
General	HM.40 through HM.48	(1)(2)	2-43
Industrial Areas	HM.49 through HM.51	(1)(2)	2-48
Tanks	HM.52 through HM.56	(1)(2)(3)	2-50
Compressed Gases Storage	HM.57 through HM.59	(1)(2)	2-52
Substandard Hazardous Substance USTs	HM.60	(1)	2-54
New or Upgraded Hazardous Substance USTs	HM.61 through HM.65	(1)(2)(3)	2-55

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**(a) CONTACT/LOCATION CODE:**

- (1) Base Civil Engineering (BCE)/Environmental Management (EM)
- (2) Base Disaster Preparedness Office (BDPO)
- (3) Fire Department
- (4) Base Supply (LGS)
- (5) Bioenvironmental Engineering (BEE)
- (6) Safety Office
- (7) Transportation Officer (LGT)

## GUIDANCE FOR CHECKLIST USERS (continued)

	REFER TO CHECKLIST ITEMS:	CONTACT THESE PEOPLE OR GROUPS:(a)	REFER TO PAGE NUMBER:
Hazardous Substance UST Filling	HM.66 and HM.67	(1)(2)(3)	2-57
Corrosion Protection and Repairs for Hazardous Substance USTs	HM.68 and HM.69	(1)(2)	2-57
Release Detection for Hazardous Substance USTs	HM.70 and HM.71	(1)(2)	2-59
Hazardous Substance UST Releases	HM.72 through HM.80	(1)(2)(3)(4)	2-61
Deferred UST Systems	HM.81	(1)(2)	2-65
Hazardous Substance UST Documentation	HM.82 through HM.84	(1)(2)	2-66
Changes in Service or Closure of Hazardous Substance USTs	HM.85 through HM.90	(1)(2)	2-66
Transportation of Hazardous Materials	HM.91 through HM.98	(1)(2)(4)(6)(7)	2-68

**(a) CONTACT/LOCATION CODE:**

- (1) Base Civil Engineering (BCE)/Environmental Management (EM)
- (2) Base Disaster Preparedness Office (BDPO)
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## **HAZARDOUS MATERIALS MANAGEMENT**

### **Records to Review During an ECAMP Assessment**

- Hazardous Substance Spill Control and Contingency Plan
- Spill records
- Emergency plan documents
- MSDSs
- Inventory records
- Hazardous substance release reports
- Shipping papers

### **Physical Features to Inspect During an ECAMP Assessment**

- Hazardous material storage areas
- Shop activities
- Shipping and receiving area

### **People to Interview During an ECAMP Assessment**

- Base Civil Engineer
- Base Disaster Preparedness Officer (BDPO)
- Base Fire Department
- Base Supply
- Bioenvironmental Engineer
- Safety Officer
- Transportation Officer



**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL INSTALLATIONS</b></p> <p><b>HM.1.</b> Actions or changes since previous review of hazardous materials management should be examined (MP).</p> <p><b>HM.2.</b> Copies of all relevant Federal, state, and local regulations on hazardous materials management are required to be maintained at the installation (AFR 19-1, para 11f).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous compliance report. (1)(2)</p> <p>Verify that the following documents are maintained and kept current at the base: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance with Pollution Standards.</i></li> <li>- 29 CFR 1910, <i>Occupational Safety and Health Standards.</i></li> <li>- 40 CFR 112, <i>Oil Pollution Prevention.</i></li> <li>- 40 CFR 280, <i>Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks.</i></li> <li>- 40 CFR 300, <i>National Oil and Hazardous Substances Pollution Contingency Plan.</i></li> <li>- 40 CFR 302, <i>Reportable Quantities of Hazardous Materials (Table 302.4).</i></li> <li>- 40 CFR 355, <i>Emergency Planning and Notification.</i></li> <li>- 40 CFR 370, <i>Hazardous Chemical Reporting: Community Right-To-Know.</i></li> <li>- 40 CFR 372, <i>Toxic Chemical Release Reporting: Community Right to Know.</i></li> <li>- 49 CFR 171, <i>General Information, Regulations, and Definitions.</i></li> <li>- 49 CFR 172, <i>Hazardous Materials Tables, Special Provisions, Hazardous Materials Communication Requirements and Emergency Response Information Requirements.</i></li> </ul> <p>Verify that the Base Staff Judge Advocate reviews Federal, state, and local laws that may affect ongoing and proposed activities and keeps the EPC informed as needed. (1)(2)</p>

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**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.3.</b> Copies of all relevant DOD and USAF directives, and guidance documents on hazardous materials management should be maintained at the installation (MP).</p> <p><b>HM.4.</b> Installations are required to comply with state and local hazardous materials management regulations and compliance agreements negotiated with Federal, state, and local governments (EO 12088, Section 1-1).</p>	<p>Verify that the following documents are maintained and kept current at the base: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> <li>- DODR 4145.19-1, Chapter 5, Section 4, <i>Hazardous Commodities</i>.</li> <li>- AFI 32-4002, <i>Hazardous Material Emergency Planning and Response Compliance</i>.</li> <li>- AFI 32-7044, <i>Storage Tank Compliance</i>.</li> <li>- AFR 19-1, <i>Pollution Abatement and Environmental Quality</i>.</li> <li>- AFR 19-8, <i>Environmental Protection Committee and Environmental Reporting</i>.</li> <li>- AFR 75-2, <i>Defense Traffic Management Regulation</i></li> <li>- AFM 67-1, Vol. 2, Part Two, Chapter 14, <i>Storage and Related Operations</i></li> <li>- AFM 67-1, Vol. 2, Part Two, Chapter 21, <i>Special Logistic Support Procedures</i></li> <li>- International Civil Aviation Organization, <i>Technical Instructions for the Safe Transport of Dangerous Goods by Air</i></li> <li>- International Maritime Organization, <i>International Maritime Dangerous Goods Code</i></li> <li>- Policy Letters</li> <li>- NFPA, <i>Fire Protection Guide of Hazardous Materials</i>.</li> </ul> <p>Verify that the installation is complying with state and local hazardous materials management requirements. (1)</p> <p>Verify that the installation is operating according to permits or plans issued or approved by state or local agencies. (1)</p> <p>(NOTE: Issues which are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- transportation of hazardous materials</li> <li>- storage of hazardous materials</li> <li>- release reporting requirements</li> <li>- emergency planning</li> <li>- spill management</li> <li>- handling of wastewater and sludge from hazardous substance tank cleaning</li> <li>- use of product recovery systems</li> <li>- containment on hazardous substance USTS</li> <li>- hazardous substance UST operational standards</li> <li>- hazardous substance UST permitting requirements</li> <li>- hazardous substance UST replacement and removal schedules</li> <li>- hazardous substance UST cathodic protection requirements</li> <li>- hazardous substance UST alarm system requirements.)</li> </ul> <p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreement. (1)(2)</p>

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**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.5.</b> Installations will meet regulatory and AF requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding.)</p> <p><b>HM.6.</b> The installation is required to have a comprehensive list of all chemicals used or generated on the installation and an assessment of their hazards (AFM 67-1, Volume 2, part two, Chapter 14 and 21).</p> <p><b>HM.7.</b> The installation should coordinate with the fire department concerning the types of hazardous chemicals used at the installation, the areas where they are used, what they are used for, and the quantities used in a given operation (MP).</p>	<p>Determine if any new regulations concerning hazardous materials have been issued since the finalization of the manual. (1)(2)(3)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)</p> <p>Verify that a comprehensive list has been generated and the hazards assessed. (1)(2)(4)</p> <p>(NOTE: Hazardous constituents of expired materials discovered during the inventory process, or at any other time, should be identified prior to disposal, see appropriate checklist items in the Section 3, titled <i>Hazardous Waste Management</i>.)</p> <p>Verify that the fire department is aware of areas that are at high risk for chemical incidents. (3)</p>

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**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.8.</b> Installations are required to have a written Oil and Hazardous Substance Pollution Contingency Plan (OHSPC) that is reviewed annually by the EPC (AFR 19-1, para 11e(3) and AFR 19-8, para 3c(3)).</p>	<p>(NOTE: This same plan may be necessary for evaluating oil-related operations in Section 7, titled <i>POL Management</i> and may also be known as the Installation Spill Contingency Plan (ISCP).)</p> <p>Examine and review the OHSPC Plan for the following items: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> <li>- a list of all areas where hazardous substances are stored</li> <li>- one individual or department that is designated to initiate the spill response</li> <li>- phone numbers of Federal, state, and local agencies that must be notified when a spill occurs</li> <li>- contacts for agencies that provide emergency advice and assistance (e.g., Chemical Transportation Emergency Center [CHEMTREC], 1-800-424-9300)</li> <li>- personnel decontamination procedures to be followed after the spill has been cleaned up.</li> </ul> <p>Verify that the following criteria are met by interviewing personnel from Base Supply, the Fire Department, Safety Department, and Civil Engineering: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> <li>- the plan is written, reviewed, and made available to other departments on the base</li> <li>- the plan is rehearsed through periodic drills and demonstrations</li> <li>- materials and equipment are needed to manage a spill as specified in the plan readily available. Items should include: <ul style="list-style-type: none"> <li>- respiratory protection</li> <li>- absorbents</li> <li>- ear and eye protection</li> <li>- spill kits</li> <li>- protective clothing</li> <li>- neutralizers</li> </ul> </li> <li>- response materials and protective clothing are readily available</li> <li>- emergency medical procedures and first aid materials as specified in the plan are available.</li> <li>- hazard control materials that are listed in the plan are available, including items such as: <ul style="list-style-type: none"> <li>- hazard signs and labels</li> <li>- rope, wire, and tape</li> <li>- monitors and survey meters.</li> </ul> </li> </ul> <p>Verify that the EPC reviews the plan annually. (1)(2)(3)(4)</p> <p>(NOTE: This plan will be a part of the HAZMAT Plan.)</p>

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**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.9.</b> Each installation is required to publish a hazardous material (HAZMAT) plan and a HAZMAT appendix to Annex A to O Plan 32-1 (AFI 32-4002, para 2.5)</p>	<p>Verify that the HAZMAT plan and HAZMAT appendix provides guidance to base personnel on local procedures for handling of known and unknown HAZMAT. (1)(2)(5)</p> <p>Verify that the plan: (1)(2)</p> <ul style="list-style-type: none"> <li>- identifies the total resources needed (personnel and equipment) to remove to the maximum extent practicable a worst-case HAZMAT release (including releases resulting from fire or explosion)</li> <li>- identifies the resources necessary to reduce or prevent the substantial threat of a worst-case release</li> <li>- identifies the qualified individual having full authority to oversee the removal of HAZMAT from a site</li> <li>- is consistent with off-base plans such as the Federal Response Plan, the Regional Response Plan, the National Contingency Plan, the Regional Contingency Plans, and area local contingency plans.</li> </ul> <p>Verify that the HAZMAT Plan and HAZMAT Appendix are reviewed and approved by the EPC at least annually. (1)(2)(3)</p> <p>Verify that a professional engineer certifies the HAZMAT plan at least every 3 yr.</p> <p>Verify that the installation has sent a copy of the current plan to the appropriate local and state emergency planning committees and to other non-Air Force agencies or organizations as necessary. (1)(2)</p> <p>(NOTE: This plan and appendix contains the SPCC Plan and the OHSPC Plan.)</p> <p>(NOTE: See Table 2-2 for a list of the recommended contents.)</p>
<p><b>HM.10.</b> In specific circumstances installations are required to have a copy of the AF Multi-Product Emergency Response Plan (AFI 32-4002, para 2.5.7).</p>	<p>Verify that AF installations along predesignated routes for the commercial shipment of nitrogen tetroxide and liquid fluorine have a copy of this plan. (1)</p>

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**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.11.</b> Installations may not allow the storage of non-DOD owned toxic or hazardous materials onsite (DOD Directive 6050.8, para D).</p>	<p>Verify that the installation does not allow the storage of non-DOD owned toxic or hazardous materials onsite. (1)(6)</p> <p>(NOTE: This does not apply to:</p> <ul style="list-style-type: none"> <li>- agreements with General Services Administration for the storage of strategic and critical materials in the National Stockpile Program</li> <li>- agreements between DOD components and other Federal agencies for temporary storage or disposal of explosives</li> <li>- emergency lifesaving assistance to civil authorities involving the temporary storage or disposal of explosives</li> <li>- excess explosives generated under a DOD contract</li> <li>- arrangements with the Department of energy for the temporary storage of nuclear materials, or nonnuclear classified materials</li> <li>- military resources used during peacetime civil emergencies</li> <li>- assistance and refuge for commercial carriers carrying material of other Federal agencies during transportation emergencies.)</li> </ul>
<p><b>HM.12.</b> Specific persons should be designated responsible for hazardous materials storage areas and the precise nature of their responsibilities should be specified (MP).</p>	<p>Verify that specific individuals have been designated responsible for hazardous materials storage areas. (2)(3)</p> <p>Verify that the individuals designated responsible for hazardous materials storage areas are aware of the precise nature of their responsibilities. (1)(2)</p>
<p><b>HM.13.</b> Installations required to perform specific risk management activities relating to hazardous materials (AFI 32-4002, para 2.4).</p>	<p>Verify that the installation actively performs risk management activities such as the following: (1)</p> <ul style="list-style-type: none"> <li>- probability of a release is lessened by systems, equipment, or procedures already in place</li> <li>- probability of a releases or minimization of a release is achieved through operational or storage procedures</li> <li>- safer HAZMAT substitutes are used</li> <li>- methods are implemented to reduce the volumes of HAZMAT used.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.14.</b> Facilities are required to have on file an MSDS for each hazardous chemical stored and used at the facility (29 CFR 1910.1200(b)(3)(ii), 1910.1200(b)(4)(ii), 1910.1200(b)(6), 1910.1200(g)(1), and 1910.1200(g)(8)).</p>	<p>Verify that an MSDS is on file and readily accessible to workers on all shifts in the workplace for each hazardous material stored or used. (1)(2)</p> <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- tobacco or tobacco products</li> <li>- wood or wood products</li> <li>- articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that:               <ul style="list-style-type: none"> <li>- is formed to a specific shape or design during manufacture</li> <li>- has end use functions dependent in whole or in part upon its shape or design during end use</li> </ul> </li> <li>- food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel</li> <li>- any drug as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration</li> <li>- cosmetics which are packaged for sale or intended for personal use</li> <li>- any consumer product or hazardous substance as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i> where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers.</li> <li>- ionizing and nonionizing radiation</li> <li>- biological hazards)</li> </ul> <p>(NOTE: This requirement applies to laboratories. It also applies to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use.)</p>
<p><b>HM.15.</b> Containers of hazardous chemicals in the workplace are required to be labeled, tagged, or marked with specific information (29 CFR 1910.1200(b)(3)(i), 1910.1200(b)(4)(i), 1910.1200(b)(5), and 1910.1200(f)(5) through 1910.1200(f)(7)).</p>	<p>Verify that all containers of hazardous chemicals in the workplace are labeled with the following information: (1)(2)</p> <ul style="list-style-type: none"> <li>- identity of the hazardous chemical</li> <li>- appropriate hazard warnings.</li> </ul> <p>(NOTE: The facility may use signs, placards, process sheets, batch tickets, operating procedures, or other written materials instead of attached labels to individual stationary process containers as long as the alternate method identifies the containers to which it is applicable.)</p> <p>(NOTE: Portable containers into which hazardous chemicals are transferred from labeled containers and which are intended only for the immediate use of the employee who performs the transfer are not required to be marked.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>HM.15. (continued)</b>	<p>(NOTE: This requirement also applies to laboratories. It also applies to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions.)</p> <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- tobacco or tobacco products</li> <li>- wood or wood products</li> <li>- articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that:               <ul style="list-style-type: none"> <li>- is formed to a specific shape or design during manufacture</li> <li>- has end use functions dependent in whole or in part upon its shape or design during end use</li> </ul> </li> <li>- food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel</li> <li>- any drug as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration</li> <li>- cosmetics which are packaged for sale or intended for personal use</li> <li>- any consumer product or hazardous substance as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i> where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers.</li> <li>- ionizing and nonionizing radiation</li> <li>- biological hazards.)</li> </ul>
<b>HM.16.</b> Specific house-keeping requirements must be met in areas where hazardous materials are stored (29 CFR 1910.176(c)).	<p>Verify that areas where hazardous materials are stored and/or used around the facility are free from accumulations of materials that create a hazard from tripping, fire, explosion, or pest harborage. (1)(3)(5)</p> <p>(NOTE: The following are suggested housekeeping practices:</p> <ul style="list-style-type: none"> <li>- drums/containers are not leaking and are tightly sealed</li> <li>- drip pans and/or absorbent material are placed under containers</li> <li>- dispensing areas are located away from catch basins and storm drains.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PERSONNEL TRAINING</b></p> <p><b>HM.17.</b> Facilities are required to have a written hazardous communication program that is designed to provide all employees with information about the hazardous chemicals to which they are exposed (29 CFR 1910.1200(b)(6), and 1910.1200(e)(1))</p>	<p>Verify that there is a written hazard communication program that contains the following: (1)(3)(5)</p> <ul style="list-style-type: none"> <li>- how general training will be done to inform employees of issues such as MSDSs and hazardous materials labels and other warning signs</li> <li>- a list of the hazardous chemicals known to be present (can be done for the entire workplace or individual work areas)</li> <li>- the methods the facility will use to inform the employees of the hazards associated with nonroutine tasks and the hazards associated with chemicals contained in unlabeled pipes in their work areas               <ul style="list-style-type: none"> <li>- identity of the hazardous chemicals contained</li> <li>- appropriate hazard warning</li> </ul> </li> <li>- details of employee training.</li> </ul> <p>(NOTE: This requirement also applies to laboratories and to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions.)</p> <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- tobacco or tobacco products</li> <li>- wood or wood products</li> <li>- articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that:               <ul style="list-style-type: none"> <li>- is formed to a specific shape or design during manufacture</li> <li>- has end use functions dependent in whole or in part upon its shape or design during end use</li> </ul> </li> <li>- food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel</li> <li>- any drug as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration</li> <li>- cosmetics which are packaged for sale or intended for personal use</li> <li>- any consumer product or hazardous substance as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i> where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers.</li> <li>- ionizing and nonionizing radiation</li> <li>- biological hazards.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.18.</b> Personnel working with hazardous materials are required to be trained in their proper use and potential hazards (29 CFR 1910.1200(b)(3)(iii), 1910.1200(b)(4)(iii), 1910.1200(b)(6), and 1910.1200(h)).</p>	<p>Verify that employees are provided with information and trained on hazardous chemicals in their workplace at the time of initial assignment and whenever a new hazard is introduced into the workplace. (1)(3)(5)</p> <p>Verify that employees are informed of the following: (1)(3)(5)</p> <ul style="list-style-type: none"> <li>- any operations in their work areas where hazardous chemicals are present</li> <li>- the location and availability of the written hazard communication program, including the required lists of hazardous chemicals and MSDSs.</li> </ul> <p>Verify that training includes: (1)(3)(5)</p> <ul style="list-style-type: none"> <li>- methods and observations to use to detect a release</li> <li>- the physical and health hazards of the chemicals in the work areas</li> <li>- protective measures and procedures to use</li> <li>- the details of the hazard communication program developed by the facility, including an explanation of the labeling system, MSDSs, and how employees can obtain and use the appropriate hazard information.</li> </ul> <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- tobacco or tobacco products</li> <li>- wood or wood products</li> <li>- articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that:               <ul style="list-style-type: none"> <li>- is formed to a specific shape or design during manufacture</li> <li>- has end use functions dependent in whole or in part upon its shape or design during end use</li> </ul> </li> <li>- food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel</li> <li>- any drug as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration</li> <li>- cosmetics which are packaged for sale or intended for personal use</li> <li>- any consumer product or hazardous substance as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i> where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers.</li> <li>- ionizing and nonionizing radiation</li> <li>- biological hazards.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.21.</b> Major installations are required to have a HAZMAT response team or a HAZMAT response capability (AFI 32-4002, para 3.1).</p>	<p>Verify that the fire department forms the core of the HAZMAT response team. (3)</p> <p>Verify that the installation has identified the specific roles and responsibilities of each organization that responds to a HAZMAT incident. (1)(3)</p> <p>Verify that the team is able to effectively respond and contain a HAZMAT release to percent or reduce: (3)</p> <ul style="list-style-type: none"> <li>- human injury or death</li> <li>- property damage</li> <li>- product loss</li> <li>- environmental damage.</li> </ul>
<p><b>HM.22.</b> Each AF installation is required to have a HAZMAT post-emergency response team or capability (AFI 32-4002, para 3.2).</p>	<p>Verify that each AF installation has a HAZMAT postemergency response team or capability. (1)(3)</p> <p>(NOTE: If the installation decides to contract all clean-up operations, they only need an advisory group.)</p>
<p><b>HM.23.</b> The expertise of the installation emergency response planners should be offered to the regional, state, and local community for the development of state and local plans (HQ USAF/CVA Policy Letter. AF Implementation of Title 3 of SARA, 14 January 91).</p>	<p>Discuss with EPCRA point of contact the interaction of the installation with regional, state, and local emergency planning activities. (6)</p> <p>Determine if unique AF expertise has been offered, including: (3)(6)</p> <ul style="list-style-type: none"> <li>- fire fighting</li> <li>- explosive ordinance disposal</li> <li>- hazardous materials transportation</li> <li>- others on base.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.24.</b> The installation HAZMAT planning team is required to conduct hazard analyses to identify the specific hazards that a HAZMAT release might bring to a base and local community (AFI 32-4002, para 2.2).</p>	<p>Verify that hazard analysis are done and includes: (1)(3)</p> <ul style="list-style-type: none"> <li>- identifying structures, equipment, and procedures to prevent releases and any related deficiencies</li> <li>- assessing the worst-case oil (fuel) discharge from all on-base and off-base AF facilities</li> <li>- identifying the type of hazard</li> <li>- determining the extent of hazard</li> <li>- determining the probability of injury from HAZMAT stored at or above the screening quantity identified in Table 2-4</li> <li>- discussing HAZMAT incidents that the planning team has not assessed, such as transporting vehicles carrying HAZMAT, HAZMAT occurring below the specific screening quantity and contractors using HAZMAT.</li> </ul>
<p><b>HM.25.</b> Installations are required to conduct a capability assessment in relation to emergency planning (AFI 32-4002, para 2.3).</p>	<p>Verify that the installation has done a capability assessment that: (1)</p> <ul style="list-style-type: none"> <li>- identifies base and local community resources available for responding to a HAZMAT release</li> <li>- determines whether the installation needs additional resources to respond effectively</li> <li>- assess personnel, evacuation, personal protective equipment, monitoring, release control and containment, decontamination, laboratory support, cleanup, and recovery.</li> </ul> <p>Verify that local community resources, including commercial resources, have been identified. (1)(3)</p> <p>Verify that identified HAZMAT capability deficiencies are tracked until a corrective action is implemented. (1)(3)</p>
<p><b>HM.26.</b> The installation is required to have a mutual aid agreement when using local community HAZMAT capabilities (AFI 32-4002, para 2.3.2.1).</p>	<p>Determine if the installation uses local community HAZMAT capabilities. (1)</p> <p>Verify that a mutual aid agreement has been set up, including HAZMAT emergency response provisions. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.27.</b> Installations where there are extremely hazardous substances present in amounts equal to or greater than the threshold limits found in Table 2-1 are required to follow specific emergency planning procedures (EO 12856; 40 CFR 355.30, and Part 355 Appendix A).</p>	<p>Determine if the installation has any of the items listed in Table 2-1 as extremely hazardous substances in amounts equal to or greater than those listed in Table 2-1. (1)(4)</p> <p>Verify that the installation has notified the state emergency response commission, or Governor if there is not emergency response commission, that the installation is subject to emergency planning requirements within 60 days after the installation first becomes subject to these requirements. (2)(6)</p> <p>Determine whether the installation has representatives for contact by internal and external parties (i.e., Base Disaster Preparedness Officer, Base Environmental Coordinator, Base Safety Officers, Fire Chiefs, or other representative appropriate for the installation). (2)(6)</p> <p>Verify that the installation has notified the local emergency planning committee, or Governor if there is no committee, of the installation representative on or before 3 March 1994. (2)</p> <p>Verify that the base is actively participating in off-base planning by interviewing the installation point of contact and reviewing the files. (2)(6)</p> <p>Verify that a procedure is in place to notify the local emergency planning committee of changes at the installation that are relevant to emergency planning. (2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.28.</b> Installations which are required to prepare or have available an MSDS for a hazardous chemical under OSHA are required to meet specific MSDS reporting requirements for planning purposes (EO 12856; 40 CFR 370.20, 370.21, and 370.28).</p>	<p>Verify that MSDSs sheets are submitted to the emergency commission and the fire department with jurisdictions over the installation for each hazardous chemical present at the installation according to the following thresholds by 3 August 1994: (3)</p> <ul style="list-style-type: none"> <li>- for all hazardous chemicals present at the installation at any one time in amounts equal to or greater than 10,000 lb (4540 kg) (not all hazardous chemicals requiring an MSDS are listed in Table 2-1)</li> <li>- for all extremely hazardous substances present at the installation in amounts greater than or equal to 500 lb (227 kg) or the threshold planning quantity (see Table 2-1).</li> </ul> <p>(NOTE: Commonly overlooked substances requiring an MSDS are propane and petroleum based fuels.)</p> <p>Verify that if the installation has not submitted MSDSs, the following have been submitted: (4)</p> <ul style="list-style-type: none"> <li>- a list of hazardous chemicals for which the MSDS is required, grouped by hazard category</li> <li>- the chemical or common name of each hazardous chemical</li> <li>- any hazardous component of each hazardous chemical except when reporting mixture.</li> </ul> <p>Verify that revised MSDS sheets are provided within 3 mo after the discovery of significant new information concerning the hazardous chemical. (4)</p> <p>(NOTE: The installation may fulfill these reporting requirements for a hazardous chemical that is a mixture of hazardous chemicals by doing one of the following:</p> <ul style="list-style-type: none"> <li>- providing the required information on each component in the mixture which is a hazardous chemical</li> <li>- providing the required information on the mixture itself.)</li> </ul>

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<p><b>HM.29.</b> Installations which are required to prepare or have available an MSDS for a hazardous chemical under OSHA are required to meet specific inventory reporting requirements for planning purposes (EO 12856; 40 CFR 370.20, 370.25 and 370.28).</p> <p><b>HM.30.</b> As of 1 July 1995 installations that manufacture, process, or otherwise use a toxic chemical (see Table 2-1) in excess of applicable threshold quantities and that have 10 or more employees or are in the Standard Industrial Codes 20 - 39 are subject to certain reporting and record keeping requirements (EO 12856, 40 CFR 372.22 through 372.30).</p>	<p>Verify that the Tier I (or Tier II) forms are submitted to the emergency commission and the fire department with jurisdictions over the installation for each hazardous chemical present at the installation according to the following thresholds by 1 March 1995 and annually thereafter: (3)</p> <ul style="list-style-type: none"> <li>- for all hazardous chemicals present at the installation at any one time in amounts equal to or greater than 10,000 lb (4540 kg) (not all hazardous chemicals requiring an MSDS are listed in Table 2-1)</li> <li>- for all extremely hazardous substances present at the installation in amounts greater than or equal to 500 lb (227 kg) or the threshold planning quantity (see Table 2-1).</li> </ul> <p>(NOTE: Commonly overlooked substances requiring an MSDS are propane and petroleum based fuels.)</p> <p>(NOTE: The installation may fulfill these reporting requirements for a hazardous chemical that is a mixture of hazardous chemicals by doing one of the following:</p> <ul style="list-style-type: none"> <li>- providing the required information on each component in the mixture which is a hazardous chemical</li> <li>- providing the required information on the mixture itself.)</li> </ul> <p>Determine if installations meeting the listed criteria exceed the following threshold levels: (3)</p> <ul style="list-style-type: none"> <li>- has manufactured or processed 25,000 lb/yr [11,337.31 kg/yr] of toxic chemicals</li> <li>- has used 10,000 lb [4540 kg] of toxic chemicals in other ways during the year.</li> </ul> <p>(NOTE: Articles containing toxic chemicals are not included in calculations of total toxic chemical present at the installation. See 40 CFR 372.30(b)(3) for procedure to determine whether an excess has occurred.)</p> <p>Verify that installations annually submit a completed USEPA Form R to the USEPA and state on or before 1 July of the next year. (3)</p> <p>Verify that installations retain the following records for 3 yr: (3)</p> <ul style="list-style-type: none"> <li>- a copy of each report submitted</li> <li>- all supporting materials and documentation used to make the compliance determination.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.31.</b> AF Installations are not required to fill out USEPA Form 9350-1, Toxic Chemical Release Inventory Reporting Form. It is encouraged that installations using toxic chemicals maintain appropriate information for those toxic chemicals used in quantities that exceed the established threshold quantities (HQ USAF/CVA Policy Letter, AF Implementation of Title III of SARA, 14 January 91).</p> <p><b>RELEASES OF HAZARDOUS MATERIALS</b></p> <p><b>HM.32.</b> Installations must report uncontrolled releases of hazardous substances that may pose a threat to the well-being of installation personnel and offsite neighbors to the State Emergency Response Commission and the local Emergency Planning Committee (HQ USAF/CVA Policy Letter, AF Implementation of Title III of SARA, 14 January 91).</p>	<p>Verify that information includes the following: (2)(6)</p> <ul style="list-style-type: none"> <li>- whether the toxic chemical at the installation is manufactured, processed, or used otherwise and the general category or categories of use</li> <li>- an estimate of the maximum amounts (in ranges) of the toxic chemical present at the installation at any time during the preceding year</li> <li>- for each waste stream, the waste treatment or disposal methods employed, and an estimate of the treatment efficiency typically achieved</li> <li>- the annual quantity for toxic chemical entering each environmental medium.</li> </ul> <p>NOTE: Under EO 12856 AF installations are required to fill out USEPA Form 9350-1 starting 1 March 1995.)</p> <p>Verify that this reporting occurs when the release: (3)(4)</p> <ul style="list-style-type: none"> <li>- exceeds the reportable quantity for that substance</li> <li>- leaves the physical boundaries of the installation</li> <li>- may represent an imminent or substantial endangerment to public health or the environment.</li> </ul> <p>Verify that proper notification has been done by reviewing documentation (see Table 2-1). (3)(4)</p> <p>Verify that notification includes: (3)(4)</p> <ul style="list-style-type: none"> <li>- chemical name, or substance identity</li> <li>- whether the substance is on the USEPA list of hazardous substances</li> <li>- the approximate quantity released</li> <li>- the time and duration of the release</li> <li>- the medium into which the release occurred</li> <li>- any known or associated health effects due to the emergency and any medical attention needed.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.32. (continued)</b></p> <p><b>HM.33.</b> Releases in excess or equal to reportable quantities of hazardous substances shall be reported to the NRC immediately by the installation, per MAJCOM delegation (40 CFR 302.1 through 302.6).</p> <p><b>HM.34.</b> Installations with releases that are continuous and stable in quantity and rate are required to meet limited notification requirements (40 CFR 302.8).</p>	<p>(NOTE: Immediate notification to the NRC is required for extremely hazardous substances and substances subject to emergency notification if the substance exceeds the reportable quantity under CERCLA Section 103(a) regardless of whether the release goes beyond the installation boundaries. If there is no set reportable quantity, it is 1 lb.)</p> <p>Verify that spills in excess of the reportable quantities listed in Table 2-1 have been reported. (3)(4)</p> <p>Verify that a procedure is in place for the notification of the NRC immediately after becoming aware of the release. (3)(4)</p> <p>Verify that if mixtures or solutions of hazardous substances are released, except for radionuclides, it is reported when: (4)</p> <ul style="list-style-type: none"> <li>- the quantity of all hazardous constituents of the mixture or solution is known and a reportable quantity or more of any hazardous constituent is released</li> <li>- the quantity of one or more of the hazardous constituents of the mixture or solution is unknown and the total amount of the mixture or solution released equals or exceeds the reportable quantity for the hazardous constituent with the lowest reportable quantity.</li> </ul> <p>(NOTE: Notification requirements for radionuclide releases are not included in this protocol.)</p> <p>Determine if the installation has any releases that are continuous and stable in quantity and rate. (2)(4)</p> <p>Verify that the following notifications have been given: (4)</p> <ul style="list-style-type: none"> <li>- initial telephone notification</li> <li>- initial written notification within 30 days of the initial telephone notification</li> <li>- follow-up notification within 30 days of the first anniversary date of the initial written notification of changes in: <ul style="list-style-type: none"> <li>- the composition or source of the release</li> <li>- information submitted in the initial written notification</li> <li>- the follow-up notification required on the first anniversary date of the initial written notification</li> </ul> </li> <li>- notification when there is an increase in the quantity of the hazardous substances being released in any 24 h period that represents a statistically significant increase.</li> </ul>

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**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.36. (continued)</b></p>	<p>Verify that the plan includes the following elements and indicates specific measures to be taken when laboratory work involves the use of hazardous chemicals: (1)</p> <ul style="list-style-type: none"> <li>- standard operating procedures relevant to safety and health considerations to be followed</li> <li>- criteria that will be used to determine and implement control measures to reduce employee exposure to hazardous chemicals including the engineering controls, the use of personal protective equipment and hygiene practices</li> <li>- a requirement that fume hoods and other protective equipment are functioning properly and specific measures taken to ensure proper and adequate performance of the equipment</li> <li>- provisions for employee information and training</li> <li>- circumstances and situations which require prior approval from a designated individual</li> <li>- provisions for medical consultations and medical exams</li> <li>- designation of individuals responsible for the implementation of the plan</li> <li>- assignment of a Chemical Hygiene Officer and, if appropriate, establishment of a Chemical Hygiene Committee</li> <li>- provisions for additional employee protection when working with particularly hazardous substances, including, select carcinogens, reproductive toxins and substances which have a high degree of acute toxicity. Provisions might include:               <ul style="list-style-type: none"> <li>- establishment of a designated area</li> <li>- use of containment devices such as fume hoods or glove boxes</li> <li>- procedures for safe removal of contaminated waste</li> <li>- decontamination procedures.</li> </ul> </li> </ul> <p>Verify that the plan is reviewed annually and updated as needed. (1)(2)</p>
<p><b>HM.37.</b> Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to provide employees with information and training concerning the hazards of the chemicals in their work areas (29 CFR 1910.1450(f)).</p>	<p>Verify that information about the hazards of the chemicals in the work area is provided at the time of initial employment and prior to assignment involving new exposure risks. (1)(2)</p> <p>(NOTE: The frequency of refresher training is to be determined by the facility.)</p> <p>Verify that employees are informed of: (1)(2)</p> <ul style="list-style-type: none"> <li>- the requirements to be trained and informed</li> <li>- the location and availability of the Chemical Hygiene Plan</li> <li>- the permissible exposure limits for OSHA regulated substances or recommended exposure levels for other hazardous chemicals where there is no OSHA limit</li> <li>- signs and symptoms associated with exposure</li> <li>- the location and known availability of known reference material such as an MSDS.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>HM.37. (continued)</b>	<p>Verify that training includes: (1)(2)</p> <ul style="list-style-type: none"> <li>- methods and observations that may be used to detect the presence of or release of a hazardous chemical</li> <li>- the physical and health hazards of chemicals in the work area</li> <li>- the measures employees can take to protect themselves</li> <li>- applicable details of the Chemical Hygiene Plan.</li> </ul>
<p><b>HM.38.</b> Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to follow specific handling and operating procedures (29 CFR 1910.1450(h)).</p>	<p>Verify that labels on incoming containers of hazardous chemicals are not removed or defaced. (1)(2)</p> <p>Verify that material safety data sheets are maintained and readily accessible to lab employees. (1)</p> <p>Verify that if the facility is developing chemical substances, a determination is made as to whether or not it is a hazardous chemical if the composition of the chemical is known and the chemical is produced only for use by the laboratory. (1)</p> <p>Verify that if the facility is developing chemical substances as a byproduct and the composition is not known, it is assumed to be hazardous. (1)</p> <p>Verify that if the chemical substance is produced for another user outside of the lab, the lab meets the standards outlined in 29 CFR 1910.1200 (checklist items HM.14 and HM.15, HM.17 and HM.18). (1)</p>
<p><b>HM.39.</b> Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to maintain specific records (29 CFR 1910.1450(j)).</p>	<p>Verify that records of monitoring for employee exposure are maintained along with any medical records or test results. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>FLAMMABLE/ COMBUSTIBLE LIQUIDS STORAGE</b></p> <p><b>General</b></p> <p><b>HM.40.</b> Specific good management practices should be considered when storing and handling flammable/ combustible materials (GMP).</p>	<p>(NOTE: The requirements pertaining to the handling, storage and use of flammable/ combustible liquids with a flashpoint below 200 °F [93.33 °C] outlined through 29 CFR 1910.106 (checklist items HM.40 through HM.56) do not apply to the following:</p> <ul style="list-style-type: none"> <li>- bulk transportation of flammable/combustible liquids</li> <li>- storage, handling, and use of fuel oil tanks and containers connected with oil burning equipment</li> <li>- storage of flammable and combustible liquids on farms</li> <li>- liquids without a flashpoint that may be flammable under some conditions, such as halogenated hydrocarbons and mixtures containing halogenated hydrocarbons</li> <li>- mists, sprays, or foams, except in flammable aerosols</li> <li>- the following facilities when they meet NFPA Standards:               <ul style="list-style-type: none"> <li>- dry cleaning plants</li> <li>- manufacture of organic coatings</li> <li>- solvent extraction plants</li> <li>- stationary combustion engines and gas turbines (29 CFR 1910.106(j).)</li> </ul> </li> </ul> <p>Verify that the following good management practices are followed: (1)</p> <ul style="list-style-type: none"> <li>- there are no positive sources of ignition (open flames, welding, radial heat, mechanical sparks) in the immediate area</li> <li>- items are not stored against pipes or coils producing heat</li> <li>- paint drums that are stored horizontally are rolled a half turn every 90 days</li> <li>- containers of paint are palletized prior to storage</li> <li>- aerosol containers are stored in well-ventilated areas.</li> </ul> <p>Verify that containers are stored and handled such that: (1)</p> <ul style="list-style-type: none"> <li>- open flame devices are not in use in the storage area</li> <li>- combustible materials, other than wood pallets used in the storage of flammable/combustibles, are not stored in the storage facility</li> <li>- handling is done so as to avoid damaging the label</li> <li>- materials received without a date of manufacture label are marked with the shipping document date</li> <li>- leaking containers are removed from the storage are immediately</li> <li>- containers are stored so that they are issued or used in the order of dates of manufacture, with the material being the oldest used first</li> <li>- there are no open containers.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.41.</b> Drums and other containers of less than 60 gal [227.12 L] individual capacity and portable tanks less than 660 gal [2498.37 L] individual capacity used to store flammable or combustible materials are required to meet specific standards (29 CFR 1910.106(d)(1) and 1910.106(d)(2)).</p>	<p>Verify that flammable and combustible liquid containers meet the constraints outlined in Table 2-5 except that glass or plastic containers of no more than 1 gal [3.79 L] capacity may be used for a Class IA or IB flammable liquid if: (1)</p> <ul style="list-style-type: none"> <li>- the liquid would be rendered unfit for its intended use by contact with metal or would excessively corrode a metal container</li> <li>- the user's process either would require more than 1 pt [0.47 L] of a Class IA liquid or more than 1 qt [0.95 L] of a Class IB liquid of a single assay lot to be used at one time, or would require the maintenance of an analytical standard liquid of a quality which is not met by the specified standards of the liquids available, and the quantity of the analytical standard liquid required to be used in any one control process exceeds one-sixteenth the capacity of the container allowed under Table 2-5 for the class of liquid.</li> </ul> <p>Verify that each portable tank has one or more devices installed in the top with sufficient emergency venting capacity to limit internal pressure under fire exposure conditions to 10 psig or 30 percent of the bursting pressure of the tank, whichever is greater. (1)</p> <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> <li>- storage of containers in service stations, Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engine</li> <li>- flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days.)</li> </ul>
<p><b>HM.42.</b> Flammable or combustible liquids shall not be stored in ways that limit the use of exits, stairways, or areas normally used for the safe egress of people (29 CFR 1910.106(d)(5)(i)).</p>	<p>Verify that exits or common traffic routes are not blocked. (1)</p> <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> <li>- storage of containers in service stations, Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engine</li> <li>- flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days.)</li> </ul>
<p><b>HM.43.</b> Storage cabinets used for the storage of flammable/combustible liquids must meet specific requirements (29 CFR 1910.106(d)(3)).</p>	<p>Verify that storage cabinets meet the following: (1)</p> <ul style="list-style-type: none"> <li>- no more than 60 gal [227.12 L] of Class I or Class II liquids nor any more than 120 gal [454.23 L] of Class III liquids are stored in the cabinet</li> <li>- the cabinets are fire-resistant</li> <li>- cabinets are constantly closed and are conspicuously labeled <b>FLAMMABLE--Keep Fire Away.</b></li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.44.</b> Storage cabinets used for the storage of flammable/combustible liquids should meet specific requirements (GMP).</p> <p><b>HM.45.</b> Inside flammable/combustible storage rooms must meet certain specifications (29 CFR 1910.106(d)(4)).</p>	<p>Verify that storage cabinets meet the following: (1)</p> <ul style="list-style-type: none"> <li>- materials within the cabinet are segregated</li> <li>- there are no open containers within the cabinet</li> <li>- all containers in the cabinet are labeled.</li> </ul> <p>Verify that the facility's flammable/combustible storage facility meet the following: (1)(2)</p> <ul style="list-style-type: none"> <li>- the walls meet fire resistance test NFPA 251-1969</li> <li>- a 4 in. [10.16 cm] raised sill or ramp is provided to adjacent rooms or buildings, or the floor of the storage area is 4 in. [10.16 cm] lower than the surrounding floors</li> <li>- an open grated trench that drains to a safe area is in the building if a sill or ramp is not present</li> <li>- liquid tight wall/floor joints exist</li> <li>- self-closing fire doors exist (NFPA 80)</li> <li>- the electrical wiring and equipment meet NFPA 70 requirements</li> <li>- the storage in the rooms meet the requirements in Table 2-6</li> <li>- there is either gravity or mechanical exhaust ventilation system</li> <li>- the exhaust system provides for six changes of air in the room per hour</li> <li>- mechanical exhaust systems are controlled by a switch outside the door and have exhaust outlets on exterior walls</li> <li>- for gravity ventilation, the fresh air intake is on exterior walls</li> <li>- there is one clear aisle at least 3 ft [0.91 m] wide</li> <li>- containers over 30 gal [113.56 L] capacity are not stacked one upon the other</li> <li>- dispensing is done by an approved pump or self-closing faucet.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.46.</b> The storage of flammable or combustible liquids in warehouses or storage buildings shall meet specific requirements (29 CFR 1910.106(d)(5)(vi)).</p>	<p>Verify that the following requirements are met: (1)(2)</p> <ul style="list-style-type: none"> <li>- if the storage facility is located 50 ft [15.24 m] or less from a building or line of adjoining property that may be built upon, the exposing wall is a blank wall having a fire-resistance rating of at least 2 h</li> <li>- any quantity of liquids may be stored as long as the storage arrangements outlined in Table 2-7 are met</li> <li>- containers are separated by pallets or dunnage when necessary to provide stability and prevent excess stress on container walls</li> <li>- portable tanks which are stored over one tier high are designed to nest securely</li> <li>- no pile is closer than 3 ft [0.91 m] to the nearest beam, chord, girder, or other obstruction</li> <li>- piles are 3 ft [0.91 m] below sprinkler deflectors or discharge points of water spray</li> <li>- all wood shelving is at least 1 in. [2.54 cm] thick</li> <li>- aisles are at least 3 ft [0.91 m] wide when necessary for access to doors, windows, or standpipe connections.</li> </ul>
<p><b>HM.47.</b> Flammable/combustible materials stored outside of buildings must meet certain storage and handling criteria (29 CFR 1910.106(d)(6)).</p>	<p>Verify that outdoor flammable/combustible storage meets the following: (1)(2)</p> <ul style="list-style-type: none"> <li>- no more than 1100 gal [4163.95 L] of flammable/combustible liquids is stored adjacent to buildings located on the same premises unless 10 ft [3.05 m] or more exists between buildings and the nearest flammable container</li> <li>- the storage area is graded to divert spills or is surrounded by a curb at least 6 in. [15.24 cm] high</li> <li>- drains terminate in a safe location</li> <li>- the storage area is protected against tampering and kept free of waste and other combustible materials</li> <li>- all containers bear contents, labels, and hazard markings</li> <li>- total quantity and arrangement of liquids outside a building complies with the requirements in Table 2-7.</li> </ul> <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> <li>- storage of containers in service stations, Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engine</li> <li>- flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.48.</b> Areas where flammable/combustibles are stored must meet certain fire protection standards (29 CFR 1910.106(d)(7)).</p>	<p>Verify that all flammable/combustible storage locations meet the following: (1)(2)</p> <ul style="list-style-type: none"> <li>- there is at least one 12-B rated portable fire extinguisher located outside and within 10 ft [3.05 m] of a door opening into any room for storage</li> <li>- there is at least one 12-B rated portable fire extinguisher located within 10 to 25 ft [3.05 to 7.62 m] of any Class I or Class II liquid storage area outside of a storage room, but inside a building</li> <li>- fire extinguishing sprinklers or systems meet the standards in 29 CFR 1910.159</li> <li>- no smoking or open flame is permitted within 50 ft [15.24 m] and signs are posted</li> <li>- incompatible materials are not stored together (see Table 2-8)</li> <li>- no water reactive materials are stored in the same room with flammable/combustible liquids.</li> </ul> <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> <li>- storage of containers in service stations, Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engine</li> <li>- flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Industrial Areas</b></p> <p><b>HM.49.</b> Areas where flammable/combustible materials are stored, dispensed, or used in industrial plants shall meet specific guidelines (29 CFR 1910.106(e)(4) through 1910.106(e)(9)).</p> <p><b>HM.50.</b> Incidental storage of flammable/combustible liquids in industrial areas must conform to certain requirements (29 CFR 1910.106(e)(2)).</p>	<p><b>NOTE:</b> Checklist items HM.49 through HM.51 pertain to industrial areas where the use of flammable or combustible liquid is incidental to the principal business or where flammable or combustible liquids are handled or used only in unit physical operations such as drying, evaporating, filtering, distillation, and similar operations which do not involve chemical reactions.</p> <p>Verify that the following provisions are met: (1)(2)</p> <ul style="list-style-type: none"> <li>- portable fire extinguishers and fire control equipment shall be in place in quantity and type as needed for the hazards of operation and storage at the site</li> <li>- adequate precautions shall be taken to prevent sources of ignition at the site</li> <li>- Class I liquids shall not be dispensed into containers unless nozzles and containers are electrically interconnected</li> <li>- operations such as welding and cutting for repairs to equipment shall be done under the supervision of an individual in responsible charge</li> <li>- maintenance and operating practices shall control leakage and prevent the accidental escape of flammable or combustible liquids:               <ul style="list-style-type: none"> <li>- adequate aisles shall be maintained</li> <li>- combustible waste material and residues shall be kept to a minimum, stored in covered metal containers, and disposed of daily</li> <li>- the grounds area around the buildings and unit operating areas shall be kept free of weeds, trash or other unnecessary combustibles</li> </ul> </li> <li>- tank vehicle and tank car loading or unloading facilities are separated from aboveground tanks, warehouses, and other plant buildings or nearest line of adjoining property by a distance of 25 ft [7.62 m] for Class I liquids and 15 ft [4.57 m] for Class II and III liquids.</li> </ul> <p>Verify that flammable and combustible liquids are stored in closed containers. (1)(2)</p> <p>Verify that the storage areas meet the requirements outlined in 29 CFR 1910.106(d)(3) through 1910.106(d)(4) as listed in checklist items HM.43 and checklist items HM.45 except that: (1)(2)</p> <ul style="list-style-type: none"> <li>- the quantity of liquid that can be located outside of an inside storage room or storage cabinet in a building or in anyone fire area of a building shall not exceed:               <ul style="list-style-type: none"> <li>- 25 gal [94.64 L] of Class IA liquids in containers</li> <li>- 120 gal [454.25 L] of Class IB, IC, II, or III liquids in containers</li> <li>- 660 gal [2498.37 L] of Class IB, IB, II, or III liquids in a single portable tank</li> </ul> </li> <li>- where large quantities of flammable or combustible liquids are needed, storage may be in tanks.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.50. (continued)</b></p>	<p>Verify that areas where flammable/combustible liquids are transferred from one container to another container are separated from other operations in the building by an adequate distance or by construction having fire resistance. (1)</p> <p>Verify that drainage or other means is provided to contain spills and adequate natural or mechanical ventilation is present. (1)</p> <p>Verify that the following practices are observed at the point of final use:</p> <ul style="list-style-type: none"> <li>- flammable liquids are kept in covered containers when not actually in use</li> <li>- where flammable/combustible liquids are used or handled means are provided to dispose promptly and safely of spills and leaks</li> <li>- Class I liquids are only used where there are no open flames or other sources of ignition</li> <li>- flammable/combustible liquids are drawn from or transferred into vessels, containers, or portable tanks within a building only through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container or portable tanks by gravity through an approved self closing valve. Transferring by means of air pressure on the container or portable tanks is prohibited.</li> </ul>
<p><b>HM.51.</b> Those areas where flammable/combustible liquids are used in unit operations such as mixing, drying, evaporating, filtering, or distillation are required to meet specific operating standards (29 CFR 1910.106(e)(3)).</p>	<p>Verify that the following parameters are met: (1)</p> <ul style="list-style-type: none"> <li>- these areas are located so that each building or unit of equipment is accessible from at least one side for fire fighting</li> <li>- areas where unstable liquids are handled or small scale unit chemical processes are carried on shall be separated from the remainder of the area by a fire wall of 2 h minimum fire resistance rating</li> <li>- emergency drainage systems direct leakage and fire protection water to a safe location</li> <li>- emergency drainage systems, if connected to public sewers or discharged into public waterways, are equipped with traps or a separator</li> <li>- when Class I liquids are being used, ventilation is provided at a rate of not less than 1 ft<sup>3</sup>/min/ft<sup>2</sup> of solid floor area through either natural or mechanical means</li> <li>- equipment is designed to limit flammable vapor-air mixtures.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.53. (continued)</b></p>	<p>(NOTE: In the case of flammable or combustible liquid tanks operating at pressure exceeding 2.5 psig or equipped with emergency venting which will permit pressures to exceed 2.5 psig spacing of 3 ft [0.91 m] or the use of the formula concerning one-sixth of diameters may be used.)</p> <p>Verify that means such as diversion curbs or grading are provided to prevent the accumulation of flammable or combustible liquids under adjacent LPG containers. (1)</p> <p>Verify that if flammable combustible liquid storage tanks are within a diked area, LPG containers are outside the diked area and at least 10 ft [3.05 m] away from the centerline of the wall of the diked area. (1)</p> <p>(NOTE: The requirement concerning LPG containers and diked areas does not apply if LPG containers of 125 gal [473.18 L] or less capacity are installed adjacent to fuel oil supply of 550 gal [2081.98 L] or less capacity.)</p>
<p><b>HM.54.</b> Tanks for the storage of flammable/combustible liquids are required to meet specific containment requirements (29 CFR 1910.106(b)(2)(vii)).</p>	<p>Verify that the area surrounding a tank or a group of tanks is either provided with drainage or diked as follows: (1)(2)</p> <ul style="list-style-type: none"> <li>- drainage systems terminate in vacant land or other area or in an impounding basin having a capacity not smaller than that of the largest tank served</li> <li>- diked areas have a volumetric capacity of not less than the greatest amount of liquid that can be released from the largest tank within the diked area, assuming a fuel tank.</li> </ul> <p>Verify that walls of diked areas are of earth, concrete, steel, or solid masonry designed to be liquid tight. (1)</p> <p>Verify that earthen walls 3 ft [0.91 m] or more in height have a top that is no less than 2 ft [0.61 m] wide. (1)(2)</p> <p>Verify that the walls of the diked area are restricted to an average height of 6 ft [1.83 m] above interior grade. (1)</p> <p>Verify that there are no loose combustible materials, empty or full drums or barrels within the diked area. (1)(2)</p>
<p><b>HM.55.</b> In locations where flammable vapors may be present from storage tanks, precautions are required to be taken to prevent ignition (29 CFR 1910.106(b)(6)).</p>	<p>Verify that sources of ignition such as open flames, smoking, welding and cutting, hot surfaces, sparks, and radiant heat are avoided. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.56.</b> Tanks used for the storage of flammable/combustible liquids are required to be strength tested before being placed into service (29 CFR 1910.106(b)(7)).</p>	<p>Verify that the tank is marked with an American Society of Mechanical Engineers (ASME) code stamp, American Petroleum Institute (API) monogram, or the label of the Underwriters Laboratory (UL) as evidence of having had a strength test. (1)</p>
<p><b>COMPRESSED GASES STORAGE</b></p> <p><b>HM.57.</b> The in-plant storage, handling, and utilization of all compressed gases in cylinders, portable tanks, rail tankers, or motor vehicles must be done according to the Compressed Gas Association Pamphlet P-1-1965 (29 CFR 1910.101).</p>	<p>Verify that compressed gas cylinders and tanks have safety relief devices. (1)</p>
<p><b>HM.58.</b> Bulk storage of compressed gas must meet specific requirements (DODR 4145.19-1, para 5-405d(1) and 5-405d(2)).</p>	<p>Verify that the storage of compressed gases in open-sided, roofed sheds meets the following criteria: (1)(2)</p> <ul style="list-style-type: none"> <li>- shed is on concrete slab above grade</li> <li>- shed is located in secured area</li> <li>- shed is separated from other buildings by at least 50 ft</li> <li>- flammable gases and gases that support combustion are stored in different sheds separated by at least 50 ft</li> <li>- if the shed has one of more sides, provisions are made to ensure complete change of air at least 6 times per hour</li> <li>- shed is not heated</li> <li>- if necessary, stationary or rotating roof vents are used to lower temperature near the ceiling to ambient conditions during warm weather</li> <li>- cylinders and portable tanks have pressure relief devices installed.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SUBSTANDARD HAZARDOUS SUBSTANCE USTs</b></p> <p><b>HM.60.</b> Substandard hazardous substance UST systems must be upgraded, closed, or removed from service by 22 December 1998 (40 CFR 280.21(a) through 280.21(c)).</p>	<p>(NOTE: If a release detection system is not available for the UST, it must be phased out in 1 to 5 yr.)</p> <p>Determine if there are currently any plans for upgrades or decommissioning of a sub-standard UST. (1)</p> <p>Verify that upgrading of steel USTs includes one of the following methods: (1)</p> <ul style="list-style-type: none"> <li>- internal lining according to the following requirements:               <ul style="list-style-type: none"> <li>- lining is installed so that it prevents releases due to structural failure or corrosion and meets a recognized code of practice</li> <li>- within 10 yr after installation of lining and every 5 yr thereafter, the lined tank is inspected internally and found to be structurally sound, with the lining still performing in accordance with original design specifications</li> </ul> </li> <li>- cathodic protection with field-installed systems designed by an expert, impressed current systems, or an approved equivalent system and the integrity is assured by one of the following:               <ul style="list-style-type: none"> <li>- tank is internally inspected and assessed to ensure that the tank is structurally sound and free of corrosion</li> <li>- the tank has been installed for less than 10 yr and is monitored monthly for releases</li> <li>- the tank has been installed for less than 10 yr and is assessed for corrosion holes by conducting two tightness tests, one before and one 3 to 6 mo after installation of the cathodic protection system</li> <li>- tank is assessed for corrosion holes by a method that is determined to be equally protective by the implementing agency</li> </ul> </li> <li>- lining combined with cathodic protection:               <ul style="list-style-type: none"> <li>- if lining is installed according to requirements</li> <li>- if cathodic protection system meets requirements.</li> </ul> </li> </ul> <p>Verify that when spill and overfill equipment is added, the tank meets the same standards as new USTs. (1)</p> <p>Verify that piping that routinely contains regulated substances and is in contact with the ground is cathodically protected. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>NEW OR UPGRADED HAZARDOUS SUBSTANCE USTs</b></p> <p><b>HM.61.</b> New or upgraded hazardous substance USTs are required to be fitted with spill and overfill prevention equipment (40 CFR 280.20(c) and 280.21(d)).</p> <p><b>HM.62.</b> Notice must be given within 30 days when a hazardous substance UST system is brought into service after 8 May 1986. (40 CFR 280.22).</p>	<p>Verify that spill prevention equipment will prevent a release of product to the environment when the transfer hose is detached from the fill pipe. (1)</p> <p>Verify that overfill prevention equipment does one of the following: (1)</p> <ul style="list-style-type: none"> <li>- automatically shuts off flow into the tank when the tank is no more than 95 percent full</li> <li>- alerts the transfer operator when the tank is no more than 90 percent full by restricting the flow into the tank or triggering a high-level alarm</li> <li>- restrict flow 30 min prior to overfilling, alert the operator with a high-level alarm one minute before overfilling, or automatically shut off flow into the tank so that none of the fittings are exposed to product due to overfilling.</li> </ul> <p>(NOTE: This equipment is not required if approved equivalent equipment is used or the UST system is filled by transfers of no more than 25 gal at one time.)</p> <p>(NOTE: All existing tanks must be upgraded by 1998.)</p> <p>Determine if the installation has brought any USTs into service after 8 May 1986. (1)(2)</p> <p>Verify that appropriate notification was issued. (1)(2)</p> <p>(NOTE: State forms may be used for notification in lieu of an USEPA form 7530. These notices must be sent to the appropriate agency.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.63.</b> Hazardous substance UST systems installed after 22 December 1988 must be constructed in such a manner that they will remain structurally sound for their operating life (40 CFR 280.20(a) and 280.20(b)).</p>	<p>Verify that USTs conform to industry standards by reviewing records. (1)</p> <p>Verify that USTs meet the following: (1)</p> <ul style="list-style-type: none"> <li>- they have leak/spill prevention protection</li> <li>- the tank is constructed of one of the following materials:               <ul style="list-style-type: none"> <li>- fiberglass-reinforced plastic</li> <li>- steel which has one of the following types of cathodic protection:                   <ul style="list-style-type: none"> <li>- coated with a suitable dielectric material</li> <li>- field installed cathodic protection (expert installed)</li> <li>- impressed current systems which allow determination of current operating status</li> </ul> </li> <li>- steel fiberglass reinforced plastic composite</li> <li>- metal without additional corrosion protection provided that:                   <ul style="list-style-type: none"> <li>- the site has been determined not to cause corrosion to the tank by a corrosion expert</li> <li>- records are maintained for the life of the tank that it is in a corrosion free environment</li> </ul> </li> </ul> </li> <li>- construction is in a manner that is deemed to prevent release of the regulated substance.</li> </ul> <p>(NOTE: Piping must also meet these criteria with the exception of not being constructed of steel fiberglass reinforced plastic composite.)</p>
<p><b>HM.64.</b> Installation of hazardous substance USTs must be done by a certified installer and according to standard practices (40 CFR 280.20(d) and 280.20(e)).</p>	<p>Determine if new UST systems have been properly installed by reviewing records for certification. (1)</p> <p>Verify that if the installation does its own installation of USTs, the installation is done according to standard practices. (1)</p> <p>Verify that the installer was certified by manufacturer or implementing agencies. (1)</p>
<p><b>HM.65.</b> Installations are required to use hazardous substance UST systems made of or lined with materials compatible with the substance stored (40 CFR 280.32).</p>	<p>Verify that the substances stored in UST systems are compatible with the system. (1)</p> <p>Determine which USTs are being used to store a substance other than that for which it was originally intended. (1)(2)(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HAZARDOUS SUBSTANCE UST FILLING</b></p> <p><b>HM.66.</b> The filling of a hazardous substance UST must include the prevention of overfilling and spilling of the substance (40 CFR 280.30(a)).</p> <p><b>HM.67.</b> Installations with hazardous substance UST systems are required to contain and immediately clean up a spill or overflow and report it to the implementing agency within 24 h in specific situations (40 CFR 280.30(b) and 280.53).</p> <p><b>CORROSION PROTECTION AND REPAIRS FOR HAZARDOUS SUBSTANCE USTs</b></p> <p><b>HM.68.</b> Hazardous substance UST systems with corrosion protection must meet specific requirements (40 CFR 280.31).</p>	<p>Determine if there is a problem with overfilling or USTs or spills by observing the filling operations, reviewing records, and checking the ground around the fill lines for visible or odorous indications of contamination. (1)(2)</p> <p>Determine if the level of the UST is checked before a transfer is made and that the volume available in the tank is greater than the volume of the product to be transferred. (1)(3)</p> <p>Verify that fill lines are capped and locked. (2)(3)</p> <p>Verify that the transfer is monitored constantly. (1)(2)</p> <p>Determine if the installation has reported, contained, and cleaned up any and all spills or overfills of hazardous substances that result in a release to the environment in excess of the reportable quantity (see Table 2-1). (1)(2)</p> <p>(NOTE: Spills or overfills of hazardous substances equal to or greater than the reportable quantity must be immediately reported to the NRC.)</p> <p>Verify that the installation has contained and immediately cleaned up a spill or overflow of a hazardous substance that is less than the reportable quantity. (1)(2)</p> <p>Verify that if these less than reportable quantity spills or overfills cannot be cleaned up within 24 h, or another reasonable time period established by the implementing agency, the implementing agency is notified. (1)(2)</p> <p>Determine which UST systems have corrosion protection. (1)(2)</p> <p>Verify that the corrosion protection systems operate continuously to provide corrosion protection to the metal components that routinely contained regulated substances and are in contact with the ground. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>RELEASE DETECTION FOR HAZARDOUS SUBSTANCE USTs</b></p> <p><b>HM.70.</b> Installations with new and existing underground storage tanks are required to provide a method, or combination of methods of release detection by the dates indicated in Table 2-9 (40 CFR 280.10(d), 280.40, and 280.45).</p>	<p>Determine if the installation has a program in place (or at least in the proposed stage) for provisions of release detection. (1)(2)</p> <p>Verify that the appropriate schedule is being complied with (see Table 2-9). (1)(2)</p> <p>Verify that the installed release detection system can: (1)(2)</p> <ul style="list-style-type: none"> <li>- detect a release from any portion of the tank and the connected underground piping</li> <li>- is installed, calibrated, operated, and maintained in accordance with the manufacturer's instructions, including routine maintenance and service checks for operability or running condition</li> <li>- meets the performance requirements outlined in Table 2-10.</li> </ul> <p>(NOTE: Any pressurized delivery lines must be retrofitted by 22 December 1990.)</p> <p>Verify that records are kept as follows: (1)(2)</p> <ul style="list-style-type: none"> <li>- all written performance claims pertaining to any release detection system used for 5 yr from the date of installation</li> <li>- the results of any sampling testing or monitoring for 1 yr</li> <li>- the results of tank tightness testing, until the next test is done</li> <li>- written documentation of calibration, maintenance, repair, of release detection equipment permanently located onsite, at least 1 yr after the servicing is done</li> <li>- schedules of required calibration and maintenance provided by the release detection equipment manufacturer, 5 yr after the date of installation.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.71.</b> By 22 December 1998, all existing and new UST systems containing hazardous substances must meet specific release detection system requirements (40 CFR 280.42).</p>	<p>Verify that by 22 December 1998 the release detection systems on existing and new hazardous substance USTs meets the following: (1)</p> <ul style="list-style-type: none"> <li>- secondary containment systems are:               <ul style="list-style-type: none"> <li>- designed, constructed and installed to contain regulated substances released from the tank system until they are detected and removed</li> <li>- designed, constructed, and installed to prevent the release of regulated substances to the environment at any time during the operational life of the UST</li> <li>- checked for evidence of a release at least every 30 days</li> </ul> </li> <li>- double-walled tanks are designed constructed and installed to:               <ul style="list-style-type: none"> <li>- contain a release from any portion of the inner tank within the outer wall</li> <li>- detect the failure of the inner wall</li> </ul> </li> <li>- external liners (including vaults) are designed, constructed, and installed to:               <ul style="list-style-type: none"> <li>- contain 100 percent of the capacity of the largest tank within its boundary</li> <li>- prevent the interference of precipitation or groundwater intrusion with the ability to contain or detect a release of regulated substances</li> <li>- surround the tank completely (capable of preventing lateral as well as vertical migration of regulated substances</li> </ul> </li> <li>- underground piping is equipped with secondary containment such as trench liners or jacketing of double-walled pipe</li> <li>- underground piping that conveys regulated substances under pressure is equipped with an automatic line leak detector as outlined in Table 2-10.</li> </ul> <p>(NOTE: Other methods of release detection may be used if the installation:</p> <ul style="list-style-type: none"> <li>- demonstrates to the implementing agency that an alternate method can detect a release as effectively as other allowed methods</li> <li>- provides information to the implementing agency on effective corrective action technologies, health risks, and chemical and physical properties of the stored substance and the characteristics of the UST site</li> <li>- obtains approval from the implementing agency to use the alternate release detection method before the installation and operation of the new UST system.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HAZARDOUS SUBSTANCE UST RELEASES</b></p> <p><b>HM.72.</b> Installations with hazardous substance UST systems are required to report releases under specific conditions (40 CFR 280.50).</p> <p><b>HM.73.</b> HQ USAF/CEV must be notified of releases (AFI 32-7044, para 2.8.3.2).</p> <p><b>HM.74.</b> Installations with a suspected release from a UST are required to perform specific activities (AFI 32-7044, para 2.8.1.1 and 2.8.1.2).</p>	<p>Determine if the installation has reported any and all releases which met the following criteria: (1)</p> <ul style="list-style-type: none"> <li>- released regulated substances were found at the UST site or in the surrounding area (such as the presence of free product or vapors in soils, basements, sewer and utility lines, and nearby surface waters)</li> <li>- unusual operating conditions were observed such as the erratic behavior of dispensing equipment or a sudden loss of product unless it is determined the problem lies in the equipment but it is not leaking and is immediately repaired or replaced</li> <li>- monitoring results indicate a possible release.</li> </ul> <p>Verify that the implementing agency was notified within 24 h (or time period specified by the implementing agency) of the release. (1)</p> <p>Verify that the installation has notified HQ USAF/CEV of a release. (1)(2)</p> <p>Verify that if the installation suspects a leaking UST, it performs a tightness test of the system. (2)(3)(4)</p> <p>Verify that if there is a suspected release because of environmental contamination but a leak is not detected, a site check is performed by sampling and measuring for contamination at the UST site. (2)(3)(4)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.75.</b> Installations must investigate and confirm all suspected releases of a regulated substances requiring reporting within 7 days unless a corrective action is started immediately as detailed in 40 CFR 280.60 through 280.67 (40 CFR 280.52).</p> <p><b>HM.76.</b> Installations with a confirmed release from hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements, are required to perform specific initial response actions within 24 hours of a release (40 CFR 280.60 and 280.61).</p>	<p>Verify that tightness testing is done within 7 days of a suspected release to determine whether a leak is in the tank or the delivery piping. (2)(3)(4)</p> <p>Verify that if environmental contamination is the basis for suspecting a leak and the tightness test does not indicate that a leak exists, a site check is done that measure for the presence of a release in the areas where contamination is most likely to be present. (2)(3)</p> <p>(NOTE: If the results indicate that a leak has occurred, corrective actions must be started.)</p> <p>(NOTE: If the tightness test does not indicate a leak and environmental contamination is not the basis for suspecting a release, no further investigation is needed.)</p> <p>Verify that installation personnel are aware of the following initial response actions: (2)</p> <ul style="list-style-type: none"> <li>- the release is reported</li> <li>- immediate action is taken to prevent further release of the regulated substance into the environment</li> <li>- fire, explosion, and vapor hazards are identified and mitigated.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.77.</b> Installations with a confirmed release from hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements, are required to perform specific initial abatement measures and site checks unless directed to do otherwise by the implementing agency (40 CFR 280.60 and 280.62).</p>	<p>Verify that the following actions are performed: (1)(2)</p> <ul style="list-style-type: none"> <li>- as much of the substance as is necessary to prevent further release is removed from the UST system</li> <li>- visual inspection of aboveground releases or exposed belowground releases is done and further migration of the released substance into surrounding soils and groundwaters is prevented</li> <li>- monitoring and mitigation of any fire and safety hazards caused by vapors or free product is done</li> <li>- hazards from contaminated soils that are excavated or exposed are remedied</li> <li>- measurements are done for the presence of a release where the contamination is most likely to be present unless the presence and source of the release has previously been confirmed</li> <li>- an investigation is done for the presence of free product and the removal of free product is done as soon as possible.</li> </ul> <p>Verify that within 20 days after release confirmation a report is submitted to the implementing agency summarizing the initial abatement measures and site checks and the resulting information and data collected. (1)(2)(3)</p>
<p><b>HM.78.</b> Installations with a confirmed release from hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements, are required to assemble information about the site and nature of the release unless exempted by the implementing agency (40 CFR 280.60 and 280.63).</p>	<p>Verify that the following information is collected: (2)(3)</p> <ul style="list-style-type: none"> <li>- data on the nature and estimated quantities of the release</li> <li>- data from available sources and/or site investigations concerning surrounding population, water quality, use and approximate locations of wells potentially affected, subsurface soil conditions, locations of subsurface sewers, climatological conditions, and land use</li> <li>- results of site check</li> <li>- results of free product investigation.</li> </ul> <p>Verify that within 45 days of the release confirmation this information is submitted to the implementing agency in a manner that demonstrates the applicability and technical adequacy or according to a format required by the implementing agency. (2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.79.</b> Installations with a confirmed release from hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements, where site investigations have indicated free product must, to the maximum extent possible as required by the implementing agency, remove the free product (40 CFR 280.60 and 280.64).</p>	<p>Determine if there are any release sites at the installation where free product has been confirmed. (1)(2)(3)</p> <p>Verify that free product removal is done so that the spread of contamination is minimized. (1)(2)(3)</p> <p>Verify that, unless exempted by the implementing agency, within 45 days after confirming a release, a free product removal report is submitted to the implementing agency that includes the following: (1)(2)</p> <ul style="list-style-type: none"> <li>- the name of the person responsible for implementing the free product removal system</li> <li>- the estimated quantity, type, and thickness of free product observed or measured</li> <li>- the type of free product recovery system used</li> <li>- whether there will be any onsite or offsite discharges during the recovery operation and where this discharge will be located</li> <li>- the type of treatment used for any discharge during the recovery operation and where this discharge will be located</li> <li>- the steps taken to obtain any required permits</li> <li>- the disposition of the recovered free product.</li> </ul>
<p><b>HM.80.</b> Installations with a confirmed release from hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements, are required to perform an investigation for soil and groundwater contamination (40 CFR 280.60 and 280.65).</p>	<p>Verify that an investigation of the release, the release site, and possibly affected surrounding areas has been done and identified if any of the following conditions exists: (1)(2)</p> <ul style="list-style-type: none"> <li>- evidence that groundwater wells have been affected</li> <li>- free product is evident</li> <li>- evidence that contaminated soil is in contact with groundwater</li> <li>- the implementing agency requests an investigation.</li> </ul> <p>Verify that the results of the investigation are submitted to the implementing agency according to a time schedule defined by the implementing agency. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.86.</b> Notification must be given to the implementing agency (USEPA) for any closure or change in service 30 days in advance or within a reasonable time frame as determined by the implementing agency (40 CFR 280.71(a) and 280.71(b)).</p>	<p>Determine if the installation is planning to close or change any hazardous substance USTs. (1)(2)</p> <p>Verify that notification of changes were given within 30 days. (1)(2)</p> <p>Verify that UST closure is done in one of the following methods: (1)</p> <ul style="list-style-type: none"> <li>- it is removed from ground</li> <li>- it is left in place with substance removed, and filled with an inert solid material and closing it to all future outside access).</li> </ul> <p>Determine if there are any closed USTs or USTs in the process of being closed at the installation. (1)</p> <p>Verify that tanks being permanently closed are emptied and cleaned by removing all liquids and accumulated sludges. (1)</p> <p>Determine if there are any possible abandoned USTs and if there are plans to close the UST off in an appropriate manner. (1)</p> <p>Determine if a site assessment was made to ensure that no releases to the environment have occurred by reviewing records. (1)</p>
<p><b>HM.87.</b> Prior to a change-in-service, tanks must be emptied, cleaned and a site assessment conducted (40 CFR 280.71(c)).</p>	<p>Determine if there are any tanks which the installation has continued to use to store a nonregulated substance (a change-in-service). (1)</p> <p>Verify that prior to the change, the tank was emptied and cleaned. (1)</p> <p>Verify that prior to the change a site assessment was done. (1)</p>
<p><b>HM.88.</b> Prior to permanent closure or change-in-service is completed measurements must be made for the presence of a release where contamination is most likely to be present at the site (40 CFR 280.72).</p>	<p>Verify that measurements for the presence of a release have been done. (1)</p> <p>(NOTE: These requirements are met if other approved leak detection methods have been used.)</p>

(1) Base Civil Engineering (BCE)/Environmental Management (EM) (2) Base Disaster Preparations Office (BDPO) (3) Fire Department (4) Base Supply (LGS) (5) Bioenvironmental Engineering (BEE) (6) Safety Office (7) Transportation Officer (LGT)

**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.89.</b> Installations with UST systems closed prior to 22 December 1988 must assess the excavation zone and close the UST according to current standards if releases from the UST may pose a current or potential threat to human health and the environment (40 CFR 280.73).</p> <p><b>HM.90.</b> Excavation zone assessment records shall be maintained for 3 yr (40 CFR 280.74).</p>	<p>Determine if the installation has any USTs which were closed prior to 22 December 1988. (1)(2)</p> <p>Verify that the excavation zone of these USTs has been assessed and clean-up done as needed. (1)</p> <p>Verify that excavation zone assessment records are maintained for 3 yr in one of the following ways: (1)</p> <ul style="list-style-type: none"> <li>- by the installation</li> <li>- at the implementing agency if they cannot be maintained at the closed installation.</li> </ul>
<p><b>TRANSPORTATION OF HAZARDOUS MATERIALS</b></p> <p><b>HM.91.</b> Shipping papers for hazardous materials are required to indicate the proper shipping name, hazard class, identification number, and quantities of materials (49 CFR 172.202).</p> <p><b>HM.92.</b> Each package or container shall be marked in accordance with specific marking requirements (49 CFR 171.3).</p>	<p>Verify that the proper information is displayed on the shipping papers for the hazardous material. (1)</p> <p>Verify that the commodity description (proper shipping name) is on the container as well as the following information: (1)</p> <ul style="list-style-type: none"> <li>- exemption numbers for containers shipped under Department of Transportation (DOT) exemptions</li> <li>- the name and address of consignee (or consignor) on the container.</li> </ul>

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**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.93.</b> The installation is responsible for providing proper placarding to vehicles transporting hazardous materials off the installation (49 CFR 172.500).</p> <p><b>HM.94.</b> Vehicles being used to transport explosive or extremely hazardous materials are required to be inspected (AFR 75-2, para 33-18).</p> <p><b>HM.95.</b> The installation should ensure that transportation of hazardous materials between buildings is accomplished in accordance with good management practices to help ensure against spills, releases, and accidents (MP).</p> <p><b>HM.96.</b> An installation that offers for transport, accepts for transport, transfers, or otherwise handles a hazardous material must have emergency response information available (49 CFR 172.600 through 172.604).</p>	<p>Determine from Base Transportation Branch if AF vehicles are used to transport hazardous materials off the installation. (7)</p> <p>Determine if proper DOT placards, as described in 49 CFR 172.504 through 172.558, are affixed to vehicles being used to transport hazardous materials offbase. (7)</p> <p>Determine if transportation has proper DOT placards for vehicles which are being used for transport of hazardous materials. (7)</p> <p>(NOTE: Observe, if practical, the placarding of vehicles used to transport hazardous materials.)</p> <p>Determine if vehicles being used to transport explosive or extremely hazardous materials are being inspected. (7)</p> <p>Determine if procedures exist to manage movement of hazardous materials throughout the base. (1)(4)</p> <p>Determine if drivers are trained in spill control procedures. (4)</p> <p>Determine if provisions have been made for securing hazardous materials in vehicles when transporting. (4)</p> <p>Verify that emergency response information includes: (2)(4)(6)(7)</p> <ul style="list-style-type: none"> <li>- the description of the hazardous material required by 49 CFR 172.202-203</li> <li>- immediate hazards to health</li> <li>- risks of fire or explosion</li> <li>- immediate precautions to take in the event of an accident or incident</li> <li>- immediate methods for handling small or large fires</li> <li>- immediate methods for handling spills or leaks in the absence of fire</li> <li>- preliminary first aid measures.</li> </ul> <p>(NOTE: Shipping papers must contain an emergency response telephone number for the hazardous material being shipped.)</p>

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**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HM.96. (continued)</b></p> <p><b>HM.97.</b> Spills, leaks, and other incidents occurring during hazardous material transportation require immediate notification in specific circumstances (49 CFR 171.15).</p>	<p>Verify that each carrier and installation operators maintain this emergency response information. (7)</p> <p>Verify that immediate notification is done for those incidents in which, as a direct result of hazardous materials: (4)(7)</p> <ul style="list-style-type: none"> <li>- a person is killed</li> <li>- a person is injured and requires hospitalization</li> <li>- estimated carrier or other property damage exceeds \$50,000</li> <li>- an evacuation of the general public occurs lasting 1 or more hours</li> <li>- one or more major transportation arteries or facilities are closed or shut down for 1 or more hours</li> <li>- the operational flight pattern of an aircraft is altered</li> <li>- fire, breakage, spillage, or suspected radioactive contamination occurs involving shipment of radioactive materials</li> <li>- fire, breakage, spillage, or suspected contamination occurs involving shipment of etiologic agents</li> <li>- the carrier feels the situation merits reporting, even though it does not meet the above requirements.</li> </ul> <p>Verify that the immediate notification is given to the DOT by telephone. (7)</p> <p>(NOTE: If the notice involves etiologic agents, it may be given to the Center for Disease Control.)</p>
<p><b>HM.98.</b> Written hazardous materials incident reports are required to be submitted to the DOT of each hazardous material incident within 30 days of the incident (49 CFR 171.16).</p>	<p>Verify that detailed hazardous materials incident reports (DHMIR) are submitted to the DOT within 30 days if: (7)</p> <ul style="list-style-type: none"> <li>- any of the circumstances of 49 CFR 171.15 are met</li> <li>- there has been an unintentional release of hazardous materials from a package</li> <li>- any quantity of hazardous materials has been discharged during transportation.</li> </ul> <p>(NOTE: Guidelines for assistance in completing a DHMIR may be obtained free of charge from the Office of Hazardous Materials Transportation, DHM-51, U.S. Department of Transportation, Washington DC 20590.)</p> <p>Verify that a copy of the report is retained on site for 2 yr (unless written permission has been obtained from the DOT to maintain records elsewhere). (7)</p>

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**Table 2-1**

**Consolidated List of Chemicals Covered in Title III of SARA**

This consolidated chemical list includes chemicals subject to reporting requirements under Title III of SARA. This consolidated chemical list does not contain all chemicals that are subject to reporting requirements in Sections 311 and 312 of SARA Title III. These hazardous chemicals, for which MSDS must be developed under the *Occupational Safety and Health Act Hazard Communication Standards*, are identified by broad criteria, rather than enumeration. There are over 50,000 such substances that meet the criteria. The consolidated list has been prepared to help determine whether there is a need to submit reports under Section 304 or 313 of Title III and, for a specific chemical, what reports need to be submitted.

The list includes chemicals under the four following Federal statutory provisions:

1. SARA Section 302 Extremely Hazardous Substances - The presence of which, in sufficient quantities, requires certain emergency planning activities to be conducted. Releases of these substances are also subject to reporting under Section 304 of Title III. The final rule listing the extremely hazardous substances and their threshold planning quantities (TPQ), is found in 40 CFR 355
2. CERCLA Hazardous Substances Reportable Quantity (RQ) Chemicals - Releases of which are subject to reporting under CERCLA of 1980. Such releases are also subject to reporting under Section 304 of Title III. CERCLA hazardous substances, and their reportable quantities (RQ), are listed in 40 CFR Part 302, Table 302.4
3. SARA Section 313 Toxic Chemicals - Emissions or releases of which must be reported annually as part of SARA Title III's community right-to-know provisions. A list of these toxic chemicals is found in 40 CFR 372.65
4. RCRA Hazardous Wastes - from the "P" and "U" lists (40 CFR 261.33), of specific chemicals. RCRA hazardous wastes from the "F" and "K" lists are not included here; such waste streams are also CERCLA hazardous substances. This listing is provided as an indicator that you may already have data on a specific chemical that can be used for Title III reporting purposes.

There are four columns in the consolidated list corresponding to these four statutory provisions. If a chemical is listed as an extremely hazardous substance under Section 302, its TPQ is given in the extremely hazardous substance column. Similarly, the CERCLA RQ is given for those chemicals that are listed as hazardous substances. A key to the symbols used in the Section 302 and CERCLA columns precedes the list. An "X" in the column for Section 313 indicates that the chemical is subject to reporting under Section 313.

The letter-and-digit code in the column for 40 CFR 261.33 is the chemical's RCRA hazardous waste code. A blank in any of these columns indicates that the chemical is not subject to the corresponding statutory authorities.

The Chemical Abstract Service (CAS) registry number is provided for each chemical on the list.

(continued)

**Table 2-1 (continued)**

chronic toxicity is completed; until then, the statutory RQ applies.

## Indicates that an adjusted RQ has been proposed, but a final judgment has not been made.

+ USEPA has proposed to adjust the RQ for radionuclides by establishing RQs in units of curies; until then, the 1 lb RQ applies.

\* Indicates that the chemical is proposed for deletion from the list of extremely hazardous substances.

\*\* Indicates that no RQ is assigned to this generic or broad class.

**CONSOLIDATED CHEMICAL LIST**

This is an alphabetical listing of the consolidated list of chemicals. Numbered chemicals are listed first.

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
1-Amino-2-methyl-anthraquinone			x		82-28-0
1-Butanamine,N-butyl-N-nitroso-		10	x	U172	924-16-3
1-Chloro-1,1-difluoroethane (HCFC-142(b))			x		75-68-3
1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a)			x		354-25-6
1-Methylbutadiene		100		U186	504-60-9
1-Naphthalamine		100	x	U167	134-32-7
1-Propanamine		5000		U194	107-10-8
1-Propanol,2,3-dibromo-phosphate (3:1)		10	x	U235	126-72-7
(1,1'-Biphenyl)-4,4'diamine, 3,3'dimethoxy-		100	x	U09	119-90-4
(1,1'-Biphenyl)-4,4'diamine, 3,3'dimethyl-		10	x	U095	119-93-7

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
1,1-Dichloro-1-fluoroethane (HCFC-141b)			x		1717-80-6
1,1-Dichloro-1,2,2-trifluoroethane (HCFC-123b)			x		812-04-4
1,1-Dichloroethane		1000		U076	75-34-3
1,1-Dichloroethylene		100	x	U078	75-35-4
1,1,1,2-Tetrachloroethane			x		630-20-6
1,2-Benzenedicarboxylic acid, [bis(2-ethylhexyl)]ester		100	x	U028	117-81-7
1,2-Benzenedicarboxylic acid, diethyl ester (diethyl phthalate)		1000	x	U088	84-66-2
1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino) ethyl]-		1000		P042	51-43-4
1,2-Benzisothiazolin-3(2H) one, 1,1-dioxide		100	x	U202	81-07-2
1,2-Benzphenanthrene		100		U050	218-01-9
1,2-Butylene oxide			x		106-88-7
1,2-Dibromo-3-chloropropane		1	x	U066	96-12-8
1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)			x		354-23-4
1,2-Dichloroethane		100	x	U077	107-06-2
1,2-Dichloroethylene			x		540-59-0
1,2-Dichloropropane		1000	x	U083	78-87-5
1,2-Dimethylhydrazine		1		U099	540-73-8
1,2-Diphenylhydrazine		10	x	U109	122-66-7
1,2-Oxathiolane, 2,2-dioxide		10	x	U193	1120-71-4

(continued)

**Table 2-1 (continued)**

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
1,2-trans-Dichloroeth- ylene		1000		U079	156-60-5
1,3-Benzenediol		5000		U201	108-46-3
1,3-Benzodioxole, 5- propyl		10		U090	94-58-6
1,3-Benzodioxole,5-)1- 1 propenyl		100	x	U141	120-58-1
1,3-Benzodioxole. 5-) 2,propenyl		100	x	U203	94-59-7
1,3-Butadiene			x		106-99-0
1,3-Dichloropropylene		100	x	U084	542-75-6
1,3-Isobenzofurandione		5000	x	U190	85-44-9
1,4-Dichloro-2-butene			x		764-41-0
1,4-Diethylene dioxide (1,4-Dioxane)		100	x	U108	123-91-1
1,4-Naphthalenedione		5000		U166	130-15-4
2-Acetylaminofluorene		1	x	U005	53-96-3
2-Aminoanthraquinone			x		117-79-3
2-Butanone peroxide		10		U160	1338-23-4
2-Butanone (Methyl ethyl ketone)		5000	x	U159	78-93-3
2-Butene,1,4-dichloro-		1		U074	764-41-0
2-Chloro-1,1,2,2-tet- rafluoroet- hane(HCFC 124)			x		2837-89-0
2-Chloroacetophenone			x		532-27-4
2-Chloroethyl vinyl ether		1000		U042	110-75-8
2-Chlorophenol		100		U048	95-57-8
2-Cyclohexyl-4,6-dini- trophenol		100		P034	131-89-5
2-Ethoxyethanol		100	x		110-80-5
2-Furancarboxaldehyde		5000		U125	98-01-1

(continued)

Table 2-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
2-Methoxyethanol			x		109-86-4
2-Methylpyridine			x		109-06-8
2-Naphthylamine		10	x	U168	91-59-8
2-Nitropropane		10	x	U171	79-46-9
2-Phenylphenol			x		90-43-7
2-Picoline		5000		U191	109-06-8
2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123)			x		306-83-2
2,2-Dichloropropionic acid		5000			75-99-0
2,3-Dichloropropene		100	x		78-88-6
2,3,4-Trichlorophenol		10	x		15950-66-0
2,3,5-Trichlorophenol		10			933-78-8
2,3,6-Trichlorophenol		10			933-75-5
2,3,7,8-Tetrachlorodibenzo p-dioxin (TCDD)		1			1746-01-6
2,4-D acid		100	x	U240	94-75-7
2,4-D esters		100			94-11-1
2,4-D esters		100			94-79-1
2,4-D esters		100			94-80-4
2,4-D esters		100			1320-18-9
2,4-D esters		100			1928-38-7
2,4-D esters		100			2971-38-2
2,4-D esters		100			53467-11-1
2,4-D esters		100			1928-61-6
2,4-D esters		100			1929-73-3
2,4-D esters		100			25168-26-7
2,4-Diaminoanisole sulfate			x		39156-41-7

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
2,4-Diaminazole			x		615-41-7
2,4-Diaminotoluene		10		U221	823-40-5
2,4-Dichlorophenol		100	x	U081	120-83-2
2,4-Dimethylphenol		100	x	U101	105-67-9
2,4-Dinitrophenol		10	x	P048	51-28-5
2,4,5-T esters		1000			25168-15-4
2,4,5-T salts		1000			13560-99-1
2,4,5-T amines		5000			1319-72-8
2,4,5-T amines		5000			3813-14-7
2,4,5-T amines		5000			6369-96-6
2,4,5-T amines		5000			6369-97-7
2,4,5-T amines		5000			2008-46-0
2,4,5-T esters		1000			93-79-8
2,4,5-T esters		1000			1928-47-8
2,4,5-T esters		1000			2545-59-7
2,4,5-T esters		1000			61792-07-2
2,4,5-T		1000		U232	93-76-5
2,4,5-TP acid esters		100			32534-95-5
2,5-Furandione		5000	x	U147	108-31-6
2,6-Dichlorophenol		100		U082	87-65-0
2,6-Xylidine			x		87-62-7
3,3-Dichlorobenzidine			x		91-94-1
3,4-Diaminotoluene		10	x	U221	95-80-7
3,4-Dinitrotoluene		10			610-39-9
3,4,5-Trichlorophenol		10			609-19-8
3,5-Dichloro-N-(1,1-dimethyl-2-propynyl) benzamide		5000		U192	23950-58-5
4-Aminoazobenzene			x		60-09-3
4-Aminobiphenyl			x		92-67-1

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
4-Chloro-m-cresol		5000		U039	59-50-7
4-Chlorophenyl phenyl ether		5000			7005-72-3
4-Nitrobiphenyl			x		92-93-3
4,4'-Diaminodiphenyl ether			x		101-80-4
4,4'-Isopropylidene- diphenol			x		80-05-7
4,4'-Methylene bis(N,N-di- methyl) benzenamine			x		101-61-1
4,4'-Methylenedi- aniline			x		101-77-9
4,4'-Thiodianiline 6- dinitrophenol			x		139-65-1
5-Nitro-o-anisidine			x		99-59-2
5-Nitro-o-toluidine			x		99-55-6
Acenaphthene		100			83-32-9
Acenaphthylene		5000			208-96-8
Acetaldehyde		1000	x	U001	75-07-0
Acetaldehyde, trichloro-		5000		U034	75-87-6
Acetamide			x		60-35-5
Acetamide-N-(4-ethox- yphenyl)-		100		U187	62-44-2
Acetamide,N-(ami- nothi-oxomethyl)-		1000		P002	591-08-2
Acetic acid		5000			64-19-7
Acetic acid, ethyl ester		5000		U112	141-78-6
Acetic acid, fluoro, sodium salt	10/10,000	10		P058	62-74-8
Acetic acid, lead(2+) salt		10		U144	301-04-2

(continued)



**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Acetic acid, thal- lium(1+) salt		100		U214	563-68-8
Acetic anhydride		5000			108-24-7
Acetone		5000	x	U002	67-64-1
Acetone cyanohydrin	1000	10		P069	75-86-5
Acetone thiosemicarba- zide	1000/10,000				1752-30-3
Acetonitrile		5000	x	U003	75-05-8
Acetophenone		5000	x	U004	98-86-2
Acetyl bromide		5000			506-96-7
Acetyl chloride		5000		U006	75-36-5
Acrolein	500	1	x	P003	107-02-8
Acrylamide	1000/10,000	5000	x	U007	79-06-1
Acrylic acid		5000	x	U008	79-10-7
Acrylonitrile	10,000	100	x	U009	107-13-1
Acrylyl chloride	100				814-68-6
Adipic acid		5000			124-04-09
Adiponitrile	1000				111-69-3
Aldicarb	100/10,000	1		P070	116-06-3
Aldrin	500/10,000	1	x	P004	309-00-2
Allyl alcohol	1000	100	x	P005	107-18-6
Allyl chloride		1000	x		107-05-1
Allylamine	500				107-11-9
alpha,alpha-Dimethyl phenethylamine		5000		P046	122-09-8
alpha-Endosulfan		1			959-98-8
alpha-BHC		10			319-84-6
Aluminum (fume or dust)			x		7429-90-5
Aluminum oxide (fibrous forms)			x		1344-28-1

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Aluminum phosphide	500	100		P006	20859-73-8
Aluminum sulfate		5000			10043-01-3
Aminopterin	500/10,000				54-62-6
Amiton	500				78-53-5
Amiton oxalate	100/10,000				3734-97-2
Amitrole		10	x	U011	61-82-5
Ammonia	500	100	x		7664-41-7
Ammonium acetate		5000			631-61-8
Ammonium benzoate		5000			1863-63-4
Ammonium bicarbonate		5000			1066-33-7
Ammonium bichromate		10			7789-09-5
Ammonium bifluoride		100			1341-49-7
Ammonium bisulfite		5000			10192-30-0
Ammonium carbamate		5000			1111-78-0
Ammonium carbonate		5000			506-87-6
Ammonium chloride		5000			12125-02-9
Ammonium chromate		10			7788-98-9
Ammonium citrate, dibasic		5000			3012-65-5
Ammonium fluoborate		5000			13826-83-0
Ammonium fluoride		100			12125-01-8
Ammonium hydroxide		1000			336-21-6
Ammonium nitrate (solution)			x		6484-52-2
Ammonium oxalate		5000			5972-73-6
Ammonium oxalate		5000			6009-70-7
Ammonium oxalate		5000			14258-49-2
Ammonium picrate		10		P009	131-74-8

(continued)

Table 2-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Ammonium silicofluoride		1000			16919-19-0
Ammonium sulfamate		5000			7773-06-0
Ammonium sulfate (solution)			x		7783-20-2
Ammonium sulfide		100			12135-76-1
Ammonium sulfite		5000			10196-04-0
Ammonium tartrate		5000			14307-43-8
Ammonium tartrate		5000			3164-29-2
Ammonium thiocyanate		5000			1762-95-4
Ammonium vanadate		1000		P119	7803-55-6
Amphetamine	1000				300-62-9
Amyl acetate		5000			628-63-7
Aniline,2,4,6-trimethyl-	500				88-05-1
Aniline	1000	5000	x	U012	62-53-3
Anthracene		5000	x		120-12-7
Antimony		5000	x		7440-36-0
Antimony pentachloride		1000			7647-18-9
Antimony pentafluoride	500				7783-70-2
Antimony potassium tartrate		100			28300-74-5
Antimony tribromide		1000			7789-61-9
Antimony trichloride		1000			10025-91-9
Antimony trifluoride		1000			7783-56-4
Antimony trioxide		1000			1309-64-4
Antimycin A	1000/10,000				1397-94-0
Antu	500/10,000				86-88-4
Aroclor 1016		1			12674-11-2

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Aroclor 1221		1			11104-28-2
Aroclor 1232		1			11141-16-5
Aroclor 1242		1			53469-21-9
Aroclor 1248		1			12672-29-6
Aroclor 1254		1			11097-69-1
Aroclor 1260		1			11096-82-5
Arsenic		1	x		7440-38-2
Arsenic acid		1		P010	1327-52-2
Arsenic acid		1		P010	7778-39-4
Arsenic disulfide		1			1303-32-8
Arsenic pentoxide	100/10,000	1		P011	1303-28-2
Arsenic trisulfide		1			1303-33-9
Arsenic trioxide	100/10,000	1		P012	1327-53-3
Arsenous trichloride	500	1			7784-34-1
Arsine	100				7784-42-1
Arsine, diethyl-		1		P038	692-42-2
Asbestos		1	x		1332-21-4
Azaserine		1		U015	115-02-6
Azinophos-ethyl	100/10,000				2642-71-9
Azinophos-methyl	10/10,000				86-50-0
Barium and compounds			x		7440-39-3
Barium cyanide		10		P013	542-62-1
Benzal chloride	500	5000	x	U017	98-87-3
Benzamide			x		55-21-0
Benz[a]anthracene		10		U018	56-55-3
Benzanthracene,7,12- dimethyl-		1		U094	57-97-6
Benz[c]acridine		100		U016	225-51-4
Benzenamine,2-methyl 5-nitro-		100		U181	99-55-8

(continued)

Table 2-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Benzenamine,2- methyl, hydrochloride		100	x	U222	636-21-5
Benzenamine,3-(trifluoro-methyl)-	500				98-16-8
Benzenamine-4-chloro		1000		P024	106-47-8
Benzenamine,4-chloro- 2-methyl-hydrochloride		100		U049	3165-93-3
Benzenamine, 4- methyl		100		U353	106-49-0
Benzenamine,4-nitro-		5000		P077	100-01-6
Benzenamine 4,4'- methylenebis-2- chloro		10	x	U158	101-14-4
Benzenamine,NN-dimethyl-4-phenylazo		10	x	U093	60-11-7
Benzene		10	x	U019	71-43-2
Benzene,1-bromo-4- phenoxy-		100		U030	101-55-3
Benzene,1-(chloromethyl)-4-nitro-	500/10,000				100-14-1
Benzene,1-methyl-2,4- dinitro-		10	x	U105	121-14-2
Benzene,1-methyl- ethyl- (Cumene)		5000	x	U055	98-82-8
Benzene,1,2-dichloro		100	x	U070	95-50-1
Benzene,1,2,4,5-tetra- chloro-		5000		U207	95-94-3
Benzene,1,3-dichloro		100	x	U071	541-73-1
Benzene,1,3-diisocyanatomethyl		100	x	U223	26471-62-5
Benzene,1,3,5-trinitro-		10		U234	99-35-4
Benzene,1,4-dichloro		100	x	U072	106-46-7

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Benzene,2-methyl-1,3-dinitro-		100	x	U106	606-20-2
Benzene, chloro-		100	x	U037	108-90-7
Benzene, dimethyl-		1000	x	U239	1330-20-7
Benzene, hexachloro-		10	x	U127	118-74-1
Benzene, hexahydro-(cyclohexane)		1000	x	U056	110-82-7
Benzene, m-dimethyl-		1000	x		108-38-3
Benzene, methyl-(toluene)		1000	x	U220	108-88-3
Benzene, o-dimethyl-		1000	x		95-47-6
Benzene, p-dimethyl-		1000	x		106-42-3
Benzene, pentachloro-		10		U183	608-93-5
Benzene, pentachloronitro-		100	x	U185	82-68-8
Benzene, arsonic acid	10/10,000				98-05-5
Benzene, sulfonyl chloride		100		U020	98-09-9
Benzidine		1	x	U021	92-87-5
Benzimidazole, 4,5-dichloro-2-(trifluoromethyl)	500/10,000				3615-21-2
Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-		10		U157	56-49-5
Benzoic acid		5000			65-85-0
Benzo[a]pyrene		1		U022	50-32-8
Benzo[b]fluoranthene		1			205-99-2
Benzo[ghi]perylene		5000			191-24-2
Benzoic acid		5000			65-85-0
Benzo[jk]fluorene		100		U120	206-44-0
Benzo[k]fluoranthene		5000			207-08-9

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Benzonitrile		5000			100-47-0
Benzotrichloride	500	10	x	U023	98-07-7
Benzoyl chloride		1000	x		98-88-4
Benzoyl peroxide			x		94-36-0
Benzyl chloride	500	100	x	P028	100-44-7
Benzyl cyanide	500				140-29-4
Beryllium chloride		1			7787-47-5
Beryllium fluoride		1			7787-49-7
Beryllium nitrate		1			13597-99-4
Beryllium nitrate		1			7787-55-5
Beryllium		10	x	P015	7440-41-7
beta-Endosulfan		1			33213-65-9
beta-BHC		1			319-85-7
beta-Chloronaphthalene		5000		U047	91-58-7
Bicyclo[2.2.1]heptane-2-carbonitrile, 5-chloro-6-(methyl)	500/10,000				15271-41-7
Biphenyl			x		92-52-4
Bis(2-chloroethoxy) methane		1000	x	U024	111-91-1
Bis(2-chloroisopropyl) ether		1000	x	U027	108-60-1
Bis(2-ethylhexyl)adipate			x		103-23-1
Bis(chloromethyl)ketone	10/10,000				534-07-6
Bitoscanate	500/10,000				4044-65-9
Boron trichloride	500				10294-34-5
Boron trifluoride compound with methyl ether (1:1)	1000				353-42-4

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Boron trifluoride	500				7637-07-2
Bromadiolone	100/10,000				18772-56-7
Bromine	500				7726-95-6
Bromoacetone		1000		P017	598-31-2
Bromochlorodifluoromethan (Halon 1211)			x		353-59-3
Bromoform		100	x	U225	75-25-2
Bromotrifluoromethane (Halon 1311)			x		75-63-8
Brucine		100		P018	357-57-3
Butanoic acid.4-[bis(2-chloroethyl)amino] benzene-		10		U035	305-03-3
Butyl benzyl Phthalate		100	x		85-68-7
Butyl acetate		5000			123-86-4
Butyl acrylate			x		141-32-2
Butylamine		1000			109-73-9
Butyraldehyde			x		123-72-8
Butyric acid		5000			107-92-6
CI Acid Green 3			x		4680-78-8
CI Basic Green 4			x		569-64-2
CI Basic Red 1			x		989-38-8
CI Direct Black 38			x		1937-37-7
CI Direct Blue 6			x		2602-46-2
CI Direct Brown 95			x		16071-86-6
CI Disperse Yellow 3			x		2832-40-8
CI Food Red 15			x		81-88-9
CI Food Red 5			x		3761-53-3
CI Solvent Orange 7			x		3118-97-6
CI Solvent Yellow 14			x		824-07-0

(continued)



Table 2-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
CI Solvent Yellow 34 (Auramine)		100	x	U014	492-80-8
CI Solvent Yellow 3			x		97-56-3
CI Vat Yellow 4			x		128-66-5
Cacodylic acid		1		U136	75-60-5
Cadmium		10	x		7440-43-9
Cadmium acetate		10			543-90-8
Cadmium bromide		10			7789-42-6
Cadmium chloride		10			10108-64-2
Cadmium oxide	100/10,000				1306-19-0
Cadmium stearate	1000/10,000				2223-93-0
Calcium arsenate	500/10,000	1			7778-44-1
Calcium arsenite		1			52740-16-6
Calcium carbide		10			75-20-7
Calcium chromate		10		U032	13765-19-0
Calcium cyanamide			x		156-62-7
Calcium cyanide		10		P021	592-01-8
Calcium dodecylben- zene sulfonate		1000			26264-06-2
Calcium hypochlorite		10			7778-54-3
Cantharidin	100/10,000				56-25-7
Captan		10	x		133-06-2
Carbachol chloride	500/10,000				51-83-2
Carbamic acid, ethyl ester		100	x	U238	51-79-6
Carbamic acid, methyl- nitroso-,ethyl ester		1		U178	615-53-2
Carbamic acid, methyl- o-(((2,4-dimethyl- 1,3 dithiolan-2-y	100/10,000				26419-73-8
Carbamic chloride, dimethyl-		1	x	U097	79-44-7

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Carbaryl		100	x		63-25-2
Carbofuran	10/10,000	10			1563-66-2
Carbon disulfide	10,000	100	x	P022	75-15-0
Carbon oxyfluoride		1000		U033	353-50-4
Carbon tetrachloride		10	x	U211	56-23-5
Carbonyl sulfide			x		463-58-1
Carbophenothion	500				786-19-6
Catechol			x		120-80-9
Chloramben			x		133-90-4
Chlordane	1000	1	x	U036	57-74-9
Chlorfenvinfos	500				470-90-6
Chlorinated fluorocar- bon(Freon 113)			x		76-13-1
Chlorine	100	10	x		7782-50-5
Chlorine cyanide		10		P033	506-77-4
Chlorine dioxide			x		10049-04-4
Chlormephos	500				24934-91-6
Chloromequat chloride	100/10,000				999-81-5
Chlornaphazine		100		U026	494-03-1
Chloroacetaldehyde		1000		P023	107-20-0
Chloroacetic acid	100/10,000		x		79-11-8
Chlorobenzilate		10	x	U038	510-15-6
Chlorodibromomethane		100			124-48-1
Chlorodifluoromethane (HCFC-22)			x		75-45-6
Chloroethane		100	x		75-00-3
Chloroethanol	500				107-07-3
Chloroethyl chloroformate	1000				627-11-2
Chloroform	10,000	10	x	U044	67-66-3

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Chloromethyl methyl ether	100	10	x	U046	107-30-2
Chlorophacinone	100/10,000				3691-35-8
Chloroprene			x		126-99-8
Chlorotetrafluoroethane			x		63938-10-3
Chlorothalonil			x		1897-45-6
Chloroxuron	500/10,000				1982-47-4
Chlorpyrifos		1			2921-88-2
Chlorsulfonic acid		1000			7790-94-5
Chlorthiophos	500				21923-23-9
Chromic acetate		1000			1066-30-4
Chromic acid		10			11115-74-5
Chromic acid		10			7738-94-5
Chromic chloride	1/10,000				10025-73-7
Chromic sulfate		1000			10101-53-8
Chromium		5000	x		7440-47-3
Chromous chloride		1000			10049-05-5
Cobalt			x		7440-50-8
Cobalt,((2,2'-1,2-ethanediylbis(ni-trilomethyldyne))bis(6)	100/10,000				62207-76-5
Cobalt carbonyl	10/10,000				10210-68-1
Cobaltous bromide		1000			7789-43-7
Cobaltous formate		1000			544-18-3
Cobaltous sulfamate		1000			14017-41-5
Colchicine	10/10,000				64-86-8
Copper		5000	x		7440-50-8
Copper cyanide		10		P029	544-92-3
Coumaphos	100/10,000	10			56-72-4

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Coumatetralyl	500/10,000				5836-29-3
Cresol(s) (mixed iso- mers)		1000	x	U052	1319-77-3
Cresol,o-	1000/10,000	1000	x	U052	95-48-7
Creosote		1	x	U051	8001-58-9
Crimidine	100/10,000				535-89-7
Crotonaldehyde.(E)-	1000	100		U053	123-73-9
Crotonaldehyde	1000	100		U053	4170-30-3
Cumene hyroperoxide			x		80-15-9
Cupferron			x		135-20-6
Cupric acetate		100			142-71-2
Cupric chloride		10			7447-39-4
Cupric nitrate		100			3251-23-8
Cupric oxalate		100			5893-66-3
Cupric sulfat		10			7758-98-7
Cupric sulfate ammoni- ated		100			10380-29-7
Cupric tartrate		100			815-82-7
Cyanides (soluble cya- nide salts		10		P030	57-12-5
Cyanogen		100		P031	460-19-5
Cyanogen bromide	500/10,000	1000		U246	506-68-3
Cyanogen iodide	1000/10,000				506-78-5
Cyanophos	1000				2636-26-2
Cyanuric fluoride	100				675-14-9
Cyclohexanone		5000		U057	108-94-1
Cycloheximide	100/10,000				66-81-9
Cyclohexylamine	10,000				108-91-8
Cyclophosphamide		10		U058	50-18-0

(continued)

**Table 2-1 (continued)**

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
D-Glucopyranose,2- deoxy-2-(3-methyl- 3-ni-trosoureido)-		1		U206	18883-66-4
Daunomycin		10		U059	20830-81-3
DDD		1		U060	72-54-8
DDE		1			72-55-9
DDT		1		U061	50-29-3
Decaborane(14)	500/10,000				17702-41-9
Decabromodiphenyl oxide			x		1163-19-5
Delta-BHC		1			319-86-8
Demeton	500				8065-48-3
Demeton-S-methyl	500				919-86-8
Di-(2-ethylhexyl)phth- late (DEHP)			x		177-81-7
Di-n-octyl phthalate		5000	x	U107	117-84-0
Di-n-propylnitro- samine(N-Nitrosodi- n-propylamine)		10	x	U111	621-64-7
Dialifor	100/10,000				10311-84-9
Diallate		100	x	U062	2303-16-4
Diaminotoluene (mixed isomers)		10	x	U221	25376-45-8
Diaminotoluene(mixed isomers)		10			496-72-0
Diazinon		1			333-41-5
Diazomethane			x		334-88-3
Dibenz(a)lpyrene		10		U064	189-55-9
Dibenz[a.h] anthracene		1		U063	53-70-3
Dibenzofuran			x		132-64-9
Diborane	100				19287-45-7

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Dibromotetrafluoroethane (Halon 2402)			x		124-73-2
Dibutyl phthalate		10	x	U069	84-74-2
Dicamba		1000			1918-00-9
Dichlone		1			117-80-6
Dichloro-1,1,2-trifluoroethane			x		90454-18-5
Dichlorobenzene (mixed isomers)		100	x		25321-22-6
Dichlorobromomethane		5000	x		75-27-4
Dichlorodifluoromethane(CFC-12)		5000	x	U075	75-71-8
Dichloroethyl ether	10,000	10	x	U025	111-44-4
Dichloromethyl ether	100	10	x	P016	542-88-1
Dichloromethylphenylsilane	1000				149-74-6
Dichloropropane		1000			26638-19-7
Dichloropropane-		100			8003-19-8
Dichloropropene		100			26952-23-8
Dichlorotetrafluoroethane (CFC-114)			x		76-14-2
Dichlorotrifluoroethane			x		34077-87-7
Dichlorvos	1000	10	x		62-73-7
Dicholobenil		100			1194-65-6
Dicofol			x		115-32-2
Dicrotophos	100				141-66-2
Dieldrin		1		P037	60-57-1
Diepoxybutane	500	10	x	U085	1464-53-5
Diethanolamine			x		111-42-2
Diethyl chlorophosphate	500				814-49-3

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Diethyl-p-nitrophenylphosphate		100		P041	311-45-5
Diethyl sulfate			x		64-67-5
Diethylamine		100			109-89-7
Diethylcarbamazine citrate	100/10,000				1642-54-2
Diethylstilbestrol		1		U089	56-53-1
Digitoxin	100/10,000				71-63-6
Diglycidyl ether	1000				2238-07-5
Digoxin	10/10,000				20830-75-5
Dihydrosafrole			x		94-58-6
Diisopropylfluorophosphate	100	100		P043	55-91-4
Dimefox	500				115-26-4
Dimethoate	500/10,000	10		P044	60-51-5
Dimethyl-p-phenylenediamine	10/10,000				99-98-9
Dimethyl phosphorochloridothioate	500				2524-03-0
Dimethyl phthalate		5000	x	U102	131-11-3
Dimethyl sulfate	500	100	x	U103	77-78-1
Dimethylamine		1000		U092	124-40-3
Dimethyldichlorosilane	500				75-78-5
Dimethylhydrazine	1000	10	x	U098	57-14-7
Dimetilan	500/10,000				644-64-4
Dinitrobenzene (mixed)		100			25154-54-5
Dinitrophenol		10			25550-58-7
Dinitrotoulene	10/10,000	10	x	P047	534-52-1
Dinitrotoluene (mixed isomers)		10	x		25321-14-6
Dinoseb	100/10,000	1000		P020	88-85-7

(continued)

Table 2-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Dinoterb	500/10,000				1420-07-1
Dioxathion	500				78-34-2
Diphacinone	10/10,000				82-66-6
Diphosphoramide, octamethyl-	100	100		P085	152-16-9
Dipropylamine		5000		U110	142-84-7
Diquat		1000			85-00-7
Diquat		1000			2764-72-9
Disulfoton	500	1		P039	298-04-4
Dithiazinine iodide	500/10,000				514-73-8
Dithiobiuret	100/10,000	100		P049	541-53-7
Diuron		100			330-54-1
Dodecylbenzene- sulfonic acid		1000			27176-87-0
Emetine.dihydrochloride	1/10,000				316-42-7
Endosulfan	10/10,000	1		P050	115-29-7
Endosulfan sulfate		1			1031-07-8
Endothall		1000		P088	145-73-3
Endothion	500/10,000				2778-04-3
Endrin	500/10,000	1		P051	72-20-8
Endrin aldehyde		1			7421-93-4
Epichlorohydrin	1000	100	x	U041	106-89-8
EPN	100/10,000				2104-64-5
Ergocalciferol	1000/10,000				50-14-6
Ergotamine tartrate	500/10,000				379-79-3
Ethanamine.N-ethyl-N- nitroso-		1	x	U174	55-18-5
Ethane.1,1'-oxybis-		100		U117	60-29-7
Ethane.1,2-dibromo-		1	x	U067	106-93-4
Ethane.1,1,2-trichloro		100	x	U227	79-00-5

(continued)



**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Ethane,1,1,1,2-tetra- chloro-		100		U208	630-20-6
Ethane,1,1,2,2-tetra- chloro-		100	x	U209	79-34-5
Ethane, hexachloro		100	x	U131	67-72-1
Ethanesulfonyl chlo- ride, 2-chloro-	500				1622-32-8
Ethanethioamide		10	x	U218	62-55-5
Ethanol,1,2-dichloro- acetate	1000				10140-87-1
Ethanol,2,2'-(nitroso imino) bis-		1		U173	1116-54-7
Ethene, tetrachloro		100	x	U210	127-18-4
Ethene, chloro-		1	x	U043	75-01-4
Ethion	1000	10			563-12-2
Ethoprophos	1000				13194-48-4
Ethyl acrylate		1000	x	U113	140-88-5
Ethyl chloroformate			x		541-41-3
Ethyl methacrylate		1000		U118	97-63-2
Ethyl methanesulfonate		1		U119	62-50-0
Ethylbenzene		1000	x		100-41-4
Ethylbis(2-chloroet- hyl)amine	500				538-07-8
Ethylene			x		74-85-1
Ethylene glycol			x		107-21-1
Ethylene oxide	1000	10	x	U115	75-21-8
Ethylene thiourea		10	x	U116	96-45-7
Ethylenebisdithiocar- bamic- acid, salts & esters/		5000		U114	111-54-6
Ethylenediamine	10,000	5000			107-15-3

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Ethylenediamine tetra- acetic acid (EDTA)		5000			60-00-4
Ethyleneimine	500	1	x	P054	151-56-4
Ethylenethiocyanate	10,000				542-90-5
Ethylidene dichloride			x		75-34-3
Famphur		1000		P097	52-85-7
Fenamiphos	10/10,000				22224-92-6
Fenitrothion	500				122-14-5
Fensulfothion	500				115-90-2
Ferric ammonium cit- rate		1000			1185-57-5
Ferric ammonium oxalate		1000			2944-67-4
Ferric ammonium oxalate		1000			55488-87-4
Ferric chloride		1000			7705-08-0
Ferric fluoride		100			7783-50-8
Ferric nitrate		1000			10421-48-4
Ferric sulfate		1000			10028-22-5
Ferrous ammonium sul- fate		1000			10045-89-3
Ferrous chloride		100			7758-94-3
Ferrous sulfate		1000			7720-78-7
Ferrous sulfate		1000			7782-63-0
Florouracil	500/10,000				51-21-8
Fluometuron	100/10,000				4301-50-2
Fluometuron			x		2164-17-2
Fluorene		5000			86-73-7
Fluorine	500	10		P056	7782-41-4
Fluoroacetamide	100/10,000	100		P057	640-19-7
Fluoroacetic acid	10/10,000				144-49-0

(continued)

Table 2-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Fluoroacetyl chloride	10				359-06-8
Fonofos	500				944-22-9
Formaldehyde	500	100	x	U122	50-00-0
Formaldehyde cyano- hydrin	1000				107-16-4
Formetanate hydro- chloride	500/10,000				23422-53-9
Formic acid		5000	x	U123	64-18-6
Formothion	100				2540-82-1
Formparanate	100/10,000				17702-57-7
Fosthietan	500				21548-32-3
Fuberidazole	100/10,000				3878-19-1
Fulminic acid. mercury(II) salt		10		P065	628-86-4
Fumaric acid		5000			110-17-8
Furan	500	100		U124	110-00-9
Furan, tetrahydro-		1000		U213	109-99-9
Gallium trichloride	500/10,000				13450-90-3
Glycidylaldehyde		10		U126	765-33-4
Guanidine,N-nitroso-N methyl-N'-nitro		10		U163	70-25-7
Heptachlor		1	x	P059	76-44-8
Heptachlor epoxide		1			1024-57-3
Hexachloro-1,3-butadi- ene		1	x	U128	87-68-3
Hexachlorocyclopenta- diene	100	10	x	U130	77-47-4
Hexachloronaphthalene			x		1335-87-1
Hexachlorophene		100	x	U132	70-30-4
Hexachloropropene		1000		U234	1888-71-7
Hexaethyl tetraphos- phate		100		P062	757-58-4

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Hexamethylenedi- amine, N,N'-dibutyl-	500				4835-11-4
Hexamethylphosphora- mide			x		680-31-9
Hydrazine	1000	1	x	U133	302-01-2
Hydrazine sulfate			x		10034-93-2
Hydrochloric acid (Hydro-gen chloride (gas only))***	500	5000	x		7647-01-0
Hydrocyanic acid	100	10	x	P063	74-90-8
Hydrogen fluoride	100	100	x	U134	7664-39-3
Hydrogen peroxide (conc > 52%)	1000				7722-84-1
Hydrogen selenide	10				7783-07-5
Hydrogen sulfide	500	100	x	U135	7783-06-4
Hydroquinone	500/10,000		x		123-31-9
Indeno(1.2.3-cd)pyrene		100		U137	193-39-5
Iron, pentacarbonyl-	100				13463-40-06
iso-Amyl acetate		5000			123-92-2
iso-Butyl acetate		5000			110-19-0
iso-Butylamine		1000			78-81-9
iso-Butyric acid		5000			79-31-2
Isobenzan	100/10,000				297-78-9
Isobutyl alcohol		5000		U140	78-83-1
Isobutyraldehyde			x		78-84-2
Isobutyronitrile	1000				78-82-0
Isocyanic acid.3,4- dichlorophenyl ester	500/10,000				102-36-3
Isodrin	100/10,000	1		P060	465-73-6
Isophorone		5000			78-59-1
Isophorone diisocyan- ate	100				4098-71-9

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>toxic chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Isoprene		100			78-79-5
Isopropanolamine dodecylbenzene sulfonate		1000			42504-46-1
Isopropyl alcohol (mfg- strong acid pro- cesses)			x		67-63-0
Isopropyl chloroformate	1000				108-23-6
Isopropylmethylpyra- zoly dimethylcar- bamate	500				119-38-0
Kepone		1		U142	143-50-0
Lactonitrile	1000				78-97-7
Lasiocarpine		10		U143	303-34-4
Lead		10	x		7439-92-1
Lead arsenate		1			10102-48-4
Lead arsenate		1			7645-25-2
Lead arsenate		1			7784-40-9
Lead chloride		10			7758-95-4
Lead fluoborate		10			13814-96-5
Lead fluoride		10			7783-46-2
Lead iodide		10			10101-63-0
Lead nitrate		10			10099-74-8
Lead phosphate		10		U145	7446-27-7
Lead stearate		10			1072-35-1
Lead stearate		10			52652-59-2
Lead stearate		10			7428-48-0
Lead stearate		10			56189-09-4
Lead subacetate		10		U146	1335-32-6
Lead sulfate		10			15739-80-7
Lead sulfate		10			7446-14-2

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Lead sulfide		10			1314-87-0
Lead thiocyanate		10			592-87-0
Leptophos	500/10,000				21609-90-5
Lewisite	10				541-25-3
Lindane	1000/10,000	1	x	U129	58-89-9
Lithium chromate		10			14307-35-8
Lithium hydride	100				7580-67-8
m-Cresol		1000	x	U052	108-39-4
m-Nitrophenol		100			554-84-7
m-Nitrotoluene		1000			99-08-1
Malathion		100			121-75-5
Maleic acid		5000			110-16-7
Maleic, hydrazide		5000		U148	123-33-1
Malononitrile	500/10,000	1000	x	U149	109-77-3
Maneb			x		12427-38-2
Manganese			x		7439-96-5
Manganese, tricarbonyl methylcyclopentadienyl	100				12108-13-3
Mechlorethamine	10		x		51-75-2
Melphalan		1		U150	148-82-3
Mephosfolan	500				950-10-7
Mercuric acetate	500/10,000				1600-27-7
Mercuric chloride	500/10,000				7487-94-7
Mercuric cyanide		1			592-04-1
Mercuric nitrate		10			10045-94-0
Mercuric oxide	500/10,000				21908-53-2
Mercuric sulfate		10			7783-35-9
Mercuric thiocyanate		10			592-85-8
Mercurous nitrate		10			7782-86-7

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Mercurous nitrate		10			10415-75-5
Mercury		1	x	U151	7439-97-6
Methacrolein diacetate	1000				10476-95-6
Methacrylic anhydride	500				760-93-0
Methacryloyl chloride	100				920-46-7
Methacryloyloxyethyl isocyanate	100				30674-80-7
Methacrylonitrile	500	1000	x	U152	126-98-7
Methamidophos	100/10,000				10265-92-6
Methane, chloro		100	x	U045	74-87-3
Methane, dibromo-		1000	x	U068	74-95-3
Methane, dichloro-		1000	x	U080	75-09-2
Methane, iodide-		100	x	U138	74-88-4
Methane, trichlorofluoro- (CFC-11)		5000		U121	75-69-4
Methanesulfanyl chloro- ride, trichloro	500	100		P118	594-42-3
Methanesulfonyl fluo- ride	1000				558-25-8
Methanol		5000	x	U154	67-56-1
Methapyrilene		5000		U155	91-80-5
Methidathion	500/10,000				950-37-8
Methiocarb	500/10,000	10			2032-65-7
Methomyl	500/10,000	100		P066	16752-77-5
Methoxychlor		1	x		72-43-5
Methoxyethylmercuri- acetate	500/10,000				151-38-2
Methyl 2-chloroacry- late	500				80-63-7
Methyl acrylate			x		96-33-3
Methyl bromide	1000	1000	x	U029	74-83-9

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Methyl chlorocarbonate			x		79-22-1
Methyl chloroformate(Methylchlorocarbonate)	500	1000		U156	79-22-1
Methyl chloroform		1000	x	U226	71-55-6
Methyl hydrazine		10	x	P068	60-34-4
Methyl isobutyl ketone		5000	x	U161	108-10-1
Methyl isocyanate	500	10	x	P064	624-83-9
Methyl isothiocyanate	500				556-61-1
Methyl mercaptan	500	100	x	U153	74-93-1
Methyl methacrylate		1000	x	U162	80-62-6
Methyl phenkapton	500				3735-23-7
Methyl phosphonic dichloride	100				676-97-1
Methyl tert-butyl ether			x		1634-04-4
Methyl thiocyanate	10.000				556-64-9
Methyl vinyl ketone	10				78-94-4
Methylene-bis-(phenyl-iso-cyanate)(MBI)			x		101-68-8
Methylmercuric dicyanamide	500/10,000				502-39-6
Methylthiouracil		10		U164	56-04-2
Methyltrichlorosilane	500				75-79-6
Metolcarb	100/10,000				1129-41-5
Mevinphos	500	10			7786-34-7
Mexacarbate	500/10,000	1000			315-18-4
Michler's ketone			x		90-94-8
Mitomycin C	500/10,000	10		U010	50-07-7
Molybdenum trioxide			x		1313-27-5
Moncrotophos	10/10,000				6923-22-4

(continued)



**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
(Mono)chloropenta- fluoroethane (CFC 115)			x		76-15-3
Monoethylamine		100			75-04-7
Monomethylamine		100			74-89-5
Muscimol	500/10,000	1000		P007	2763-96-4
Mustard gas	500		x		505-60-2
n-Butyl alcohol			x		71-36-3
N,N'-Dimethylaniline			x		121-69-7
N,N'-Diethylhydrazine		10		U086	1615-80-1
N-Nitroso-N-ethylurea		1	x		759-73-9
N-Nitroso-N-methy- lurea		1	x		684-93-5
N-Nitrosodipheny- lamine		100	x		86-30-6
N-Nitrosomethylviny- lamine		10	x		4549-40-0
N-Nitrosomorpholine			x		59-89-2
N-Nitrosornicotine			x		16543-55-8
N-Nitrosopiperidine		10	x	U179	100-75-4
N-Nitrosopyrrolidine		1		U180	930-55-2
Naled		10			300-76-5
Naphthalene		100	x	U165	91-20-3
Naphthenic acid		100			1338-24-5
Nickel		100	x		7440-02-0
Nickel ammonium sul- fate		100			15699-18-0
Nickel carbonyl	1	10		P073	13463-39-3
Nickel chloride		100			37211-05-5
Nickel chloride		100			7718-54-9
Nickel cyanide		10		P074	557-19-7

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Nickel hydroxide		10			12054-48-7
Nickel nitrate		100			14216-75-2
Nickel sulfate		100			7786-81-4
Nicotine	100	100		P075	54-11-5
Nicotine sulfate	100/10,000				65-30-5
Nitric acid	1000	1000	x		7697-37-2
Nitric oxide	100	10		P076	10102-43-9
Nitrilotriacetic acid			x		139-13-9
Nitrobenzene	10,000	1000	x	U169	98-95-3
Nitrocyclohexane	500				1122-60-7
Nitrogen			x		1836-75-5
Nitrogen dioxide	100	10		P078	10102-44-0
Nitrogen dioxide		10		P078	10544-72-6
Nitroglycerine		10	x	P081	55-63-0
Nitrophenol (mixed)		100			25154-55-6
Nitrosodimethylamine	1000	10	x	P082	62-75-9
Nitrotoluene		1000			1321-12-6
Norbormide	100/10,000				991-42-4
O,O-Diethyl S-methyl dithiophosphate		5000		U087	3288-58-2
o-Anisidine hydrochloride			x		134-29-2
o-Anisidine			x		90-04-0
o-Dinitrobenzene		100	x		528-29-0
o-Nitrophenol		100	x		88-75-5
o-Nitrotoluene		1000			88-72-2
o-Toluidine		100	x	U328	95-53-4
Octachloronaphthalene			x		2234-13-1
Osmium tetroxide		1000	x	P087	20816-12-0
Ouabain	100/10,000				630-60-4

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Oxamyl	100/10,000				23135-22-0
Oxetane,3,3- bis(chloromethyl)-	500				78-71-7
Oxydisulfoton	500				2497-07-6
Ozone	100				10028-15-6
p-Anisidine			x		104-94-9
p-Benzoquinone		10	x	U197	106-51-4
p-Cresidine			x		120-71-8
p-Cresol		1000	x	U052	106-44-5
p-Dinitrobenzene		100	x		100-25-4
p-Nitrophenol		100	x	U170	100-02-7
p-Nitrosodiphenylamine			x		156-10-5
p-Nitrotoluene		1000			99-99-0
p-Phenylenediamine			x		106-50-3
Paraformaldehyde		1000			30525-89-4
Paraldehyde		1000	x		123-63-7
Paraquat	10/10,000				1910-42-5
Paraquat methosulfate	10/10,000				2074-50-2
Parathion	100	10	x	P089	56-38-2
Parathion, methyl	100/10,000	100		P071	298-00-0
Paris green (Cupric acetoarsenite)	500/10,000	1			12002-03-8
Pentaborane	500				19624-22-7
Pentachloroethane		10	x	U184	76-01-7
Pentachlorophenol		10	x	U242	87-86-5
Pentadecyclamine	100/10,000				2570-26-5
Peracetic acid	500		x		79-121-0
Phenanthrene		5000			85-01-8
Phenol	500/10,000	1000	x	U188	108-95-2

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Phenol,2,2'-thio bis (4-chloro-6-methyl	100/10,000				4418-66-0
Phenol,2,3,4,6-tetra-chloro		10		U212	58-90-2
Phenol,2,4,5-trichloro		10	x	U230	95-95-4
Phenol,2,4,6-trichloro		10	x	U231	88-06-2
Phenol,3-(1-methyl-ethyl). methylcarbamate	500/10,000				64-00-6
Phenoxarsine,10,10'-oxydi-	500/10,000				58-36-6
Phenyl dichloroarsine	500	1		P036	696-28-6
Phenylhydrazine hydrochloride	1000/10,000				59-88-1
Phenylmercury acetate	500/10,000	100		P092	62-38-4
Phenylsilatrane	100/10,000				2097-19-0
Phenylthiourea	100/10,000	100		P093	103-85-5
Phorate	10	10		P094	298-02-2
Phosacetim	100/10,000				4104-14-7
Phosfolan	100/10,000				947-02-4
Phosgene	10	10	x	P095	75-44-5
Phosmet	10/10,000				732-11-6
Phosphamidon	100				13171-21-6
Phosphine	500	100		P096	7803-51-2
Phosphonothioic acid-methyl-O-(4-nitrophenyl)O-phenyl ester	500				2665-30-7
Phosphonothioic acid, methyl-O-ethyl-O-(4-(methylthio)phenyl) Ester	500				2703-13-1

(continued)

Table 2-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Phosphonothioic acid, methyl-,s-(2-(bis(1- methylethyl)amino Ethyl o-Ethyl Ester	100				50782-69-9
Phosphoric acid		5000	x		7664-38-2
Phosphoric acid, dimethyl 4-(meth- ylthio)phenyl ester	500				3254-63-5
Phosphorothioic acid, O,O-diethyl, O- pyrazinyl ester	500	100		P040	297-97-2
Phosphorothioic acid, O,O-dimethyl-S-(2- methylthio)ethyl est	500				2587-90-8
Phosphorus	100	1	x		7723-14-0
Phosphorus oxychloride	500	1000			10025-87-3
Phosphorus pentachloride	500				10026-13-8
Phosphorus pentasulfide		100		U189	1314-80-3
Phosphorus pentoxide	10				1314-56-3
Phosphorus trichloride	1000	1000			7719-12-2
Physostigmine	100/10,000				57-47-6
Physostigmine, sali- cylate (1:1)	100/10,000				57-64-7
Picric acid			x		88-89-1
Picrotoxin	500/10,000				124-87-8
Piperidine	1000				110-89-4
Pirimifos-ethyl	1000				23505-41-1
Polychlorinated biphe- nyls		1	x		1336-36-3
Potassium arsenate		1			7784-41-0
Potassium arsenite	500/10,000	1			10124-50-2

(continued)

**Table 2-1 (continued)**

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Potassium bichromate		10			7778-50-9
Potassium chromate		10			7789-00-6
Potassium cyanide	100	10		P098	151-50-8
Potassium hydroxide		1000			1310-58-3
Potassium permanganate		100			7722-64-7
Potassium silver cyanide	500	1		P099	506-61-6
Promecarb	500/10,000				2631-37-0
Pronamide			x		23950-58-5
Propargite		10			2312-35-8
Propargyl alcohol		1000		P102	107-19-7
Propargyl bromide	10				106-96-7
Propiolactone, beta-	500		x		57-57-8
Propionaldehyde			x		123-38-6
Propionic acid		5000			79-09-4
Propionic acid, 2-(2,4,5-trichlorophenoxy)-		100		U233	93-72-1
Propionic anhydride		5000			123-62-6
Propiophenone, 4'-amino-	100/10,000				70-69-9
Propenenitrile	500	10		P101	107-12-0
Propenenitrile, 3-chloro-	1000	1000		P027	542-76-7
Propoxur			x		114-26-1
Propyl chloroformate	500				109-61-5
Propylene (Propene)			x		115-07-1
Propylene oxide	10,000	100	x		75-56-9
Propyleneimine	10,000	1	x	P067	75-55-8
Prothoate	100/10,000				2275-18-5
Pyrene	1000/10,000	5000			129-00-0

(continued)

**Table 2-1 (continued)**

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Pyrethrins		1			121-21-1
Pyrethrins		1			121-29-9
Pyrethrins		1			8003-34-7
Pyridine		1000	x	U196	110-86-1
Pyridine,2-methyl-5- vinyl-	500				140-76-1
Pyridine,4-amino-	500/10,000	1000		P008	504-24-5
Pyridine,4-nitro-1- oxide	500/10,000				1124-33-0
Pyriminil	100/10,000				53558-25-1
Quinoline		5000	x		91-22-5
Reserpine		5000		U200	50-55-5
Salcomine	500/10,000				14167-18-1
Sarin	10				107-44-8
sec-Amyl acetate		5000			626-38-0
sec-Butyl acetate		5000			105-46-4
sec-Butyl alcohol			x		78-92-2
sec-Butylamine		1000			13952-84-6
sec-Butylamine		1000			513-49-5
Selenium		100	x		7782-49-2
Selenium dioxide		10		U204	7446-08-4
Selenium disulfide		10		U205	7448-56-4
Selenium oxychloride	500				7791-23-3
Selenious acid	1000/10,000	10		U204	7783-00-8
Selenouree		1000		P103	630-10-4
Semicarbazide hydro- chloride	1000/10,000				563-41-7
Silane,(4-aminobutyl) diethoxymethyl-	1000				3037-72-7
Silver		1000	x		7440-22-4

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Silver cyanide		1		P104	506-64-9
Silver nitrate		1			7761-88-8
Sodium		10			7440-23-5
Sodium arsenate	1000/10,000	1			7631-89-2
Sodium arsenite	500/10,000	1			7784-46-5
Sodium azide (Na(N <sub>3</sub> ))	500	1000		P105	26628-22-8
Sodium bichromate		10			10588-01-9
Sodium bifluoride		100			1333-83-1
Sodium bisulfite		5000			7631-90-5
Sodium cacodylate	100/10,000				124-65-2
Sodium chromate		10			7775-11-3
Sodium cyanide (Na(CN))	100	10		P106	143-33-9
Sodium dodecylben- zene sulfonate		1000			25155-30-0
Sodium fluoride		1000			7681-49-4
Sodium fluoroacetate	10/10,000	10		P058	62-74-8
Sodium hydrosulfide		5000			16721-80-5
Sodium hydroxide		1000			1310-73-2
Sodium hypochlorite		100			10022-70-5
Sodium hypochlorite		100			7681-52-9
Sodium methylate		1000			124-41-4
Sodium nitrite		100			7632-00-0
Sodium phos- phate,dibasic		5000			10039-32-4
Sodium phos- phate,dibasic		5000			10140-65-5
Sodium phos- phate,dibasic		5000			7558-79-4
Sodium phosphate. tribasic		5000			10101-89-0

(continued)



**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Sodium phosphate, tribasic		5000			10124-56-8
Sodium phosphate, tribasic		5000			10361-89-4
Sodium phosphate, tribasic		5000			7601-54-9
Sodium phosphate, tribasic		5000			7758-29-4
Sodium phosphate, tribasic		5000			7785-84-4
Sodium selenate	100/10,000				13410-01-0
Sodium selenite	100/10,000	100			10102-18-8
Sodium selenite		100			7782-82-3
Sodium tellurite	500/10,000				10102-20-2
Strannane,acetoxo- triphenyl-	500/10,000				900-95-8
Strontium chromate		10			7789-06-2
Strychnine	100/10,000	10		P108	57-24-9
Strychnine, sulfate	100/10,000				60-41-3
Styrene		1000	x		100-42-5
Styrene oxide			x		96-09-3
Sulfotep	500	100		P109	3689-24-5
Sulfoxide,3-chloropro- pyl octyl	500				3569-57-1
Sulfur dioxide	500				7446-09-5
Sulfur monochloride		1000			12771-08-3
Sulfur tetrafluoride	100				7783-60-0
Sulfur trioxide	100				7446-11-9
Sulfuric acid	1000	1000	x		7664-93-9
Sulfuric acid		1000			8014-95-7
Tabun	10				77-81-6
Tellurium	500/10,000				13494-80-9

(continued)

Table 2-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Tellurium hexafluoride	100				7783-80-4
Tetraethyldithiopyr phosphate	100	10		P111	107-49-3
Terbufos	100				13071-79-9
tert-Amyl acetate		5000			625-16-1
tert-Butyl acetate		5000			540-88-5
tert-Butyl alcohol			x		75-65-0
tert-Butylamine		1000			75-64-9
Tetrachlorvinphos			x		961-11-5
Tetraethyllead	100	10		P110	78-00-2
Tetraethyltin	100				597-64-8
Tetramethyl Lead	100				75-74-1
Tetranitromethane	500	10		P112	509-14-8
Thallic oxide		100		P113	1314-32-5
Thallium		1000	x		7440-28-0
Thallium(1) carbonate	100/10,000	100		U215	6533-73-9
Thallium (I)sulfate	100/10,000	100		P115	10031-59-1
Thallium(I)nitrate		100		U217	10102-45-1
Thallium(I)selenide		1000		P114	12039-52-0
Thalious chloride	100/10,000	100		U216	7791-73-9
Thalious malonate	100/10,000				2757-18-8
Thalious sulfate	100/10,000	100		P115	7446-18-6
Thiocarbazide	1000/10,000				2231-57-4
Thiofanox	100/10,000	100		P045	39196-18-4
Thiram		10	x	U244	137-26-8
Thiophenol	500	100		P014	108-98-5
Thiosemicarbazide	100/10,000	100		P116	79-19-6
Thiourea		10	x		62-56-6
Thiourea,(2-chlorophe- nyl)-	100/10,000	100		P026	5344-82-1

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Thiourea, (2- methylphenyl)-	500/10,000				614-78-8
Thorium dioxide			x		1314-20-1
Titanium dioxide			x		13463-67-7
Titanium tetrachloride	100		x		7550-45-0
Toluene 2,4-diisocyan- ate	500	100	x		584-84-9
Toluene 2,6-diisocyan- ate	100	100	x		91-08-7
Toxaphene (Camphe- clor)		1	x	P123	8001-35-2
Trans 1,1-dichloro butene	500				110-57-6
Triamiphos	500/10,000				1031-47-6
Triaziquone			x		68-76-8
Triazofos	500				24017-47-8
Trichloroacetyl chloride	500				76-02-8
Trichloro(chlorome- thyl) silane	100				1558-25-4
Trichloro(dichloro- phenyl) silane	500				27137-85-5
Trichloroethylene		100	x	U228	79-01-6
Trichloroethylsilane	500				115-21-9
Trichlorofon		100	x		52-68-6
Trichloronate	500				327-98-0
Trichlorophenol		10			25167-82-2
Trichlorophenylsilane	500				98-13-5
Triethanolamine dode-cylbenzene sulfonate		1000			27323-41-7
Triethoxysilane	500				998-30-1
Triethylamine		5000			121-44-8

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Trifluralin			x		1582-09-8
Trimethylamine		100			75-50-3
Trimethylchlorosilane	1000				75-77-4
Trimethylolpropane phosphite	100/10,000				824-11-3
Trimethyltin chloride	500/10,000				1066-45-1
Triphenyltin chloride	500/10,000				639-58-7
Tris(2-chloroethyl) amine	100				555-77-1
Trypan blue		10	x	U236	72-57-1
Uracil.5-[bis(2-chloro- ethyl)amino]-		10		U237	66-75-1
Uranyl acetate		100			541-09-3
Uranyl nitrate		100			10102-06-4
Uranyl nitrate		100			36478-76-9
Valinomycin	1000/10,000				2001-95-8
Vanadium(fume or dust)			x		7440-62-2
Vanadium pentoxide	100/10,000	1000		P120	1314-62-1
Vanadyl sulfate		1000			27774-13-6
Vinyl acetate	1000	5000	x		108-05-4
Vinyl bromide			x		593-60-2
Warfarin	500/10,000	100		P001	81-81-2
Warfarin sodium	100/10,000				129-06-6
Xylenol		1000			1300-71-6
Xylylene dichloride	100/10,000				28347-13-9
Zinc		1000	x		7440-66-6
Zinc acetate		1000			557-34-6
Zinc ammonium chlo- ride		1000			52628-25-8

(continued)

**Table 2-1 (continued)**

<b>Chemical Name</b>	<b>Extremely Haz Sub 40 CFR 355 (pounds)</b>	<b>Haz Sub RQ 40 CFR 302.4 (pounds)</b>	<b>Toxic Chemicals 40 CFR 372.65(a)</b>	<b>Haz Mat which are RCRA wastes</b>	<b>CAS No.</b>
Zinc ammonium chloride		1000			14639-97-5
Zinc ammonium chloride		1000			14639-98-6
Zinc borate		1000			1332-07-6
Zinc bromide		1000			7699-45-8
Zinc carbonate		1000			3486-35-9
Zinc chloride		1000			7646-85-7
Zinc cyanide		10		P121	557-21-1
Zinc, dichloro(4,4-dimethyl-5((methylamino)carbonyloxy)imino)Pentane-nitrile)-(T-4)	100/10,000				58270-08-9
Zinc fluoride		1000			7783-49-5
Zinc formate		1000			557-41-5
Zinc hydrosulfite		1000			7779-86-4
Zinc nitrate		1000			7779-88-6
Zinc phenolsulfonate		5000			127-82-2
Zinc phosphide	500	100		P122	1314-84-7
Zinc silicofluoride		5000			16871-71-9
Zinc sulfate		1000			7733-02-0
Zineb			x		12122-67-7
Zirconium nitrate		5000			13746-89-9
Zirconium potassium fluoride		1000			16923-95-8
Zirconium sulfate		5000			14644-61-2
Zirconium tetrachloride		5000			10026-11-6

**Table 2-2**

**Quantities of Hazardous Materials That The HAZMAT  
Planning Team Identifies and Evaluates  
(AFI 32-4002, Table 2.1)**

<b>Recommended HAZMAT Plan Format</b>
<b>1. Introduction</b> <ul style="list-style-type: none"><li>a. Emergency Action Plan</li><li>b. Telephone Roster</li><li>c. Mission Statement</li><li>d. Legal Authority and Responsibility for Responding</li><li>e. Abbreviations and Definitions</li><li>f. Assumptions/Environmental Setting</li><li>g. Concept of Operations<ul style="list-style-type: none"><li>1) Governing Principles</li><li>2) Organizational Roles and Responsibilities</li><li>3) Relationship to Other Plans</li></ul></li><li>h. Instruction on Plan Use<ul style="list-style-type: none"><li>1) Purpose</li><li>2) Plan Distribution</li></ul></li><li>i. Record of Amendments</li></ul>
<b>2. Hazards Analysis</b> <ul style="list-style-type: none"><li>a. Hazards Identification</li><li>b. Vulnerability Analysis</li><li>c. Risk Analysis</li></ul>
<b>3. Capability Assessment</b> <ul style="list-style-type: none"><li>a. Base Research</li><li>b. Off-base Research</li></ul>
<b>4. Response Functions</b> <ul style="list-style-type: none"><li>a. Initial Notification of Response Agencies</li><li>b. Direction and Control</li><li>c. Communication (among responders)</li><li>d. Warning systems and Emergency Public Notification</li><li>e. Public Information/community Relations</li><li>f. Resource Management (including training)</li><li>g. Medical Support</li><li>h. Environmental Management</li><li>i. Decontamination Procedures</li><li>j. Personal Protection of Citizens<ul style="list-style-type: none"><li>1) Indoor Protection</li><li>2) Evacuation Procedures</li><li>3) Other Public Protection Strategies</li></ul></li><li>k. Fire and Rescue Support</li><li>l. Security Police Support</li><li>m. Civil Engineering Support</li><li>n. Other Support Services</li></ul>

(continued)

**Table 2-2 (continued)**

<b>Recommended HAZMAT Plan Format</b>
5. Containment and Cleanup
6. Documentation and Investigative Followup
7. Procedures for Testing and Updating the Plan
8. References

<b>Recommended OPlan 32-1 Appendix Format</b>
1. Purpose
2. Assumptions (Summary of Hazards Analysis) a. Vulnerable Facilities b. Pre-emergency Planning
3. Concept of Operations a. Relationship of OPlan to HAZMAT Plan b. Roles and Responsibilities c. Federal, State, and Local Relationship
4. Emergency Response Phase a. Notification Procedures b. Levels of Response c. Site Management Practices d. Evacuation Procedures
5. Recovery Phase a. After Action Reports b. Incident Review and Followup

(continued)

**HAZMAT EMERGENCY RESPONSE TRAINING REQUIREMENTS**  
 ((AFI 32-4002, Attachment 6))

Employee Category	Training Categories															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Security/Law enforcement	X							X								
On-scene Disaster Control Group	X							X				X				
Fire Protection		X						X			X	X				
Explosive Ordnance Personnel			X					X			X					
HAZMAT Response Team			X					X	X	X	X	X	X		X	
Bioenvironmental Engineering Technicians			X					X	X	X	X	X	X			
HAZMAT Response Team Leader(s)*				X	X			X	X	X	X	X	X	X		
Bioenvironmental Engineer				X				X		X	X	X	X	X	X	
Environmental Management (as assigned)				X				X			X	X	X	X	X	
Base Commander and Deputies					X			X	X		X	X	X	X	X	
Disaster Preparedness			X		X			X	X		X	X	X	X		
Senior Fire Officials					X			X	X	X	X	X	X	X	X	
Cleanup Team Personnel								X		X	X	X	X			
IRP Remedial Project Managers (as assigned)							X	X			X		X			
Personnel in Units Handling HAZMAT (as assigned)						X		X	X	X	X	X	X	X	X	X

**TRAINING CATEGORIES:**

1. First Responder Awareness (29 CFR 1910.120 and NFPA 472)
2. First Responder Operations (29 CFR 1910.120 and NFPA 472)
3. HAZMAT Technician (29 CFR 1910.120 and NFPA 472)
4. HAZMAT Specialist (29 CFR 1910.120)
5. On-Scene Commander (29 CFR 1910.120 and NFPA 472)
6. Post Emergency Response Operations (29 CFR 1910.120/134)
7. AF Installation Restoration Site Managers (29 CFR 1910.120)
8. Emergency Action Plans (29 CFR 1910.38)
9. Process Safety Management (29 CFR 1910.119)
10. Confined Space (29 CFR 1910.146)
11. HAZCOM & Lab Safety (29 CFR 1200/1450)
12. 40 CFR 109/112/125. HM-214, & PS-130)
13. Hazardous Waste (40 CFR 262/264/265)
14. NCP (40 CFR 300)
15. PCBs (40 CFR 761)
16. Training for Safe Transportation (49 CFR 171-178)

\* HAZMAT Response Team Leader(s) are those persons responsible for the day-to-day administrative and training requirements of the HAZMAT Response Team. During a HAZMAT incident, they will fill the HAZARD Group Supervisor position.





**Table 2-4**

**Quantities of Hazardous Materials That The HAZMAT Planning  
Team Identifies and Evaluates  
(AFI 32-4002, Table 2.1)**

<b>Category</b>	<b>Screening Quantity</b>
Extremely Hazardous Substances (EHSs)	Greater than or equal to the TPQ. (The sum of all containers of a specific EHS, so no matter where they are located on an installation)
Hazardous Substance	Containers greater than or equal to 55 gal
Underground Storage Tanks (USTs)	Tanks containing more than 42,000 gal of oil
Aboveground Storage Tanks (ASTs)	Tanks containing more than 1320 gal or any container with a capacity in excess of 660 gal of oil
Hazardous Waste	Any amount
PCBs	Any quantity of a material containing a concentration of greater than or equal to 50 ppm



**Table 2-5****Maximum Allowable Capacity of Containers And Portable Tanks  
(29 CFR 1910.106(d)(2), Table H-12)**

Container Type	Flammable Liquids			Combustible Liquids	
	IA	IB	IC	II	II
Glass or approved plastic	1 pt [0.47 L]	1 qt [0.95 L]	1 gal [3.79 L]	1 gal [3.79 L]	1 gal [3.79 L]
Metal (other than DOT drums)	1 gal [3.79 L]	5 gal [18.93 L]	5 gal [18.93 L]	5 gal [18.93 L]	5 gal [18.93 L]
Safety cans	2 gal [7.57 L]	5 gal [18.93 L]	5 gal [18.93 L]	5 gal [18.93 L]	5 gal [18.93 L]
Metal drums (DOT specifications)	60 gal [227.12 L]	60 gal [227.12 L]	60 gal [227.12 L]	60 gal [227.12 L]	60 gal [227.12 L]
Approved portable tanks	660 gal [2498.37 L]	660 gal [2498.37 L]	660 gal [2498.37 L]	660 gal [2498.37 L]	660 gal [2498.37 L]



**Table 2-6**  
**Storage in Inside Rooms**  
**(29 CFR 1910.106(d)(4), Table H-13)**

<b>Fire Protection Provided<sup>1</sup></b>	<b>Fire Resistance (hours)</b>	<b>Maximum Size</b>	<b>Total Allowable Quantities (gal/ft<sup>2</sup> floor area)<sup>2</sup></b>
Yes	2	500 ft <sup>2</sup> [46.45 m <sup>2</sup> ]	10 [37.85 L]
No	2	500 ft <sup>2</sup> [46.45 m <sup>2</sup> ]	4 [15.14 L]
Yes	1	150 ft <sup>2</sup> [13.94 m <sup>2</sup> ]	5 [18.93 L]
No	1	150 ft <sup>2</sup> [13.94 m <sup>2</sup> ]	2 [7.57 L]

<sup>1</sup>Fire protection system will be sprinkler, water spray, or other approved method.

<sup>2</sup>If metric containers are being stored, use the nearest metric equivalent.



**Table 2-7**

**Storage of Flammable/Combustible Materials  
29 CFR 1910.106(d)(5) and 1910.106(d)(6), Tables H-14 through H-17)**

**Indoor Container Storage**

<b>Class</b>	<b>Liquid Storage Level</b>	<b>Protected Storage Maximum per Pile</b>	<b>Unprotected Storage Minimum per Pile</b>
A	Ground and upper floors	2750 gal [10409.88 L] (50)	600 gal [2271.25 L] (12)
	Basement	Not permitted	Not permitted
B	Ground and upper floors	5500 gal [20819.77 L] (100)	1375 gal [5204.94 L] (25)
	Basement	Not permitted	Not permitted
C	Ground and upper floors	16,500 gal [62459.30 L] (300)	4125 gal [15614.82 L] (25)
	Basement	Not permitted	Not permitted
II	Ground and upper floors	16,500 gal [62459.30 L] (300)	4125 gal [15614.82 L] (75)
	Basement	5500 gal [20819.77 L] (100)	Not permitted
III	Ground and upper floors	55,000 gal [208197.66 L] (1000)	13,750 gal [52049.42 L] (250)
	Basement	8250 gal [31229.65 L] (450)	Not permitted

(NOTE: Numbers in parenthesis indicate corresponding number of 55 gal drums.)

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate maximum gallonages.

NOTE 2: Aisles will be provided so that no container is more than 12 ft [3.66 m] from an aisle. Main aisles will be at least 8 ft [2.44 m] wide and side aisles at least 4 ft [1.22 m] wide. (Numbers in parentheses indicate corresponding number of 55 gal [208.20 L] drums.)

NOTE 3: Each pile shall be separated from the others by at least 4 ft [1.22 m].

(continued)



**Table 2-7 (continued)****Outdoor Container Storage**

<b>Class</b>	<b>Maximum per pile (Gal) [L]</b>	<b>Distance between piles (Ft) [m]</b>	<b>Distance to property line that can be built upon (Ft) [m]</b>	<b>Distance to street, alley or public way (Ft) [m]</b>
IA	1100 [4163.95]	5 [1.52]	20 [6.10]	10 [3.05]
IB	2200 [8327.91]	5 [1.52]	20 [6.10]	10 [3.05]
IC	4400 [44003.79]	5 [1.52]	20 [6.10]	10 [3.05]
II	8800 [33311.63]	5 [1.52]	10 [3.05]	5 [1.52]
III	22,000 [83279.06]	5 [1.52]	10 [3.05]	5 [1.52]

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate gallonages.

NOTE 2: Within 200 ft [60.96 m] of each container, there will be a 12 ft [3.66 m] wide access way to permit approach of fire control apparatus.

NOTE 3: The distances listed apply to properties that have protection for exposures as defined. If there are exposures, and such protection for exposures does not exist, the distances in column 3 will be doubled.

NOTE 4: When total quantity stored does not exceed 50 percent of maximum per pile, the distance in columns 4 and 5 may be reduced 50 percent, but not less than 3 ft [0.91 m].

(continued)

**Table 2-7 (continued)****Indoor Portable Tank Storage**

<b>Class Liquid</b>	<b>Storage Level</b>	<b>Protected Storage Maximum per Pile (gal) [L]</b>	<b>Unprotected Storage Minimum per Pile (gal) [L]</b>
IA	Ground and upper floors Basement	Not permitted Not permitted	Not permitted Not permitted
IB	Ground and upper floors Basement	20,000 [75708.24] Not permitted	2000 [7570.82] Not permitted
IC	Ground and upper floors Basement	40,000 [151420.48] Not permitted	5500 [20820.32] Not permitted
II	Ground and upper floors Basement	40,000 [151420.48] 20,000 [75708.24]	5500 [20820.32] Not permitted
III	Ground and upper floors Basement	60,000 [227124.72] 20,000 [75708.24]	22,000 [83279.06] Not permitted

NOTE 1: When one or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate maximum gallonages.

NOTE 2: Aisles will be provided so that no container is more than 12 ft [3.66 m] from an aisle. Main aisles will be at least 8 ft [2.44 m] wide and side aisles at least 4 ft [1.22 m] wide.

NOTE 3: Each pile shall be separated from each other by at least 4 ft [1.22 m].

(continued)

**Table 2-7 (continued)**

**Outdoor Portable Tank Storage**

<b>Class</b>	<b>Maximum per pile (gal) [L]</b>	<b>Distance between piles (ft) [m]</b>	<b>Distance to property line that can be built upon (ft) [m]</b>	<b>Distance to street, alley public way (ft) [m]</b>
IA	2200 [8327.95]	5 [1.52]	20 [6.10]	10 [3.05]
IB	4400 [44003.79]	5 [1.52]	20 [6.10]	10 [3.05]
IC	8800 [33311.63]	5 [1.52]	20 [6.10]	10 [3.05]
II	17,600 [66623.25]	5 [1.52]	10 [3.05]	5 [1.52]
III	44,000 [166558.79]	5 [1.52]	10 [3.05]	5 [1.52]

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate gallonages.

NOTE 2: Within 200 ft [60.96 m] of each container, there will be a 12 ft [3.66 m] wide access way to permit approach of fire control apparatus.

NOTE 3: The distances listed apply to properties that have protection for exposures as defined. If there are exposures, and such protection for exposures does not exist, the distances in column 3 will be doubled.

NOTE 4: When total quantity stored does not exceed 50 percent of maximum per pile, the distance in columns 4 and 5 may be reduced 50 percent, but not less than 3 ft [0.91 m].

**Table 2-8**

**Potentially Incompatible Hazardous Materials/Wastes**

*(Law, Regulations, and Guidelines for Handling of Hazardous Waste, California Department of Health, February 1975  
(40 CFR 264, Appendix V))*

Below are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences that result from mixing materials in one group with materials in another group. The list is intended as a guide to indicate the need for special precautions when managing these potentially incompatible waste materials or components. This list is not intended to be exhaustive. Operators must, as the regulations require, adequately analyze their wastes to avoid creating uncontrolled substances or reactions of the type listed below, whether listed below or not.

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequences as noted.

Group 1-A	Group 1-B
Acetylene sludge Alkaline caustic liquids Alkaline cleaner Alkaline corrosive liquids Alkaline corrosive battery acid Caustic wastewater Lime sludge and other corrosive alkalies Lime wastewater Lime and water Spent caustic	Acid sludge Acid and water Battery acid Chemical cleaners Electrolyte, acid Etching acid liquid or solvent Pickling liquor and other corrosive acids Spent acid Spent mixed acid Spent sulfuric acid

**Potential Consequences: Heat generation, violent reaction.**

Group 2-A	Group 2-B
Aluminum Beryllium Calcium Lithium Magnesium Potassium Sodium Zinc powder Other reactive metals and metal hydrides	Any waste in Group 1-A or 1-B

**Potential Consequences: Fire or explosion, generation of flammable hydrogen gas.**

(continued)

**Table 2-8 (continued)**

Group 3-A	Group 3-B
Alcohols Water	Any concentrated waste in Groups 1-A or 1-B Calcium Lithium Metal hydrides Potassium SO <sub>2</sub> , Cl <sub>2</sub> , SOCl <sub>2</sub> , PCl <sub>3</sub> , CH <sub>3</sub> , SiCl <sub>3</sub> Other water-reactive waste

**Potential Consequences:** Fire, explosion, or heat generation; generation of flammable or toxic gases.

Group 4-A	Group-4-b
Alcohols Aldehydes Halogenated hydrocarbons Nitrated hydrocarbons Unsaturated hydrocarbons Other reactive organic compounds and solvents	Concentrated Group 1-A or Group 1-B wastes Group 2-A wastes

**Potential Consequences:** Fire or explosion, violent reaction.

Group 5-A	Group 5-B
Spent cyanide and sulfide solutions	Group 1-B wastes

**Potential Consequences:** Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

Group 6-A	Group 6-B
Chlorates Chlorine Chlorites Chromic acid Hypochlorites Nitrates Nitric acid, fuming Perchlorates Permanganates Peroxides Other strong oxidizers	Acetic acid and other organic acids Concentrated mineral acids Group 2-A wastes Group 4-A wastes Other flammable and combustible wastes

**Potential Consequences:** Fire, explosion, or violent reaction.

**Table 2-9**  
**Schedule for Phase-in of Release Detection**  
**(40 CFR 280.40(c))**

Year system was installed	Year when release detection is required (by December 22 of the year indicated)				
	1989	1990	1991	1992	1993
Before 1965 or date unknown.	RD	P			
1965-69		P/RD			
1970-74		P	RD		
1975-79		P		RD	
1980-88		P			RD

P = must begin release detection for all pressurized piping as defined in 280.41(b)(1).

RD = must begin release detection for tanks and suction piping.



**Table 2-10**

**Release Detection Requirements for USTs and Underground Piping  
(40 CFR 280.41 through 280.43)**

**A. UST Options (see NOTE for additional guidance)**

1. **Inventory control:** Product inventory control must be conducted monthly to detect a release of at least 1.0 percent of flow-through plus 130 gal on a monthly basis in the following manner:
  - i. inventory volume measurements for regulated substance inputs, withdrawals, and the amount still remaining in the tank are recorded each operating day
  - ii. the equipment used is capable of measuring the level of product over the full range of the tanks height to the nearest one-eighth of an inch
  - iii. the regulated substance inputs are reconciled with delivery receipts by measurements of the tank inventory volume before and after delivery
  - iv. deliveries made through a drop tube that extends to within one foot of the tank bottom;
  - v. product dispensing is metered and recorded within the local standards of product withdrawn
  - vi. the measurement of any water level in the bottom of the tank is made to the nearest one-eighth of an inch at least once a month.
  
2. **Manual gauging:** Manual tank gauging must meet the following requirements:
  - i. tank liquid level measurements are taken at the beginning and end of a period of at least 36 h during which no liquid is added to or removed from the tank
  - ii. level measurements are based on an average of two consecutive stick readings at both the beginning and end of the period
  - iii. the equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth of an inch
  - iv. a leak is suspected and subject to the requirements of subpart E if the variation between beginning and ending measurements exceeds the weekly or monthly standards of Table A below
  - v. only tanks of 550 gal or less nominal capacity may use this as a sole method of release detection. Tanks of 551 to 2000 gal may also use inventory control. See paragraph 1 in this appendix. Tanks of greater than 2000 gal nominal capacity may not use this method to meet release detection requirements.

**Table A**

<b>Nominal Tank Capacity</b>	<b>Weekly Standard (one test)</b>	<b>Monthly Standard (average of four)</b>
550 gal or less	10 gal	5 gal
551-1000 gal	13 gal	7 gal
1001-2000 gal	26 gal	13 gal

(continued)



**Table 2-10 (continued)**

3. **Tank tightness testing:** Tank tightness testing must be capable of detecting a 0.1 gal/h leak rate from any portion of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table.
4. **Tank automatic gauging:** Equipment for automatic tank gauging that tests for the loss of product and conducts inventory control; must meet the following requirements:
  - i. the automatic product level monitor test can detect a 0.2 gal/h leak rate from any portion of the tank that routinely contains product
  - ii. inventory control is conducted according to requirements (see para 1 above).
5. **Vapor monitoring:** Testing or monitoring for vapors within the soil gas of the excavation zone must meet the following requirements:
  - i. the materials used as backfill are sufficiently porous (e.g., gravel, sand, crushed rock) to easily allow diffusion of vapors from releases into the excavation area
  - ii. the stored regulated substance, or a tracer compound placed in the tank system, is sufficiently volatile (e.g., gasoline) to result in a vapor level that is detectable by the monitoring devices located in the excavation zone in the event of a release from the tank
  - iii. the measurement of vapors by the monitoring device is not rendered inoperative by the groundwater, rainfall, or soil moisture or other unknown interferences so that a release could go undetected for more than 30 days
  - iv. the level of background contamination in the excavation zone will not interfere with the method used to detect releases from the tank
  - v. the vapor monitors are designed and operated to detect any significant increase in concentration above background of the regulated substance stored in the tank system, a component or components of that substance, or a tracer compound placed in the tank system
  - vi. in the UST excavation zone, the site is assessed to ensure compliance with the requirements of paragraph 5 subparagraph i through iv above and to establish the number and positioning of monitor wells that will detect any releases within the excavation zone from any portion of the tank that routinely contains product
  - vii. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.
6. **Groundwater monitoring:** Testing or monitoring for liquids in the groundwater must meet the following requirements:
  - i. the regulated substance stored is immiscible in water and has a specific gravity of less than one
  - ii. groundwater is never more than 20 ft from the ground surface and the hydraulic conductivity of the soil(s) between the UST system and the monitoring wells or devices is not less than 0.01 cm/s (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts or other permeable materials
  - iii. the slotted portion of the monitoring well casing must be designed to prevent migration of natural soils or filter pack into the well and to allow entry of regulated substance on the water table into the well under both high and low groundwater conditions
  - iv. monitoring wells should be sealed from the ground surface to the top of the filter pack
  - v. monitoring wells or devices intercept the excavation zone or are as close to it as is technically feasible

(continued)

**Table 2-10 (continued)**

- vi. the continuous monitoring devices or manual methods used can detect the presence of at least one-eighth of an inch of free product on top of the groundwater in the monitoring wells
  - vii. within and immediately below the UST system excavation zone, the site is assessed to ensure compliance with the requirements of paragraphs 6 i-v above and to establish the number and positioning of monitoring wells or devices that will detect releases from any portion of the tank that routinely contains product
  - viii. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.
- 7. Interstitial monitoring:** Interstitial monitoring between the UST system and a secondary barrier immediately around or beneath it may be used, but only if the system is designed, constructed and installed to detect a leak from any portion of the tank that routinely contains product and also meets one of the following requirements:
- i. for double-walled systems, the sampling or testing method can detect a release through the inner wall in any portion of the tank that routinely contains product
  - ii. for UST systems with a secondary barrier within the excavation zone, the sampling or testing method used can detect a release between the UST system and the secondary barrier
    - a. the secondary barrier around or beneath the UST system consists of artificially constructed material that is sufficiently thick and impermeable (at least  $10^{-6}$  cm/s for the regulated substance stored) to direct a release to the monitoring point and permit its detection
    - b. the barrier is compatible with the regulated substance stored so that a release from the UST system will not cause a deterioration of the barrier allowing a release to pass through undetected
    - c. for cathodically protected tanks, the secondary barrier must be installed so that it does not interfere with the proper operation of the cathodic protection system
    - d. the groundwater, soil moisture, or rainfall will not render the testing or sampling method used inoperative so that a release could go undetected for more than 30 days
    - e. the site is assessed to ensure that the secondary barrier is always above the groundwater and not in a 25 yr flood plain, unless the barrier and monitoring designs are for use under such conditions
    - f. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering
  - iii. for tanks with an internally fitted liner, an automated device can detect a release between the inner wall of the tank and the liner. The liner is compatible with the substance stored.
- 8. Other methods:** Any other type of release detection method, or combination of methods, can be used if:
- i. it can detect a 0.2 gal/h leak rate or a release of 150 gal within a month with a probability of detection of 0.95 and a probability of false alarm of 0.05
  - ii. the implementing agency may approve another method, if it can be demonstrated that this method can detect releases as effectively as the methods listed in this appendix.

(continued)

**Table 2-10 (continued)**

**NOTE: The following are alternatives on the above listings for UST release detection options:**

- USTs meeting the requirements in 40 CFR 280.20 for new tanks (see checklist items HM.23, HM.25, and HM.26) and the monthly inventory requirements in A1 and A2 above can use tank tightness testing as outlined in A3 at least every 5 yr until 22 December 1998, or until 10 yr after the tank is installed or upgraded under 40 CFR 280.21(b) (see checklist item HM.22)
- USTs that do not meet the standards of 40 CFR 280.20 or 280.21 (see checklist items HM.22 through HM.23, HM.25, HM.26) may use monthly inventory as outlined in A1 or A2 and annual tank tightness testing done according to A3 until 22 December 1998 when the tank must be upgraded or permanently closed
- USTs with a capacity of 550 gal or less may use weekly tank gauging done according to A2.

## **B. Underground Piping Options**

1. **Automatic line detectors:** Methods which alert the operator to the presence of a leak by restricting or shutting off the flow of regulated substances through piping, or triggering an audible or visual alarm may be used only if they detect leaks of 3 gal/h at 10 lb/in<sup>2</sup> line pressure within one hour. An annual test of the operation of the leak detector must be conducted in accordance with the manufacturer's requirements.
2. **Line tightness testing:** A periodic test of piping may be conducted only if it can detect a 0.1 gal/h leak one and one-half times the operating pressure.
3. **Applicable tank methods:** The methods outlined in A2 through A4 may be used if they are designed to detect a release from any portion of the underground piping that routinely contains regulated substances.

**NOTE:** The following is additional information on the above listings for underground piping release detection options:

- Pressurized piping must meet both of the following:
  - be equipped with an automatic line leak detector as outlined in B1
  - have an annual line tightness test done according to B2 or have monthly monitoring done in accordance with B3.
- Underground suction piping must either have a line tightness test done according to B2 at least every 3 yr or use a monthly monitoring method in accordance with B3. No release detection is required for suction piping that is designed and constructed to meet the following standards:
  - the below-grade piping operates at less than atmospheric pressure
  - the below-grade piping is sloped so that the contents of the pipe will drain back into the storage tank if the suction is released
  - only one check valve is included in each suction line
  - the check valve is located directly below and as close as practical to the suction pump
  - a method is provided that allows compliance with these standards to be readily determined.

<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS MATERIALS MANAGEMENT</b> <b>U.S. ECAMP</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA C RMA	<b>REVIEWER COMMENTS:</b>		

**Section 3**

**HAZARDOUS WASTE MANAGEMENT**

## SECTION 3

### HAZARDOUS WASTE MANAGEMENT

#### A. Applicability

This section applies to Air Force installations that generate, store, transport, treat, or dispose of any type of hazardous waste. Federal regulations establish different regulatory requirements based on the amount of hazardous waste generated.

This section and its associated evaluation checklists are more complex than other sections in this volume. Not all evaluation items will be applicable to an installation. Guidance is provided on the checklists to direct the evaluator to the regulations concerning the type of hazardous waste activities/facilities on the installation.

#### B. Federal Legislation

- *The Resource Conservation and Recovery Act (RCRA), Subtitle C.* This law, Public Law (PL) 98-616 (42 U.S. Code (USC) 6921-6939b) establishes standards and procedures for the handling, storage, treatment, and disposal of hazardous waste. Specifically, RCRA prohibits the placement of bulk or noncontainerized liquid hazardous waste or free liquids containing hazardous waste into a landfill. It also prohibits the land disposal of specified wastes and disposal of hazardous waste through underground injection within 1/4 mi [0.40 km] of an underground source of drinking water.
- *The Federal Facility Compliance Act (FFCA) of 1992.* This act provides for a waiver of sovereign immunity with respect to Federal, state, and local procedural and substantive requirements relating to RCRA solid and hazardous waste laws and regulations. Additionally, it defines hazardous waste in relation to public vessels, expands the definition of mixed waste, addresses the issue of munitions, and discusses waste discharges to Federally owned treatment works (FOTWs).

#### C. State/Local Regulations

Many states have met the U.S. Environmental Protection Agency (USEPA) requirements in 40 Code of Federal Regulations (CFR) 271 and have been authorized to manage their own state programs. RCRA encourages states to develop their own hazardous waste statutes and to operate regulatory programs. Many states have adopted the USEPA regulations by reference or have promulgated regulations which are identical to the USEPA regulations, while other states have promulgated regulations stricter than the Federal RCRA. These differences between individual state regulations and the Federal program require that evaluators check the status of the state's authorization and then determine which regulations apply. Since the section checklists are based exclusively on the requirements of the Federal RCRA/USEPA program, it is necessary to determine in what ways the applicable state program differs from the RCRA/USEPA program.

#### D. Department of Defense (DOD) Regulations

- None that have not been implemented/superseded by Air Force Regulations (AFRs).

## **E. U.S. Air Force Regulations (AFRs)**

- AFR 19-1, *Pollution Abatement and Environmental Quality*. This regulation sets up the environmental protection program in the Air Force. It is scheduled to be replaced by AFPD 23-3.
- Air Force Instruction (AFI) 32-7042, *Solid and Hazardous Waste Compliance*. This AFI, dated 30 November 1993, contains requirements for solid waste and hazardous waste management planning, training, collecting, and disposal.
- AFR 127-12, *Air Force Occupational Safety, Fire Prevention, and Health Program*. This regulation sets forth the policy and responsibilities for managing the Air Force Occupational Safety, Fire Prevention, and Health Program. It also requires that Safety Officers routinely inspect hazardous waste storage areas. It is scheduled to be replaced by AFI 91-302.
- Air Force Policy Letter, 6 June 1991. This policy letter provides guidance on the management of hazardous waste, employee training, turn-in and disposal procedures, contracting, and pollution prevention.
- Air Force Policy Letter, 21 January 1994. This memorandum, *Air Force Policy on the Application of the Resources Conservation and Recovery Act to Conventional Explosive Ordnance Operations*, addresses the issue of when waste ordnance is to be handled as a hazardous waste.

## **F. Key Compliance Requirements**

- **Generator Requirements - Responsibilities of Air Force installations are based on the amount of waste being generated in 1 mo. Typical wastes include solvents, paint, contaminated antifreeze or oil, and sludges. In some states, waste oil and other substances have been classified as a hazardous waste and therefore need to be included in the total amount of waste being generated. Within Federal regulations there are three classifications:**
  1. A conditionally exempt small quantity generator (CESQG) produces no more than 100 kg [220.46 lb] of hazardous waste or 1 kg [2.20 lb] of acutely hazardous waste in a 1 mo time period. They also do not accumulate onsite more than 1000 kg [2204.62 lb] of waste at any one time. When either the volume of waste produced in 1 mo exceeds 100 kg [220.46 lb] or more than 1000 kg [2204.62 lb] of waste has accumulated onsite, the installation is required to comply with the more stringent standards applicable to a small quantity generator (SQG).
  2. A SQG produces between 100 [220.46 lb] and 1000 kg [2204.62 lb] of hazardous waste in a month. The waste cannot accumulate onsite for more than 180 days unless the waste is transported more than 200 mi [321.87 km] to a treatment, storage, and disposal facility (TSDF). In that situation, the waste can accumulate for 270 days. But at no time is there to be more than 6000 kg [13,227.73 lb] of waste accumulated at the installation. When the volume of waste generated in 1 mo exceeds 1000 kg [2204.62 lb], the accumulation time onsite is exceeded, or more than 6000 kg [13,227.73 lb] of waste is onsite, the installation is required to comply with the standards for a Generator.
  3. A Generator produces more than 1000 kg [2204.62 lb] of hazardous waste in a month. If the waste is accumulated onsite for more than 90 days, the generator is required to obtain a permit and operate as a TSDF.

(NOTE: Using water, which weighs approximately 8 lb/gal [3.63 kg/gal] as a basis of measurement, 100 kg [220.46 lb] would equal about 28 gal [105.99 L] (one-half of a 55 gal [208.20 L] drum), 1000 kg [2204.62 lb] would equal about 273 gal [1036.15 L] (almost five, 55 gal [208.20 L] drums).

Whether the installation is a CESQG, SQG, or a Generator determines the type of records the installation is required to keep and design standards for storage areas. Small storage areas connected with a generation points are often referred to as accumulation points.

Regardless of the amount of hazardous waste generated, every Air Force installation is required to test or use knowledge of materials or processes used to determine if it is listed waste or has hazardous characteristics. Every installation is also required to store and/or accumulate hazardous waste in containers or tanks that are compatible with the waste, undamaged, and marked to indicate the contents.

### Comparison of RCRA Generator Requirements

Requirement	CESQG	SQG	Generator
Identify HW	Yes	Yes	Yes
Quantity Limits	≤ 100 kg/mo [220.46 lb]	100 kg/mo [220.46 lb] - 1000kg/no [2204.62 lb]	>1000 kg/mo [22-4.62 lb/mo]
Acute Waste Limits	≤ 1 kg/mo [2.20 lb/mo]	None	None
Management of Waste	State approved or RCRA permitted	RCRA permitted facility	RCRA permitted facility
USEPA ID Number	Not Required	Required	Required
RCRA Personnel Training	Not Required	Basic Training Required	Required
DOT Training	Required	Required	Required
Exception Report	Not Required	Required > 60 days	Required > 45 days
Biennial Report	Not Required	Not Required	Required
Onsite Accumulation Limits (without permit)	≤ 1000 kg [2204.62 lb]	≤ 6000kg [13,227.73 lb]	Any quantity
Accumulation Time Limits (without permit)	None	≤ 180 days or ≤ 270 days (>200 mi [321.87 km])	≤ 90 days + 30 days granted by USEPA
Storage Requirements	None	Basic requirements with technical standards for containers or tanks	Full compliance with management of containers or tanks
Use Manifests	Yes	Yes	Yes



- **Installation Hazardous Waste Management Plan.** Each Installation Commander (IC) will ensure that a written hazardous waste management plan is maintained to provide installation personnel with procedures and responsibilities to manage hazardous wastes consistent with all applicable laws and regulations.
- **Transport Requirements.** Containers of hazardous waste shipped offsite must be labeled identifying the waste and its hazard class. Shipments from the installation offbase to a TSDF, including the Defense Reutilization and Marketing Office (DRMO), must also be accompanied by manifests and are subject to the full transportation requirements as stipulated in the Department of Transportation (DOT) hazardous materials transportation regulations.
- **Accumulation Point Management -** An accumulation point is an area in or near the workplace where hazardous waste is accumulated or stored before being turned in for disposal. Storage in these areas is temporary and the permissible length of time for accumulation depends on what size generator the installation is.
- **Satellite Accumulation Point Management -** A satellite accumulation point is an area where no more than 55 gal [208.20 L] of a hazardous waste or 1 qt [0.95 L] of acute hazardous waste is accumulated at or near the point of generation. The satellite accumulation point is under the control of one operator. When the 55 gal [208.20 L] limit is reached the operator has 3 days to move the waste to a 90 day storage area or a permitted TSDF.
- **Permitted TSDF Requirements -** The operation of a TSDF is subject to regulation and permitting under Federal and state regulations. These regulations are both administrative as well as technical in nature. The administrative standards require that various plans be developed to ensure that emergencies can be dealt with, waste received is properly identified, and operating personnel are adequately trained to operate the facility and respond to emergencies. These administrative standards also include requirements that the facility be inspected routinely, records of operations are compiled and maintained, and reports of both routine and contingency operations are made to the applicable regulatory agency. The administrative standards also require that a plan for ceasing operations and closing the facility be developed, kept on-hand, and updated frequently.

The technical standards which are applicable to TSDFs fall into two classes: general standards which apply to all TSDFs and specific standards which apply to various types of facilities, i.e., container storage areas, tanks, containment buildings, surface impoundments, waste piles, land treatment facilities, incinerators, landfills, thermal treatment facilities, and chemical, physical, biological treatment facilities.

Administrative and technical facility standards are applied to a particular facility through a RCRA permit issued to a facility. Existing facilities which have applied for a permit but not yet been issued a RCRA permit are considered to be in interim status if they applied for a part A and part B permit and can continue to operate if they comply with the RCRA mandated Interim Status Standards (ISS) of 40 CFR 265 (Interim status standards for owners and operators of hazardous waste TSDF).

- **Hazardous Waste Operations and Emergency Response (HAZWOPER).** This Occupational Safety and Health Administration (OSHA) rule (29 CFR 1910.120) calls for worker training prior to engaging in hazardous waste operations and responding to emergencies involving hazardous substances. Employees affected by this rule are classified in one of five groups, each requiring a different level of training.

- **Hazardous Materials Pharmacy.** Where applicable, the Hazardous Materials Pharmacy will promptly notify the responsible division when hazardous waste is ready for turn-in, complete the hazardous waste (HW) turn-in document, DD 1348-1, and ensure containers are properly labeled. Until transfer, the Pharmacy is responsible for the proper segregation, labeling and storage.
- **Ordnance -** Under the provisions of 40 CFR 261.23(a)(6) through 261.23(a)(8) ordnance is classified as a reactive hazardous waste. The open burning and open detonation (OB/OD) of waste explosives is allowed at interim status TSDFs as long as a minimum distance is kept from the property line of the property of others. The length of this distance is based on the amount of explosive being OB/OD. For permitted TSDFs, OB/OD activities are regulated by permit to operate a miscellaneous unit. This is often referred to as a Subpart X permit. According to the AF policy letter issued 24 January 1994, conventional explosive ordnance becomes hazardous waste when:
  1. an authorized official records in writing a determination that the conventional explosive ordnance will be discarded
  2. custodians of the conventional explosive ordnance receive this written determination for the conventional explosive ordnance is to be discarded and, therefor subject to RCRA regulation.
 Prior written authorization is not required if safety or other considerations such as emergency response conducted by an Explosive Ordnance (EOD) unit or a response to mitigate an imminent hazard precludes obtaining prior written authorization.
- **Compliance Issues Not Included In This Manual.** There are several types of hazardous waste facilities that are regulated but are not discussed in this manual. They are not included in this manual because of the extremely small number of these types of facilities that actually occupy Air Force property. Hazardous waste facilities not included are: surface impoundments, waste piles, land treatment units, landfills, incinerators, thermal treatment, chemical/physical/biological treatment.

#### **F. Responsibility for Compliance**

- **The Installation Commander (IC).** The IC is responsible for establishing and maintaining an active program of surveillance of the users of hazardous materials; generators, transporters, and storers of hazardous wastes; the waste minimization program; and disposal activities. By DOD direction, the installation commander is responsible for compliance with RCRA and state regulations involving host and tenant organizations on the installation. The commander signs all permit applications and reports submitted to USEPA or state agencies as part of this overall management responsibility. In the event that the IC is not a colonel or higher, permit applications must be referred up the chain of command to an official in the grade of colonel or higher for signature. In either case, operational responsibility for the hazardous waste program rests with the activities that generate, treat, store, transport, or dispose of the waste and the activities responsible for implementing health, safety, and environmental protection programs.
- **The Installation Environmental Protection Committee (EPC).** The EPC is responsible for reviewing summary data on waste generation, personnel training, and disposal practices.
- **The Base Civil Engineer (BCE).** The BCE or designated Environmental Management Office (EMO) develops installation-specific policy for all aspects of hazardous waste management for all activities on the installation including Air Force and non-Air Force tenants. They also manage the hazardous waste program, reviews all hazardous waste storage, treatment, and disposal facilities and ensures their compatibility with hazardous waste regulations, serves as the Office of Primary Responsibility (OPR) for developing and implementing the hazardous waste management plan,

identifies to the contracting office those hazardous wastes that the installation elects to dispose of by local contract with the necessary conditions the contractor is required to meet, and approves siting and design of all hazardous waste management facilities.

- **Base Fire Department.** This department provides support in emergency response, spill events, exercises, and fire protection activities. The department is responsible for making periodic fire safety inspections of hazardous waste storage areas and accumulation points on the installation.
- **Civil Engineering Environmental Planning Function.** The Environmental Planner is responsible for monitoring day-to-day hazardous waste management activities, maintaining hazardous waste files, permit applications, reports to USEPA, budgets for hazardous waste disposal, verifies that billings for hazardous waste disposal are accurate and certifies them for payment by Accounting and Finance, certifies that all hazardous waste is properly identified, labeled and packaged before transfer to DRMO, assists generating activities in preparing turn-in documentation, and establishing procedures for transfer of accountability and custody of hazardous waste from the generating activity to the DRMO.
- **The Bioenvironmental Engineer (BEE).** The BEE provides industrial hygiene and occupational health consultant services to all industrial shops and hazardous waste treatment, storage, and disposal facilities and monitors hazardous waste processes for worker health and safety. The BEE also provides installation technical expertise on hazardous waste identification and is the OPR for the installation hazardous waste stream inventory and waste analysis plan. At the request of the environmental manager, the BEE may collect, prepare, and transport hazardous waste samples to an approved analytical laboratory for analysis. The BEE also reviews plans to build or modify facilities used to treat, store, or dispose of hazardous wastes, reviews all material requests for issues of stock classes listed in Federal Standard 313, direct assignment of IEXs or IRMCS to all items requiring medical oversight, and maintains a master file of material safety data sheets (MSDSs).
- **The Environmental Health Officer (EHO).** The EHO conducts the Hazardous Communication training for all supervisors who have personnel who handle hazardous materials.
- **The Supply Officer.** The Supply Officer processes paperwork transactions and maintains the computer transaction records for all hazardous waste disposal actions. Base Supply will not accept physical custody of hazardous waste.
- **The Ground Safety Officer.** The Ground Safety Officer performs workplace safety inspections, monitors hazardous conditions, and performs occupational safety training.
- **The Transportation Officer.** The Transportation Officer ensures hazardous wastes are properly labeled, packaged, manifested, and transported in appropriate vehicles (contract or Air Force owned vehicles).
- **The Deputy Commander for Maintenance (DCM) or Chief of Maintenance.** The DCM ensures non-hazardous and nontoxic materials are used where possible, maintains a list of hazardous materials used in the work area by shop and maintenance related task, ensures personnel are properly trained in ordering, using, handling, controlling, and storing hazardous materials and wastes, and ensures hazardous waste is properly labeled.

- **Hazardous Waste Generators.** Generators manage hazardous waste in their custody including proper storage, inspection, recordkeeping, labeling of containers, and transfer for disposal. Proper transfer for disposal will include providing Base Supply all required information to establish hazardous waste stock numbers, preparing turn-in documentation, obtaining funding certification, and transporting hazardous waste to DRMO pickup points.
- **Hazardous Waste Treatment, Storage, and Disposal Facility (TSDF) Operators.** Each TSDF operator is responsible for ensuring compliance with hazardous waste regulations applicable to the facility including maintaining operational and training records.
- **The DRMO.** This organization may or may not be located on the installation. Regardless, it is the single agency designated by DOD to provide hazardous waste disposal service on a pay-for-services-rendered basis to the installation. The DRMO is responsible for compliance with all USEPA, state, and Air Force (including base guidance) regulations at its storage or disposal facility.
  1. In many cases, the BCE will assist the DRMO in filing the RCRA Part B application and in obtaining the required RCRA permit. The DRMO is responsible for operating the storage facility according to the RCRA regulations or permit and for arranging for the shipment off-base for disposal of the waste.
  2. In a few limited cases, the installation may own and operate a long-term storage facility. This is the case when there is not a DRMO facility on base and waste must be accumulated more than ninety calendar days before shipment to an offbase DRMO. Normally, the BCE assumes responsibility for operating such a long-term storage facility.

#### G. Key Compliance Definitions

- ***Aboveground Tank*** - a device that meets the definition of a tank in 40 CFR 260.10 and that is situated in such a way that the entire surface area of the tank is completely above the plane of the adjacent surrounding surface and the entire surface area of the tank (including the tank bottom) is able to be visually inspected (40 CFR 260.10).
- ***Accumulation Site*** - a designated location to place wastes from several generation points in containers and/or tanks for a length of time up to 90 days. The sites are typically at some distance from the generation points (AFI 32-7042, Attachment 4).
- ***Acute Hazardous Waste*** - any waste listed under 40 CFR 261.31 - 261.33(c) with a hazard code of *H*. These include USEPA hazardous waste numbers: F020, F021, F022, F023, F026, and F027 (40 CFR 261.31 through 261.33).
- ***Ancillary Equipment*** - any device including, but not limited to piping, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of hazardous waste from its point of generation to a storage or treatment tank(s), between hazardous waste storage and treatment tanks to a point of disposal onsite, or to a point of shipment offsite (40 CFR 260.10).
- ***Aquifer*** - a geologic formation or group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs (40 CFR 260.10).

- **Boiler** - an enclosed device using controlled flame combustion and having the following characteristics (40 CFR 260.10):
  1. the unit has physical provisions for recovering and exporting thermal energy in the form of steam, heated fluids, or heated gases
  2. the unit's combustion chamber and primary energy recovery section(s) must be of integral design
  3. while in operation the unit maintains a thermal energy recovery efficiency of at least 60 percent
  4. the unit has been approved by the Administrator.
- **Certification** - a statement of professional opinion based upon knowledge and belief (40 CFR 260.10).
- **Characteristics of Hazardous Waste** - the characteristics of ignitability, corrosivity, reactivity, and toxicity which identify hazardous waste (40 CFR 261.20 through 261.24).
- **Closed Portion** - the portion of a facility which has been closed in accordance with the approved closure plan and all applicable closure requirements (40 CFR 260.10).
- **Component** - refers to either the tank or the ancillary equipment of the tank system (40 CFR 260.10).
- **Consignee** - the ultimate treatment, storage, or disposal facility in a receiving country to which the hazardous waste will be sent (40 CFR 262.51).
- **Container** - any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled (40 CFR 260.10).
- **Containment Building** - a hazardous waste management unit that is used to store or treat hazardous waste under 40 CFR 264.1100 through 264.1103 and 265.1100 through 265.1103 (40 CFR 260.10).
- **Contingency Plan** - a document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment (40 CFR 260.10).
- **Corrective Action Management Unit (CAMU)** - an area within a facility that is designated by the Regional Administrator under part 264 subpart S, for the purpose of implementing corrective action requirements under 264.101 and RCRA section 3008(h). A CAMU shall only be used for the management of remediation wastes pursuant to implementing such corrective action requirements at the facility (40 CFR 264.10).
- **Corrosion Expert** - a person who, by reason of knowledge of the physical sciences and the principles of engineering and mathematics, acquired by a professional education and related practical experiences is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be certified as being qualified by the National Association of Corrosion Engineers (NACE) or be a registered professional engineer who has certification and licensing that includes education and experience in corrosion control and or buried or submerged metal piping systems or tanks (40 CFR 260.10).

- **Debris** - solid material exceeding a 60 mm particle size that is intended for disposal and that is: a manufactured object, plant or animal matter, or natural geologic material. The following materials are not debris: any material for which a specific treatment standard is provided, process residuals such as smelter slag and residues from the treatment of waste, wastewater, sludges, or air emissions residues, and intact containers of hazardous waste that are not ruptured and retain at least 75 percent of their original volume (40 CFR 268.2).
- **Designated Facility** - a hazardous waste TSDF that is identified on a manifest as the destination of a hazardous waste shipment. The facility must have an appropriate permit, interim status, or be regulated under specific recycling requirements (40 CFR 260.10).
- **Detonation** - an explosion in which chemical transformation passes through the material faster than the speed of sound (0.33 km/s at sea level) (40 CFR 265.382).
- **Dike** - an embankment or ridge of either natural or manmade materials used to prevent the movement of liquids, sludges, solids, or other materials (40 CFR 260.10).
- **Discharge or Hazardous Waste Discharge** - the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water (40 CFR 260.10).
- **Disposal** - the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters (40 CFR 260.10).
- **Elementary Neutralization Unit** - a device used for neutralizing only those hazardous wastes that exhibit corrosivity (as defined in 40 CFR 261.22) or are listed in Subpart D of 40 CFR 261 only because of corrosivity and meet the definition of tank, tank system container, transport vehicle, or vessel in 40 CFR 261.10 (40 CFR 260.10).
- **EPA Acknowledgment of Consent** - the cable sent to the USEPA from the U.S. Embassy in a receiving country that acknowledges the written consent of the receiving country to accept the hazardous waste and describes the terms and conditions of the receiving country's consent to the shipment (40 CFR 262.51).
- **EPA Hazardous Waste Number** - the number assigned by USEPA to each hazardous waste listed in 40 CFR 261, Subpart D and to each characteristic identified in 40 CFR 261, Subpart C (40 CFR 260.10).
- **EPA Identification Number** - the number assigned by USEPA to each generator, transporter, and treatment, storage, or disposal facility (40 CFR 260.10).
- **Existing Hazardous Waste Management (HWM) Facility or Existing Facility** - a facility which was in operation or for which construction commenced on or before 19 November 1980 (40 CFR 260.10).
- **Existing Tank System or Existing Component** - a tank system or component that is used for the storage or treatment of hazardous waste and that is in operation, or for which installation has commenced on or before 14 July 1986. Installations will have been considered to be commenced if the

owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system and if either (40 CFR 260.20):

1. a continuous onsite physical construction of the site or installation program has begun
2. the owner or operator has entered into contractual obligations that cannot be canceled or modified without substantial loss for physical construction of the site or installation of the tank system to be completed within a reasonable time.

- **Facility** - all contiguous land and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combination of them) (40 CFR 260.10).
- **Final Closure** - the closure of all hazardous waste management units at the facility in accordance with all applicable closure requirements so that hazardous waste management activities under 40 CFR 264 and 265 are no longer conducted at the facility unless subject to the provisions of 262.34 (40 CFR 260.10).
- **Free Liquids** - liquids which readily separate from the solid portion of a waste under ambient temperature and pressure (40 CFR 260.10).
- **Freeboard** - the vertical distance between the top of a tank or surface impoundment dike, and the surface of the waste contained within it (40 CFR 260.10).
- **Generator** - any person, by site, whose act or process produces hazardous waste identified or listed in 40 CFR 261, or whose act first causes a hazardous waste to become subject to regulation (40 CFR 260.10). (NOTE: This typically is used to refer to an facility producing hazardous waste in quantities greater than 1000 kg/mo [2204.62 lb/mo]).
- **Groundwater** - water below the land surface in a zone of saturation (40 CFR 260.10).
- **Halogenated Organic Compounds (HOC)** - those compounds having a carbon-halogen bond which are listed in Appendix 4-1 (40 CFR 268.2).
- **Hazardous Debris** - debris that contains a hazardous waste or that exhibits a characteristic of hazardous waste (40 CFR 268.2).
- **Hazardous Waste** - a solid waste identified as a characteristic or listed hazardous waste in 40 CFR 261.3 (40 CFR 260.10).
- **Hazardous Waste Constituent** - a constituent that caused the hazardous waste to be listed in 40 CFR 261, Subpart D (lists of hazardous wastes from nonspecific and specific sources, and listed hazardous wastes), or a constituent listed in the table of maximum concentrations of contaminants for the toxicity characteristic) (40 CFR 260.10).
- **Hazardous Waste Management Unit** - a contiguous area of land on or in which hazardous waste is placed, or the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area. Examples are a surface impoundment, a waste pile, a treatment area, a landfill cell, an incinerator, a tank and its associated piping and underlying containment system and a container storage area. A container alone does not constitute a unit; the unit includes containers and the land or pad upon which they are placed (40 CFR 260.10).

- **HAZWOPER** - HAZWOPER stands for the Hazardous Waste Operations and Emergency Response (29 CFR 1910.120). This OSHA rule calls for worker training prior to engaging in a hazardous waste operations and responding to emergencies involving hazardous substances. Employees affected by this rule are classified in one of five groups, each requiring a different level of training.
- **Incinerator** - an enclosed device using controlled flame combustion that neither meets the criteria for classification as a boiler nor is listed as an industrial furnace (40 CFR 260.10).
- **Incompatible Waste** - a hazardous waste that is unsuitable for (40 CFR 160.10):
  1. placement in a particular device or facility because it may cause corrosion or decay of containment materials (e.g. container liners or tank walls)
  2. commingling with another waste or material under uncontrolled conditions because the commingling conditions produce heat or pressure, fire or explosion, violent reaction, toxic dusts, mist, fumes, or gases, or flammable fumes or gases.
- **Individual Generation Site** - the contiguous site at or on which one or more hazardous wastes are generated. An individual generation site, such as a large manufacturing plant, may have one or more sources of hazardous waste, but is considered a single or individual generation site if the site or property is contiguous (40 CFR 260.10).
- **Industrial Furnace** - any of the following enclosed devices that are integral components of manufacturing processes and that use controlled flame devices to accomplish recovery of materials or energy; cement kilns, lime kilns, aggregate kilns, phosphate kilns, coke ovens, blast furnaces, smelting, melting and refining furnaces, titanium dioxide chloride process oxidation reactors, methane reforming furnaces, pulping liquor recovery furnaces, combustion devices used in the recovery of sulfur values from spent sulfuric acid, halogen acid furnaces, and other devices designated by the Administrator (40 CFR 260.10).
- **Inground Tank** - a device meeting the definition of tank in 40 CFR 260.10 whereby a portion of the tank is situated to any degree within the ground, thereby preventing visual inspection of that external surface area of the tank that is in the ground (40 CFR 260.10).
- **Injection Wells** - a well into which fluids are injected (40 CFR 260.10).
- **Inner Liner** - a continuous layer of material placed inside a tank or container which protects the construction materials of the tank or container from the contained waste or reagents used to treat the waste (40 CFR 260.10).
- **Installation Inspector** - a person who by means of his knowledge of the physical sciences and the principles of engineering, acquired by a professional education and related practical experience, is qualified to supervise the installation of tank systems (40 CFR 260.10).
- **International Shipment** - the transportation of hazardous waste into or out of the jurisdiction of the United States (40 CFR 260.10).
- **Land Disposal** - includes, but is not limited to, any placement of hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, underground mine or cave, or placement in a concrete vault or bunker intended for disposal purposes (40 CFR 268.2).



- **Land Treatment Facility** - a facility or part of a facility at which hazardous waste is applied onto or incorporated into the soil surface; such facilities are disposal facilities if the waste will remain after closure (40 CFR 260.10).
- **Landfill** - a disposal facility or part of a facility where hazardous waste is placed in or on land and which is not a land treatment facility, a surface impoundment, an underground injection well, a salt bed formation, an underground mine, or a cave (40 CFR 260.10).
- **Large Quantity Generator** - see *Generator*.
- **Leachate** - any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste (40 CFR 260.10).
- **Leak Detection System** - a system capable of detecting the failure of either the primary or secondary containment structure or the presence of a release of hazardous waste or accumulated liquid in the secondary structure. Such a system must employ operational controls (e.g., daily visible containment for releases into the secondary containment system of aboveground tanks) or consist of an interstitial monitoring device designed to detect continuously and automatically the failure of the primary or secondary containment structure or the presence of a release of hazardous waste into the secondary containment structure (40 CFR 260.10).
- **Liner** - a continuous layer of natural or manmade materials, beneath or on the sides of a surface impoundment, landfill, or landfill cell, which restricts the downward or lateral escape of hazardous waste, hazardous waste constituents, or leachate (40 CFR 260.10).
- **Management or Hazardous Waste Management** - the systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous waste (40 CFR 260.10).
- **Management Practice (MP)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures,
- **Manifest** - the shipping document originated and signed by the generator containing the information required by 40 CFR 262, Subpart B (40 CFR 260.10).
- **Manifest Document Number** - the USEPA 12-digit number assigned to the generator plus a unique 5 digit number assigned to the Manifest by the generator for recording and reporting purposes (40 CFR 260.10).
- **Miscellaneous Unit** - a hazardous waste management unit where hazardous waste is treated, stored, or disposed of and that is not a container, tank, surface impoundment, pile, land treatment unit, landfill, incinerator, boiler, industrial furnace, underground injection well with appropriate technical standards under 40 CFR 146, containment building, or unit eligible for a research development and demonstration permit under 40 CFR 270.65 (40 CFR 260.10).
- **Movement** - that hazardous waste transported to a facility in an individual vehicle (40 CFR 260.10).
- **New Hazardous Waste Management Facility** - a facility which began operation, or for which construction commenced after 21 October 1976 (40 CFR 260.10).

- *New Tank System or New Component System* - a tank system or component that will be used for the storage and treatment of hazardous waste and for which installation has commenced after 14 July 1986, except however, for purposes of 264.193(g)(2) and 265.193(g)(2), a new tank system is one for which construction commenced after 14 July 1986 (see also existing tank system) (40 CFR 260.10).
- *Nonwastewaters* - wastes that do not meet the criteria for wastewaters (40 CFR 268.2).
- *Onground Tank* - a device meeting the definition of tank in 40 CFR 260.10 and that is situated in such a way that the bottom of the tank is on the same level as the adjacent surrounding surface so that the external tank bottom cannot be visibly inspected (40 CFR 260.10).
- *Onsite* - the same or geographically continuous property which may be divided by a public right-of-way, provided the entrance and exit between the properties is at a cross-roads intersection and access is by crossing as opposed to going along the right-of-way (40 CFR 260.10).
- *Pile* - any non-containerized accumulation of solid, nonflowing hazardous waste that is used for treatment or storage that is not a containment building (40 CFR 260.10).
- *Primary Exporter* - any person who is required to originate the manifest for a shipment of hazardous waste in accordance with 40 CFR 262, Subpart B or an equivalent state provision, that specifies treatment, storage, or disposal facility in a receiving country as the facility to which the hazardous waste will be sent and any intermediate arranging for the export (40 CFR 262.51).
- *Publicly Owned Treatment Works (POTW)* - any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a state or municipality (as defined by section 502(4) of the CWA). This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment (40 CFR 260.10).
- *Receiving Country* - a foreign country to which a hazardous waste is sent for the purpose of treatment, storage, or disposal (except short-term storage incidental to transportation) (40 CFR 262.51).
- *Restricted Wastes* - those categories of hazardous wastes that are prohibited from land disposal either by regulation or by statute, in other words, a hazardous waste that is restricted no later than the date of the deadline established in RCRA Section 3004 (40 CFR 268).
- *Runoff* - any rainwater, leachate, or other liquid that drains over land from any part of a facility (40 CFR 260.10).
- *Run-on* - any rainwater, leachate, or other liquid that drains over land onto any part of a facility (40 CFR 260.10).
- *Sludge* - any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant (40 CFR 260.10).
- *Small Quantity Generator (SQG)* - a generator who generates less than 1000 kg [2204.62 lb] or hazardous waste in a calendar month but more than 100 kg [220.46 lb] (40 CFR 260.10).

- **Storage** - the holding of hazardous wastes for a temporary period, at the end of which the hazardous wastes are treated, disposed of, or stored elsewhere (40 CFR 260.10).
- **Sump** - any pit or reservoir that meets the definition of tank and those troughs/trenches connected to it that serve to collect hazardous waste for transport to hazardous waste TSDf except that as used in the landfill, surface impoundment, and waste pile rules, sump means any lined pit or reservoir that serves to collect liquids drained from a leachate collection and removal system or leak detection system for subsequent removal from the system (40 CFR 260.10).
- **Surface Impoundment** - a facility or part of a facility that is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials designed to hold an accumulation of liquid wastes or wastes containing free liquids and which is not an injection well (40 CFR 260.10).
- **Tank** - a stationary device designed to contain an accumulation of hazardous waste that is constructed primarily of nonearthen materials (e.g., wood, concrete, steel, plastic) which provide structural support (40 CFR 260.10).
- **Tank System** - a hazardous waste storage or treatment tank and its associated ancillary equipment and containment system (40 CFR 260.10).
- **Thermal Treatment** - the treatment of hazardous waste in a device that uses elevated temperature as the primary means to change the chemical, physical, or biological character or composition of the hazardous waste (40 CFR 260.10).
- **Transfer Facility** - any transportation related facility including loading docks, parking areas, storage areas and other similar where shipments of hazardous wastes are held during the normal course of transportation (40 CFR 260.10).
- **Transit Country** - any foreign country, other than a receiving country, through which a hazardous waste is transported (40 CFR 260.10).
- **Transport Vehicle** - a motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (trailer, railroad freight car, etc.) is a separate transport vehicle (40 CFR 260.10).
- **Transporter** - a person engaged in the offsite transportation of hazardous wastes by air, rail, highway, or water (40 CFR 260.10).
- **Treatability Study** - a study in which a hazardous waste is subjected to a treatment process to determine (40 CFR 260.10):
  1. whether the waste is amenable to the treatment process
  2. what pretreatment (if any) is required
  3. the optimal process conditions needed to achieve the desired treatment
  4. the efficiency of a treatment process for a specific waste or wastes
  5. the characteristics and volumes of residuals from a particular treatment process.

Also included in this definition for the purpose of the 40 CFR 261.4(e) and (f) exemptions are liner compatibility, corrosion, and other material compatibility studies and toxicological and health effects studies. A treatability study is not a means to commercially treat or dispose of hazardous waste.

- *Treatment* - any method, technique, or process, including neutralization, designed to change the physical, chemical or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste nonhazardous, or less hazardous; safer to transport, store, or dispose of, or amenable for recovery, amenable for storage, or reduced in volume (40 CFR 260.10).
- *Underground Injection* - the subsurface emplacement of fluids through a bored, drilled or driven well; or through a dug well, where the depth of the dug well is greater than the largest surface dimension (40 CFR 260.10).
- *Underground Tank* - a device meeting the definition of *tank* in 40 CFR 260.10 whose entire surface area is totally below the surface and covered by the ground (40 CFR 260.10).
- *Unfit-for-Use Tank System* - a tank system that has been determined through an integrity assessment or other inspection to be no longer capable of storing or treating hazardous waste without posing a threat of release of hazardous waste to the environment (40 CFR 260.10).
- *Waste Explosives* - this includes waste which has the potential to detonate and bulk military propellants which cannot be safely disposed of through other modes of treatment (40 CFR 265.382).
- *Wastewater Treatment Unit* - a device that is part of a wastewater treatment facility subject to regulation under section 402 or 307 of the CWA and receives and treats or stores an influent wastewater that is a hazardous waste (as defined in 40 CFR 261.3) or that generates and accumulates a wastewater treatment sludge that is a hazardous waste, or treats or stores a wastewater treatment sludge and meets the definition of tank or tank system (40 CFR 260.10).
- *Wastewaters* - wastes that contain less than 1 percent by weight total organic compounds (40 CFR 268.2)
- *Zone of Engineering Control* - an area under the control of the owner/operator that upon detection of a hazardous waste release, can be readily cleaned up before the release of hazardous waste or hazardous constituents to groundwater or surface water (40 CFR 260.10).



## HAZARDOUS WASTE MANAGEMENT

### GUIDANCE FOR CHECKLIST USERS

	REFER TO CHECKLIST ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)	REFER TO PAGE NUMBER:
All Installations	HW.1 through HW.7	(1)(2)(6)	3-21
All Sizes of Generators			
General	HW.8 through HW.13	(1)(2)(3)(7)(9)(10)	3-24
Personnel Training	HW.14 and HW.15	(5)	3-28
Conditionally Exempt Small Quantity Generators (CESQGs)	HW.16 through HW.19	(1)(3)(5)(10)	3-29
Small Quantity Generators (SQGs)			
General	HW.20 through HW.26	(1)(2)(3)(8)(10)	3-32
Containers	HW.27 through HW.32	(3)(5)(10)	3-34
Satellite Accumulation Points	HW.33	(1)(3)(10)	3-36
Container Storage Areas	HW.34 through HW.36	(1)(2)(3)(4)(6)(7)(10)	3-37
Tank System Storage	HW.37 through HW.39	(1)(2)(3)(5)(10)	3-38
Disposal of Restricted Wastes	HW.40 through HW.45	(1)(3)(10)	3-39
Generators			
General	HW.46 through HW.52	(1)(2)(3)(8)(10)	3-42
Personnel Training	HW.53 and HW.54	(1)(3)(10)	3-45
Contingency Plans and Emergency Coordinators	HW.55 through HW.58	(1)(2)(3)(10)	3-46
Containers	HW.59 through HW.64	(3)(5)(10)	3-48
Satellite Accumulation Points	HW.65	(1)(3)(10)	3-50
Container Storage Areas	HW.66 through HW.68	(3)(10)	3-50
Tank System Storage	HW.69 through HW.79	(1)(2)(3)(5)(7)(10)	3-51
Containment Buildings	HW.80 through HW.86	(3)(10)	3-57
Disposal of Restricted Wastes	HW.87 through HW.93	(1)(10)	3-62
Transportation of Hazardous Waste	HW.94 through HW.98	(1)(2)(8)(10)	3-65

**(a) CONTACT/LOCATION CODE:**

- (1) Environmental Planning (BCE)
- (2) Defense Reutilization and Marketing Office (DRMO)
- (3) Accumulation Point Managers
- (4) Fire Department
- (5) Fire Department
- (6) Safety Officer
- (7) Bioenvironmental Engineer
- (8) Transportation Officer
- (9) Base Supply
- (10) Generating Activities

**GUIDANCE FOR CHECKLIST USERS (continued)**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>CONTACT THESE PERSONS OR GROUPS:(a)</b>	<b>REFER TO PAGE NUMBER:</b>
<b>All TSDFs</b>			
General	HW.99 through HW.108	(1)(2)(4)(5)(6)(7)	3-67
Personnel Training	HW.109 and HW.110	(1)(2)(5)	3-72
Containers	HW.111 through HW.116	(2)(3)(5)(10)	3-73
Container Storage Areas	HW.117 through HW.119	(2)(3)(5)	3-75
Tank Systems	HW.120 through HW.130	(1)(2)(3)(5)(10)	3-76
Containment Buildings	HW.131 through HW.137	(1)(2)(5)	3-82
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Emissions From Process Vents	HW.144 through HW.146	(1)(2)(5)	3-90
Air Emissions Standards for Equipment Leaks	HW.147 through HW.154	(1)(2)(5)	3-92
Documentation Requirements	HW.155 through HW.166	(1)(2)(5)(7)(8)	3-98
Closure	HW.167 through HW.171	(1)(2)(5)	3-103
<b>Additional Requirements for Permitted TSDFs</b>			
General	HW.172 through HW.184	(1)(2)(5)	3-105
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**(a) CONTACT/LOCATION CODE:**

- (1) Environmental Planning (BCE)
- (2) Defense Reutilization and Marketing Office (DRMO)
- (3) Accumulation Point Managers
- (4) Fire Department
- (5) Fire Department
- (6) Safety Officer
- (7) Bioenvironmental Engineer
- (8) Transportation Officer
- (9) Base Supply
- (10) Generating Activities

## **HAZARDOUS WASTE MANAGEMENT**

### **Records to Review During an ECAMP Assessment**

*Generator (including TSDFs if they are also generators):*

- Notification (USEPA identification number)
- Hazardous waste manifests
- Manifest exception reports
- Biennial and annual reports
- Delistings
- Speculative accumulation records
- Land disposal restriction certifications
- Employee training documentation
- Hazardous waste tank integrity assessments
- Contingency plan
- Notifications of hazardous waste oil fuel marketing or blending activity
- Inspection logs

*In addition to the above, TSDFs would require:*

- Unmanifested waste reports
- Facility audit reports (Inspection log)
- Waste analysis plan(s)
- Operating record
- Groundwater monitoring records and annual reports (where required)
- Facility biennial reports
- Closure/post closure plans
- Closure/post closure notices (where applicable)
- Permit if issued, otherwise Part A application
- Other documents as required by the permit

### **Physical Features to Inspect During an ECAMP Assessment**

- Disposal sites
- Satellite accumulation points
- Incinerators
- Vehicles used for transport
- Storage facilities (including containers)
- Surface impoundments
- Treatment facilities



### **People to Interview During an ECAMP Assessment**

- Base Civil Engineering (Environmental Coordinator)
- DRMO
- Satellite Accumulation Point Managers or Operators
- Safety Manager
- Fire Department
- TSDF Operators
- Project Resource Manager
- Base Bioenvironmental Engineer
- Transportation
- Storage Area Managers and Operators

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL INSTALLATIONS</b></p> <p><b>HW.1.</b> Actions or changes since previous review of hazardous waste management should be examined (MP).</p> <p><b>HW.2.</b> Copies of all relevant Federal, state, and local regulations on hazardous waste are required to be maintained at the installation (AFR 19-1, para 11f).</p>	<p>Determine if noncompliance issues have been resolved by obtaining a copy of the previous hazardous waste review. (1)(2)</p> <p>(NOTE: States may obtain authorization to operate the RCRA program from USEPA, provided regulations at least as stringent as USEPA regulations have been passed and an agreement has been signed with USEPA.)</p> <p>Determine from interview if copies of the following regulations are maintained and kept current at the base: (1)(2)</p> <ul style="list-style-type: none"> <li>- 40 CFR 260, <i>Hazardous Waste Management System: General.</i></li> <li>- 40 CFR 261, <i>Identification and Listing of Hazardous Waste.</i></li> <li>- 40 CFR 262, <i>Standards Applicable to Generators of Hazardous Waste.</i></li> <li>- 40 CFR 263, <i>Standards Applicable to Transporters of Hazardous Waste.</i></li> <li>- 40 CFR 264, <i>Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.</i></li> <li>- 40 CFR 265, <i>Interim Status Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Facilities.</i></li> <li>- 40 CFR 266, <i>Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities.</i></li> <li>- 40 CFR 268, <i>Land Disposal Restrictions.</i></li> <li>- 49 CFR 172-179, <i>Transportation Regulations.</i></li> </ul> <p>Determine if base environmental staff are familiar with and knowledgeable in regulatory requirements. (1)(2)</p> <p>Verify that the Base Staff Judge Advocate reviews Federal, state, and local regulations that may affect ongoing and proposed activities and keeps the EPC informed as needed. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.3.</b> Copies of all relevant DOD and U.S. Air Force directives, and guidance documents on hazardous waste should be maintained at the installation (MP).</p> <p><b>HW.4.</b> Installations are required to comply with state and local regulations and compliance agreements negotiated with Federal, state and local governments (EO 12088, Section 1-1; FFCA, Section 102).</p>	<p>Determine from interview if copies of the following documents are maintained and kept current at the base: (1)(2)</p> <ul style="list-style-type: none"> <li>- Air Force Hazardous Waste Management Policy, 6 June 1991.</li> <li>- <i>Air Force Policy on the Application of RCRA to Conventional Explosive Ordnance Operations</i>, 21 January 1994.</li> <li>- AFI 32-7042, <i>Solid and Hazardous Waste Compliance</i>.</li> <li>- AFR 19-1, <i>Pollution Abatement and Environmental Quality</i>.</li> <li>- AFR 127-12, <i>Air Force Occupational Safety, Fire Prevention, and Health Program</i>.</li> <li>- NFPA, <i>Fire Protection Guide of Hazardous Materials</i>.</li> </ul> <p>Verify that the installation is complying with state and local hazardous waste requirements. (1)</p> <p>Verify that the installation is operating according to permits issued by the state or local agencies where approved. (1)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- additional manifesting requirements</li> <li>- more frequent reporting requirements</li> <li>- transportation</li> <li>- identification of special waste or waste categories</li> <li>- regulation of specific substances as hazardous waste such as: medical, pathological, and infectious waste; used oil; explosives; used batteries</li> <li>- small and very small quantity generator requirements</li> <li>- RCRA permitting of oil/water separators</li> <li>- disposal requirements</li> <li>- construction and operation of storage and disposal facilities</li> <li>- satellite accumulation point requirements</li> <li>- container marking and labeling requirements.)</li> </ul> <p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreements. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.5.</b> Installations will meet regulatory and U.S. Air Force requirements issued since the finalization of the manual (a finding under this checklist item will have the citation of the new regulations as a basis of finding).</p>	<p>Determine if any new regulations concerning hazardous waste have been issued since the finalization of the manual. (1)(2)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)(2)</p>
<p><b>HW.6.</b> The installation safety manager is responsible for conducting safety evaluations and inspections of the handling and storage of hazardous waste (AFR 127-12, para 10e and 16a(2)(c)).</p>	<p>Determine command inspection requirements, forms, and reporting procedures by interviewing the safety officer. (6)</p> <p>Obtain list of buildings, shops, and material inspected by the safety officer yearly. (6)</p> <p>Review safety reports for hazardous waste TSDFs. (6)</p> <p>Verify that any corrective actions recommended in the safety reports have been implemented. (6)</p>
<p><b>HW.7.</b> Installations are required to characterize their hazardous waste streams through a waste analysis plan, a waste stream inventory, and hazardous waste profile sheets (AFI 32-7042, para 2.4.2, 2.4.3, and 2.4.4)</p>	<p>Verify that the installation has characterized hazardous waste by developing a waste analysis plan that includes the following: (1)(2)</p> <ul style="list-style-type: none"> <li>- the wastes evaluated and analyzed</li> <li>- test methods used</li> <li>- hazardous waste sampling methods</li> <li>- sample analysis locations and frequency, descriptions of analytical methods used</li> <li>- sample documentation</li> <li>- sample quality assurance/quality control procedures</li> <li>- sample request procedures.</li> </ul> <p>(NOTE: Waste analysis is to be conducted by using the waste generators knowledge of the waste or by analytical testing.)</p> <p>Verify that the waste streams are evaluated as necessary to ensure waste stream characteristics have not substantially changed. (1)</p> <p>(NOTE: Table 3-1 contains recommended re-evaluation frequencies for chemical mixture waste streams.)</p> <p>(NOTE: Describe re-evaluations in the waste analysis plan.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>HW.8. (continued)</b>	<p>Determine if the installation followed USEPA criteria for identifying the characteristics of hazardous waste and USEPA's listed wastes in 40 CFR 261 (see Tables 3-2, 3-3, 3-4, and 3-5). (1)(7)</p> <p>Verify that the master list of wastes contains appropriate wastes by comparing it to Table 3-6 and recording any inconsistencies. (1)(7)</p> <p>Determine whether the installation generates, transports, treats, stores, or disposes of any hazardous waste (see Table 3-2, 3-3, 3-4, and 3-5 for guidance) and the quantity. If so, go to the appropriate section. (1)(7)</p> <p>(NOTE: The following solid wastes are not considered to be hazardous wastes:</p> <ul style="list-style-type: none"> <li>- household waste</li> <li>- fly ash waste, bottom ash waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels except for facilities that burn hazardous waste</li> <li>- drilling fluids, produced waters and other wastes affiliated with the explorations, development, or production of crude oil, natural gas, or geothermal energy</li> <li>- solid waste which consists of discarded arsenical-treated wood or wood products which fail the test for Toxicity Characteristics for arsenic and which is not a hazardous waste for any other reason if the waste is generated by persons who utilize the arsenical treated wood and wood products for those materials intended end use</li> <li>- petroleum contaminated media and debris that fail the test for Toxicity Characteristic (Hazardous Waste Codes D018 through D043 only) and are required to meet the corrective action regulations under 40 CFR part 280 (see the section titled POL Management)</li> <li>- used chlorofluorocarbon refrigerants from totally enclosed heat transfer equipment, including mobile air conditioning systems, mobile refrigeration and commercial and industrial air conditioning and refrigeration systems that use chlorofluorocarbons as the heat transfer fluid in a refrigeration cycle, provided that the refrigerant is reclaimed for further use</li> <li>- nonferrous plated used oil filters that are not mixed with a listed hazardous waste if these oil filters have been gravity hot-drained using one of the following methods: <ul style="list-style-type: none"> <li>- puncturing the filter anti-drain back valve or the filter dome end and hot-draining</li> <li>- hot-draining and crushing</li> <li>- dismantling and hot-draining</li> <li>- any other equivalent hot-draining method which will remove used oil.)</li> </ul> </li> </ul> <p>Verify that listed wastes are tested for reactivity, corrosivity, and ignitability. (1)</p> <p>Verify that wastes are tested for toxicity characteristics. (1)(7)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>HW.11. (continued)</b>	Verify that Environmental Planning provides quarterly summaries of generation data, prior year data, and waste minimization baseline year data (normally calendar year 1986) to the EPC for evaluating progress in hazardous waste minimization. The same data is also used in the Annual Defense Status Report. (1)
<b>HW.12.</b> Installations are required to designate an individual to be responsible for the proper management of each accumulation site (AFI 32-7042, para 2.5.1).	Verify that individuals are designated as responsible for each accumulation point. (1)
<b>HW.13.</b> Areas where containers of hazardous waste are stored should have secondary containment (MP).	Verify that the areas where containers of hazardous waste are stored have secondary containment. (1)(3)(10)
<b>Personnel Training</b>	
<b>HW.14.</b> All installation personnel who handle hazardous waste must meet certain training requirements (AFI 32-7042, para 2.3).	<p>Verify that all personnel who work with hazardous waste and their supervisors receive, and successfully complete, hazardous waste training prior to working with hazardous waste. (5)</p> <p>Verify that annual refresher training is completed. (5)</p> <p>Verify that the training program includes the following: (5)</p> <ul style="list-style-type: none"> <li>- introduction to RCRA</li> <li>- identification of hazardous wastes</li> <li>- accumulation point management</li> <li>- container use, marking and labeling, an onbase transportation</li> <li>- waste turn-in procedures</li> <li>- manifesting and transportation of hazardous wastes</li> <li>- spill prevention and response to emergencies</li> <li>- waste minimization</li> <li>- personnel safety and health and fire safety.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>HW.16. (continued)</b>	<p>Verify that wastes are either treated or disposed of in an onsite facility or delivered to an offsite TSD, either of which are one of the following: (5)</p> <ul style="list-style-type: none"> <li>- permitted</li> <li>- in interim status</li> <li>- authorized to manage hazardous waste by a state with an approved hazardous waste management program</li> <li>- permitted, licensed, or registered by a state to manage municipal or industrial solid waste</li> <li>- a facility which does one of the following:               <ul style="list-style-type: none"> <li>- beneficially uses or reuses, or legitimately recycles or reclaims its waste</li> <li>- treats its waste prior to beneficial use or reuse, or legitimate recycling or reclamation.</li> </ul> </li> </ul> <p>(NOTE: If a hazardous waste generator meets the requirements for being a CESQG, they are not required to meet any of the standards outlined in 40 CFR 262 through 266, (except 262.11), 268, and 270.)</p> <p>(NOTE: If an installation mixes its waste with used oil, the mixture is subject to the requirements in Subpart G of Part 279 if it is destined to be burned for energy recovery.)</p> <p>(NOTE: Quantities of acute hazardous waste greater than listed amounts are required to be handled according to the standards in 40 CFR 262 through 266, 268, 270 and 124.)</p>
<b>HW.17. Empty containers at CESQGs previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).</b>	<p>Verify that for containers or inner liners holding hazardous wastes: (3)</p> <ul style="list-style-type: none"> <li>- wastes are removed that can be removed using common practices</li> <li>- no more than 2.5 cm [1 in.] of residue remains</li> <li>- if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains</li> <li>- when the container is greater than 110 gal [416.40 L] no more than 0.3 percent by weight of the total container capacity remains.</li> </ul> <p>Verify that for containers that hold a compressed gas, the pressure in the container approaches atmosphere. (3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>HW.17. (continued)</b>	<p>Verify that for containers or inner liners that held an acute hazardous waste listed in Table 3-7 that one of the following is done: (3)(10)</p> <ul style="list-style-type: none"> <li>- it is triple rinsed</li> <li>- it is cleaned by another method identified through the literature or testing as achieving equivalent removal</li> <li>- the inner liner is removed.</li> </ul>
<b>HW.18.</b> Containers at CESQGs should be managed in accordance with good management practices (MP).	<p>Verify the following by inspecting storage areas: (3)(10)</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</li> <li>- at least 3 ft [0.91 m] of aisle space is provided between rows of containers.</li> </ul>
<b>HW.19.</b> Containers of hazardous waste should be kept in designated storage areas at CESQGs (MP).	<p>Verify that all hazardous waste containers are identified and stored in appropriate areas. (3)(10)</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SMALL QUANTITY GENERATORS (SQGs)</b></p> <p><b>General</b></p> <p><b>HW.20.</b> Generators of more than 100 kg [220.46 lb] but less than 1000 kg [2204.62 lb] of hazardous waste per month may qualify as a SQG which can accumulate hazardous waste onsite for 180 days without a permit if specific conditions are met (40 CFR 262.34 (d)(1), 262.34(d)(4), 262.34(e), and 262.34(f)).</p> <p><b>HW.21.</b> SQGs that generate, transport, or handle hazardous wastes must obtain an USEPA identification number (40 CFR 262.12(a), 262.12(b), and 265.11).</p>	<p>Inspect containers, storage, and records. (1)(10)</p> <p>Verify that no more than 1000 kg [2204.62 lb] of hazardous waste is generated in any month. (1)(3)(10)</p> <p>Verify that the onsite accumulation time does not exceed 180 days. (3)</p> <p>(NOTE: The 180 day time period is extended to 270 days if the waste must be transported more than 200 mi to a TSDF. This extension does not apply if a TSDF is available within 200 mi and the installation chooses to transport the waste to a farther away TSDF)</p> <p>Verify that no more than 6000 kg [13,227.73 lb] is allowed to accumulate at the installation. (1)(3)</p> <p>Verify that containers are marked with the date accumulation began and the words HAZARDOUS WASTE. (3)</p> <p>Verify that the containers and the areas where containers are stored meet the requirements outlined in the portions titled SQGs: Containers, SQGs: Container Storage Areas", SQGs: Satellite Accumulation Points, and SQGs: Tank Systems Storage". (3)</p> <p>(NOTE: When a SQG exceeds the quantity generation or amount accumulation it becomes subject to either Generator or TSDF requirements. When a SQG exceeds the storage time limitation, he becomes subject to all storage, facilities, and permitting requirements.)</p> <p>Examine documentation from USEPA for the base's generator identification number. (1)(2)</p> <p>Verify that correct identification number is used on all appropriate documentation (i.e., manifests). (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.22.</b> A SQG must not offer its hazardous waste to transporters or to TSDFs that have not received an USEPA identification number (40 CFR 262.12(c)).</p> <p><b>HW.23.</b> SQGs of hazardous waste are required to use manifests and keep records of hazardous waste activity (40 CFR 262.20, 262.42(b), and 262.44).</p> <p><b>HW.24.</b> SQGs are required to keep records of waste analyses, tests and waste determinations (40 CFR 262.40(c)).</p>	<p>Examine records pertaining to disposal contract awards and verify that all transporters of hazardous waste of TSDFs have an USEPA identification number. (1)(2)</p> <p>Verify that signed copies of returned manifests are kept for 3 yr. (1)(8)</p> <p>Verify that exception reports were submitted to the USEPA Regional Administrator when a signed manifest copy was not received within 60 days of the waste being accepted by the initial transporter. (1)(8)</p> <p>Verify that exception reports are kept for at least 3 yr. (1)(8)</p> <p>Verify that records of test results, waste analyses, and determinations are kept for 3 yr. (1)(8)</p> <p>(NOTE: The requirement to prepare a manifest does not apply if:</p> <ul style="list-style-type: none"> <li>- the waste is reclaimed under contractual agreement and: <ul style="list-style-type: none"> <li>- the type of waste and frequency of shipments are specified in the agreement</li> <li>- the vehicle used to transport the waste to the recycling facility and to deliver regenerated material back to the generator is owned and operated by the reclaimer</li> </ul> </li> <li>- the generator maintains a copy of the reclamation agreement for at least 3 yr after termination of the agreement.)</li> </ul> <p>(NOTE: Period of retention of records is extended automatically during the course of any unresolved enforcement action or as requested by the USEPA Administrator.)</p> <p>Verify that appropriate records are kept for at least 3 yr from the date the waste was last sent to onsite or offsite TSDF. (1)(3)(10)</p> <p>(NOTE: Period of retention of records is extended automatically during the course of any unresolved enforcement action or as requested by the USEPA Administrator.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.25.</b> SQGs must submit a biennial report to the Regional Administrator by 1 March of even numbered years (40 CFR 262.40(b) and 262.41(a)).</p> <p><b>HW.26.</b> SQGs are required to have an emergency coordinator and emergency response planning (40 CFR 262.34(d)(5)).</p>	<p>Verify that the biennial report (USEPA Form 8700-13A) is complete and was submitted to the Regional Administrator in a timely manner. (1)(10)</p> <p>Verify that copies are kept for 3 yr. (1)(10)</p> <p>(NOTE: Reporting for exports of hazardous waste is not required.)</p> <p>(NOTE: This is not required if an annual report was submitted to the state.)</p> <p>(NOTE: Periods of retention of records may be extended automatically during the course of any unresolved enforcement action or as requested by the USEPA Administrator.)</p>
<p><b>Containers</b></p> <p><b>HW.27.</b> Empty containers at SQGs previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).</p>	<p>Verify that the installation has an emergency coordinator. (1)</p> <p>Verify that emergency information is posted next to the telephone: (10)</p> <ul style="list-style-type: none"> <li>- name and telephone number of emergency coordinator</li> <li>- location of fire extinguishers and spill control materials</li> <li>- location of fire alarms (if present)</li> <li>- telephone number of fire department.</li> </ul> <p>Verify that waste handlers are familiar with waste handling and emergency procedures. (8)(10)</p> <p>Verify that for containers or inner liners holding hazardous wastes: (3)(5)(10)</p> <ul style="list-style-type: none"> <li>- wastes are removed that can be removed using common practices</li> <li>- no more than 2.5 cm [1 in.] of residue remains</li> <li>- if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains</li> <li>- when the container is greater than 110 gal [416.40 L] no more than 0.3 percent by weight of the total container capacity remains.</li> </ul> <p>Verify that for containers that held a compressed gas, the pressure in the container approaches atmosphere. (3)(5)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.28.</b> Containers used to store hazardous waste at SQGs must be in good condition and not leaking (40 CFR 262.34(d)(2) and 265.171).</p>	<p>Verify that containers are not leaking, bulging, rusting, damaged or dented. (3)(10)</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary. (3)(10)</p>
<p><b>HW.29.</b> Containers used at SQGs must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(d)(2) and 265.172).</p>	<p>Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums. (3)(10)</p>
<p><b>HW.30.</b> Containers of hazardous waste at SQGs must be closed during storage and handled in a safe manner (40 CFR 262.34(d)(2) and 265.173).</p>	<p>Verify that containers are closed except when it is necessary to add or remove waste (check bungs on drums, look for funnels). (3)(10)</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak. (3)(10)</p>
<p><b>HW.31.</b> The handling of incompatible wastes, or incompatible wastes and materials in containers at SQGs must comply with safe management practices (40 CFR 262.34(d)(2) and 265.177).</p>	<p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers unless it is done so that it does not: (3)(10)</p> <ul style="list-style-type: none"> <li>- generate extreme heat or pressure, fire, or explosion, or violent reaction</li> <li>- produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health</li> <li>- produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions</li> <li>- damage the structural integrity of the device or facility</li> <li>- by any other like means threaten human health.</li> </ul> <p>(NOTE: Incompatible wastes as listed in Table 3-8 should not be placed in the same drum.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material. (3)(10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.31. (continued)</b></p> <p><b>HW.32.</b> Containers of hazardous waste at SQGs should be managed in accordance with good management practices (MP).</p> <p><b>Satellite Accumulation Points</b></p> <p><b>HW.33.</b> All SQGs may accumulate as much as 55 gal of hazardous waste or 1 qt of acutely hazardous waste in containers at or near any point of initial generation without complying with the requirements for onsite storage if specific standards are met (40 CFR 262.34(c)).</p>	<p>Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall or other device. (3)</p> <p>Inspect containers and storage areas to determine the following: (3)(10)</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</li> <li>- at least 3 ft [0.91 m] of aisle space is provided between rows of containers.</li> </ul> <p>(NOTE: This type of storage is often referred to as a satellite accumulation point.)</p> <p>Verify that the satellite accumulation point is near the point of generation and is under the control of the operator of the waste generating process. (1)(3)(10)</p> <p>Verify that the containers are in good condition and are compatible with the waste stored in them and that the containers are kept closed except when waste is being added or removed. (1)(3)(10)</p> <p>Verify that the containers are marked HAZARDOUS WASTE or other appropriate identification. (10)</p> <p>(NOTE: See Tables 3-2, 3-3, 3-4, 3-5, and 3-7 for a guidance list of hazardous and acute wastes.)</p> <p>Verify that when waste is accumulated in excess of quantity limitations the following actions are taken by interviewing the shop managers: (10)</p> <ul style="list-style-type: none"> <li>- the excess container is marked with the date the excess amount began accumulating</li> <li>- the waste is transferred to a 90 day or permitted storage area within 3 days.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Container Storage Areas</b></p> <p><b>HW.34.</b> Containers of hazardous waste at SQGs should be kept in storage areas designated in the management plan (MP).</p> <p><b>HW.35.</b> SQG storage areas must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 262.34(d)(4) and 265.30 through 265.37).</p>	<p>Verify that all containers are identified and stored in appropriate areas. (3)(10)</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p> <p>Determine if the following required equipment is easily accessible and in working condition by inspecting the SQG facility: (3)(10)</p> <ul style="list-style-type: none"> <li>- internal communications or alarm system capable of providing immediate emergency instruction to installation personnel</li> <li>- a telephone or hand-held two way radio</li> <li>- portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals)</li> <li>- spill control equipment</li> <li>- decontamination equipment</li> <li>- fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, or automatic sprinklers, or water spray systems.</li> </ul> <p>Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency. (1)(2)(3)(10)</p> <p>Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the installation operation. (1)(2)(3)</p> <p>Verify that police, fire departments, emergency response teams are familiar with the layout of the installation, properties of the waste being handled, and general operations as appropriate for the type of waste and potential need for such services. (4)(6)(7)</p> <p>Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency as appropriate for the type of waste and potential need for such services. (1)(3)(4)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.36.</b> SQGs must conduct weekly inspections of container storage areas (40 CFR 262.34(d)(2) and 265.174).</p> <p><b>Tank Systems Storage</b></p> <p><b>HW.37.</b> SQGs must comply with certain storage tank requirements (40 CFR 262.34(d)(3) and 265.201(a) through 265.201(c)).</p>	<p>Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers. (3)(10)</p> <p>Determine if the installation is a small quantity generator that stores or treats wastes in tanks and verify that: (1)(3)(10)</p> <ul style="list-style-type: none"> <li>- the tank prevents:               <ul style="list-style-type: none"> <li>- generation of extreme heat or pressure, fire or explosions, or violent reactions</li> <li>- production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment</li> <li>- production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion</li> <li>- damage to structural integrity of the device or facility</li> <li>- threats to human health or the environment through other means</li> </ul> </li> <li>- no treatment reagent or hazardous wastes are placed in the tank that would cause it to rupture, leak, corrode, or otherwise fail before the end of its intended life</li> <li>- uncovered tanks have at least 60 cm (2 ft) of freeboard unless the tank has a containment structure, drainage control system, or a diversion structure with a volume that equals or exceeds the capacity of the top 60 cm [2 ft] of the tank</li> <li>- continuous feed tanks have a wastefeed cutoff or other stop/bypass system.</li> </ul> <p>Verify that the following are inspected at the indicated times: (1)(3)(10)</p> <ul style="list-style-type: none"> <li>- discharge control equipment at least once each operating day</li> <li>- monitoring equipment (pressure and temperature gauges) at least once each operating day</li> <li>- waste level in tank at least once each operating day</li> <li>- construction material of the tank for corrosion or leakage weekly</li> <li>- surrounding area for leakage and/or contamination at least weekly.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.38.</b> Tank systems at SQGs must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 262.34(d)(3) and 265.201(e) through 265.201(f)).</p>	<p>Verify that ignitable or reactive wastes are not placed in a tank system, unless one of the following is met: (1)(2)(3)(10)</p> <ul style="list-style-type: none"> <li>- the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable and the minimum requirements for reactive and ignitable wastes are met</li> <li>- the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react</li> <li>- the tank system is used solely for emergencies.</li> </ul> <p>Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the National Fire Protection Association's (NFPA) <i>Flammable and Combustible Liquids Code</i> are maintained. (1)(2)(3)(5)(10)</p> <p>Verify that incompatible waste, or incompatible wastes and materials, are not placed in the same tank system unless minimum safety requirements are met. (1)(2)(3)(5)(10)</p> <p>Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless minimum safety requirements are met. (1)(2)(3)(5)(10)</p>
<p><b>HW.39.</b> SQGs must comply with specific tank closure requirements (40 CFR 265.201(d)).</p>	<p>Verify that tank systems in the process of being closed or closed had all hazardous waste removed from tanks, discharge control equipment, and discharge confinement structures. (1)(3)(10)</p>
<p><b>Disposal of Restricted Wastes</b></p> <p><b>HW.40.</b> SQGs must test their wastes or use process knowledge to determine if they are restricted from land disposal (40 CFR 268.7).</p>	<p>Determine whether the generator tests for restricted wastes. (3)(10)</p> <p>Determine if the installation generates restricted wastes by reviewing test results (see Table 3-9). (10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.41.</b> The Base Environmental Manager is responsible for completing the information required on the Hazardous Waste Profile Sheet concerning land disposal restrictions (Air Force Hazardous Waste Management Policy, 6 June 1991).</p> <p><b>HW.42.</b> When a SQG is managing a restricted waste a notice must be issued to the TSD in writing of the appropriate treatment standards and prohibition levels (40 CFR 268.7(a) (1) through 268.7(a)(3), 268.7(a)(10)).</p>	<p>Verify that the following information relating to land disposal restrictions is filled in on the Hazardous Waste Profile Sheet: (1)(3)(10)</p> <ul style="list-style-type: none"> <li>- treatability groups</li> <li>- the USEPA hazardous waste code</li> <li>- all subcategories if there is more than one code</li> <li>- the five letter treatment code or the sections of the CFR where the treatment appears</li> <li>- whether or not a lab pack contains a waste identified as a restricted waste.</li> </ul> <p>Verify that for restricted waste that does not meet the applicable treatment standards or exceeds the applicable prohibition levels the notice is issued and includes: (1)(3)(10)</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- for hazardous debris, the contaminants subject to treatment and the following statement "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45"</li> <li>- the waste analysis data, when available.</li> </ul> <p>Verify that for restricted waste that can be land disposed without further treatment (this does not include debris that does not contain hazardous waste) the notice includes: (1)(3)</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- the waste analysis data, when available</li> <li>- the signature of an authorized representative certifying that the waste complies with the treatment standards of 40 CFR 268.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.42. (continued)</b></p>	<p>Verify that, for restricted waste that is subject to an exemption from a prohibition of the type of land disposal used, the notice states that the waste is not prohibited from land disposal and includes: (1)(3)(10)</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- the waste analysis data, when available</li> <li>- for hazardous debris, the contaminant subject to treatment</li> <li>- the date the waste is subject to prohibitions.</li> </ul> <p>(NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste subject to the agreement.)</p>
<p><b>HW.43.</b> SQGs that are managing prohibited wastes in tanks, containers, or containment buildings and treating the waste to meet applicable treatment standards, must develop and follow a written waste analysis plan (40 CFR 268.7(a)(4) and 268.7(a)(10)).</p>	<p>Verify that the plan describes the procedures that the generator will carry out to comply with treatment standards. (1)(3)(10)</p> <p>(NOTE: SQGs treating hazardous debris under the alternative treatment standards are not required to conduct waste analysis.)</p> <p>Verify that the plan is kept onsite and: (1)(3)(10)</p> <ul style="list-style-type: none"> <li>- the plan is based on a detailed chemical and physical analysis of representative sample of the prohibited waste being treated</li> <li>- the plan is filed with the USEPA Regional Administrator or state authorized official at least 30 days prior to the treatment activity, with delivery verified.</li> </ul> <p>(NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste subject to the agreement.)</p>
<p><b>HW.44.</b> SQGs are required to keep specific documents pertaining to restricted wastes onsite (40 CFR 268.7(a)(5) through 268.7(a)(7) and 268.7(a)(10)).</p>	<p>Verify that if the installation is using generator knowledge to determine whether a waste meets land disposal restriction requirements, the supporting data used in making this determination is retained in the installation operating record. (1)(3)(10)</p> <p>Verify that if the installation has determined whether a waste is restricted using appropriate test methods, the waste analysis data is retained. (1)(3)(10)</p> <p>Verify that if the installation has determined that they are managing a restricted waste that is excluded from the definition of a hazardous waste or solid waste or exempt from RCRA-C, a one-time notice is placed in the installations files stating that the generated waste is excluded. (1)(3)(10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.46. (continued)</b></p> <p><b>HW.47.</b> A generator that generates, transports, or handles hazardous wastes must obtain an USEPA identification number (40 CFR 262.12(a) and 262.12(b), 264.11, and 265.11).</p> <p><b>HW.48.</b> Generators must not offer their waste to transporters or TSDFs that have not received an USEPA identification number (40 CFR 262.12(c)).</p> <p><b>HW.49.</b> Generators of hazardous waste must submit a biennial report to the Regional Administrator by 1 March of even numbered years (40 CFR 262.40(b) and 262.41(a)).</p>	<p>(NOTE: A generator who meets these standards is exempt from meeting the closure requirements outlined in 40 CFR 265.110 through 265.156, except for 265.111 and 265.114.)</p> <p>(NOTE: A generator who accumulates hazardous waste for more than 90 days (without an extension), is subject to all storage facility and permitting requirements.)</p> <p>Examine documentation from USEPA for the base's generator identification number. (1)(2)</p> <p>Verify that correct identification number is used on all appropriate documentation (i.e., manifests). (1)(2)(10)</p> <p>Verify that all transporters of hazardous wastes or TSDFs used by the generator have an USEPA identification number by examining records pertaining to disposal contract awards. (8)</p> <p>Verify that the biennial report (USEPA Form 8700-13A) is complete and was submitted in a timely manner. (1)(10)</p> <p>Verify that copies are kept for 3 yr. (1)(10)</p> <p>(NOTE: Reporting for exports of hazardous waste is not required.)</p> <p>(NOTE: This does not apply if an annual report was submitted to the state.)</p> <p>(NOTE: Periods of retention of records may be extended automatically during the course of any unresolved enforcement action or at the request of the USEPA Administrator.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.50.</b> Generators are required to use manifests, file manifest exception reports, and maintain records (40 CFR 262.40(b), 262.40(d), and 262.42(a)).</p> <p><b>HW.51.</b> Generators are required to keep records of waste analyses, tests, and waste determinations (40 CFR 262.40(c)).</p> <p><b>HW.52.</b> Generator facilities must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 262.34(a)(4) and 265.30 through 265.37).</p>	<p>Verify that manifests are used when shipping the waste offsite. (8)(10)</p> <p>Verify that exception reports are filed with the USEPA Regional Administrator if a copy of the manifest is not received within 45 days of after the waste is accepted by the initial transporter. (8)(10)</p> <p>Verify that manifests and exception reports are kept for 3 yr. (8)(10)</p> <p>(NOTE: Periods of retention for reports may be extended automatically during the course of any unresolved enforcement action.)</p> <p>Verify that the appropriate records are kept for 3 yr from the date the waste was last sent to the onsite or offsite TSDF. (1)(3)(10)</p> <p>(NOTE: Periods of retention for reports may be extended automatically during the course of any unresolved enforcement action or at the request of the USEPA Administrator.)</p> <p>Determine if the following required equipment is easily accessible and in working condition at the installation: (1)(3)(10)</p> <ul style="list-style-type: none"> <li>- internal communications or alarm system capable of providing immediate emergency instruction to installation personnel</li> <li>- a telephone or hand-held two way radio</li> <li>- portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals)</li> <li>- spill control equipment</li> <li>- decontamination equipment</li> <li>- fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, or automatic sprinklers, or water spray systems.</li> </ul> <p>Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency. (1)(3)(10)</p> <p>Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the installation operation. (1)(3)(10)</p> <p>Verify that police, fire departments, emergency response teams are familiar with the layout of the installation, properties of the waste being handled, and general operations as appropriate for the type of waste and potential need for such services. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.52. (continued)</b></p> <p><b>Personnel Training</b></p> <p><b>HW.53.</b> All installation personnel who handle hazardous waste must meet certain training requirements (40 CFR 262.34(a)(4) and 265.16(a) through 265.16(c)).</p>	<p>Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency as appropriate for the type of waste and potential need for such services. (1)(3)(10)</p> <p>Verify that the training program is directed by a person trained in hazardous waste management procedures. (3)(10)</p> <p>Verify that the training program includes the following: (3)(10)</p> <ul style="list-style-type: none"> <li>- contingency plan implementation (emergency procedures, equipment, and systems)</li> <li>- key parameters for automatic waste feed cut-off system</li> <li>- procedures for using, inspecting, and repairing emergency and monitoring equipment</li> <li>- operation of communications and alarm systems</li> <li>- response to fire or explosion</li> <li>- response to leaks or spills</li> <li>- waste turn in procedures</li> <li>- identification of hazardous wastes</li> <li>- container use, marking, labeling, and onbase transportation</li> <li>- manifesting and off-base transportation</li> <li>- accumulation point management</li> <li>- personnel health and safety and fire safety</li> <li>- facility shutdown procedures.</li> </ul> <p>Verify that new employee training is completed within 6 mo of employment. (1)(3)</p> <p>Verify that an annual review of initial training is provided. (1)(3)(10)</p> <p>Verify that employees do not work unsupervised until training is completed. (3)(10)</p> <p>Verify specifically that accumulation point managers and hazardous waste handlers have been trained. (1)(3)</p> <p>(NOTE: HAZWOPER training will fulfill this requirement.)</p>

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<p><b>HW.54.</b> Training records must be maintained for all installation staff who manage hazardous waste (40 CFR 262.34(a)(4) and 265.16(d) and 265.16(e)).</p> <p><b>Contingency Plans and Emergency Coordinators</b></p> <p><b>HW.55.</b> Generators must have a contingency plan (40 CFR 262.34(a)(4) and 265.50 through 265.54).</p>	<p>Examine training records and verify they include the following: (1)(10)</p> <ul style="list-style-type: none"> <li>- job title and description for each employee by name</li> <li>- written description of how much training each position will obtain</li> <li>- documentation of training received by name.</li> </ul> <p>Determine if training records are retained for 3 yr after employment at the installation. (1)(3)(10)</p> <p>Verify that records accompany employees transferred within the Air Force. (10)</p> <p>(NOTE: Generating facilities may be addressed in the installation's SPCC plan or other emergency plan, or if none exists, in a separate contingency plan.)</p> <p>Verify that the contingency plan is designed to minimize hazards to human health or the environmental from fires, explosions, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents. (1)(3)(10)</p> <p>Verify that the plan includes the following: (1)(3)(10)</p> <ul style="list-style-type: none"> <li>- a description of actions to be taken during an emergency</li> <li>- a description of arrangements made with local police departments, fire departments, hospitals, contractors, and state and local emergency response teams as appropriate</li> <li>- names, addresses, and phone numbers of all persons qualified to act as emergency coordinator</li> <li>- a list of all emergency equipment at the installation and where this equipment is required, located, and what it looks like</li> <li>- an evacuation plan for installation personnel where there is a possibility evacuation would be needed.</li> </ul> <p>Verify that copies of the contingency plan are maintained at the installation and also have been submitted to organizations which may be called upon to provide emergency services. (1)(3)(10)</p> <p>Verify that the contingency plan is routinely reviewed by the EPC and updated, especially when the installation is issued a new permit, the plan fails in an emergency, the emergency coordinators change, the waste being handled changes, and/or the list of emergency equipment changes. (1)(3)(10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.56.</b> Each generator must have an emergency coordinator on the installation premises or on call at all times (40 CFR 262.34(a)(4) and 265.55).</p> <p><b>HW.57.</b> Emergency coordinators at generators must follow certain emergency procedures whenever there is an imminent or actual emergency situation (40 CFR 262.34(a)(4) and 265.56(a) through 265.56(i)).</p>	<p>Verify that, at all times, there is at least one employee at the installation or on call with responsibility for coordinating all emergency response measures. (1)(2)(3)(10)</p> <p>Verify that the emergency coordinator is thoroughly familiar with the installation, the characteristics of the waste handled, and the provisions of the contingency plan. In addition, verify the emergency coordinator has the authority to commit the resources needed to carry out the contingency plan. (1)(3)(10)</p> <p>Review the contingency plan for the generator facility. (1)(2)(3)(10)</p> <p>Verify that the emergency coordinator is required to follow these emergency procedures: (1)(2)(3)(10)</p> <ul style="list-style-type: none"> <li>- immediately activate facility alarms or communication systems and notify appropriate base, state, and local response parties</li> <li>- identify the character, exact source, amount, and a real extent of any released materials</li> <li>- assess possible hazards to human health or the environment, including direct and indirect effects (e.g., release of gases, surface runoff from water or chemicals used to control fire or explosions, etc.)</li> <li>- stop processes and operations at the facility when necessary to prevent fires, explosions, or further releases</li> <li>- collect and contain the released waste</li> <li>- remove or isolate containers when necessary</li> <li>- monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment whenever appropriate</li> <li>- provide for treatment, storage, or disposal of recovered waste, contaminated soil, or surface water, or other material</li> <li>- ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup is completed</li> <li>- ensure that all emergency equipment is cleaned and fit for its intended use before operations are resumed</li> <li>- notify MAJCOM, USEPA, and appropriate state and local authorities when cleanup is complete and operation resumes.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.58.</b> Generator facility operators must record the time, date, and details of any incident that requires implementing the contingency plan (40 CFR 262.34(a)(4) and 265.56(j)).</p> <p><b>Containers</b></p> <p><b>HW.59.</b> Empty containers at generators previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).</p> <p><b>HW.60.</b> Containers used to store hazardous waste at generators must be in good condition and not leaking (40 CFR 262.34(a)(1)(i) and 265.171).</p>	<p>Determine if incidents have been recorded and corrective actions taken through a review of the facility operating records. (1)(2)(3)(10)</p> <p>Verify that written reports have been submitted to the USEPA regional administrator within 15 days after the incident. (1)(3)(10)</p> <p>Verify that for containers or inner liners holding hazardous wastes: (3)(10)</p> <ul style="list-style-type: none"> <li>- wastes are removed that can be removed using common practices</li> <li>- no more than 2.5 cm [1 in.] of residue remains</li> <li>- if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains</li> <li>- when the container is greater than 110 gal [416.40 L] no more than 0.3 percent by weight of the total container capacity remains.</li> </ul> <p>Verify that for containers that held a compressed gas, the pressure in the container approaches atmosphere. (3)(10)</p> <p>Verify that for containers or inner liners that held an acute hazardous waste listed in Table 3-7 that one of the following is done: (3)(5)(10)</p> <ul style="list-style-type: none"> <li>- it is triple rinsed</li> <li>- it is cleaned by another method identified through the literature or testing as achieving equivalent removal</li> <li>- the inner liner is removed.</li> </ul> <p>Verify that the rinse water has been tested. (3)(5)(10)</p> <p>Verify that containers are not leaking, bulging, rusting, damaged or dented. (3)(10)</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary. (3)(10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.61.</b> Containers used at generators must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(a)(1)(i) and 265.172).</p>	<p>Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums. (3)(10)</p>
<p><b>HW.62.</b> Containers must be closed during storage and handled in a safe manner at generators (40 CFR 262.34(a)(1)(i) and 265.173).</p>	<p>Verify that containers are closed except when it is necessary to add or remove waste (check bungs on drums, look for funnels). (3)(10)</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak. (3)(10)</p>
<p><b>HW.63.</b> The handling of incompatible wastes, or incompatible wastes and materials in containers at generators must comply with safe management practices (40 CFR 262.34(a)(1)(i) and 265.177).</p>	<p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers unless it is done so that it does not: (3)(10)</p> <ul style="list-style-type: none"> <li>- generate extreme heat or pressure, fire, or explosion, or violent reaction</li> <li>- produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health</li> <li>- produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions</li> <li>- damage the structural integrity of the device or facility</li> <li>- by any other like means threaten human health or the environment.</li> </ul> <p>(NOTE: Incompatible wastes as listed in Table 3-8 should not be placed in the same drum.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material. (3)(10)</p> <p>Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall or other device. (3)(10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.64.</b> Containers used to store hazardous waste at generators should be managed in accordance with good management practices (MP).</p> <p><b>Satellite Accumulation Points</b></p> <p><b>HW.65.</b> Generators may accumulate as much as 55 gal of hazardous waste or 1 qt of acutely hazardous waste in containers at or near any point of initial generation without complying with the requirements for onsite storage if specific standards are met (40 CFR 262.34(c)).</p> <p><b>Container Storage Areas</b></p> <p><b>HW.66.</b> At generators, containers of hazardous waste should be kept in designated storage areas (MP).</p>	<p>Verify the following by inspecting container storage areas: (3)(10)</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</li> <li>- at least 3 ft [0.91 m] of aisle space is provided between rows of containers.</li> </ul> <p>(NOTE: This type of storage is often referred to as a satellite accumulation point.)</p> <p>Verify that the satellite accumulation point is near the point of generation and is under the control of the operator of the waste generating process. (1)(3)(10)</p> <p>Verify that the containers are in good condition and are compatible with the waste stored in them and that the containers are kept closed except when waste is being added or removed. (1)(3)(10)</p> <p>Verify that the containers are marked HAZARDOUS WASTE or other appropriate identification. (10)</p> <p>(NOTE: See Tables 3-2, 3-3, 3-4, 3-5, and 3-7 for a guidance list of hazardous and acute wastes.)</p> <p>Verify that when waste is accumulated in excess of quantity limitations the following actions are taken by interviewing the shop managers: (10)</p> <ul style="list-style-type: none"> <li>- the excess container is marked with the date the excess amount began accumulating</li> <li>- the waste is transferred to a 90 day or permitted storage area within 3 days.</li> </ul> <p>Verify that all containers are identified and stored in appropriate areas. (3)(10)</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.67.</b> Containers holding ignitable or reactive waste must be located 15 m (50 ft) from the property line of the generators facility (40 CFR 262.34(a)(1)(i) and 265.176).</p> <p><b>HW.68.</b> Generators must conduct weekly inspections of container storage areas (40 CFR 262.34(a)(1)(i) and 265.174).</p> <p><b>Tank System Storage</b></p> <p><b>HW.69.</b> Secondary containment is required for specific types of tank systems used to store or treat hazardous waste at generators (40 CFR 262.34(a)(1)(ii), 265.190(a), 265.190(b), and 265.193 (a)).</p>	<p>Determine the distance from storage containers holding ignitable or reactive waste to the property line. (3)(10)</p> <p>Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers. (3)(10)</p> <p>Verify that the following types of tanks used to store or treat hazardous waste have secondary containment: (1)(2)(3)(10)</p> <ul style="list-style-type: none"> <li>- all new tank systems or components</li> <li>- all existing tank systems used to store or treat USEPA Hazardous Waste Numbers FO20, FO21, FO22, FO23, FO26 and FO27</li> <li>- existing tank systems of known documented age that are 15 yr of age</li> <li>- existing tank systems for which the age cannot be documented but are located at a facility that is older than 15 yr.</li> </ul> <p>(NOTE: The following are exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor</li> <li>- tank systems, including sumps, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.70.</b> Secondary containment on tank systems at generators must meet specific requirements (40 CFR 262.34(a)(1)(ii) 265.190(a), and 265.193(b) through 265.193(d)).</p>	<p>Verify that secondary containment meets the following criteria: (1)(2)(3)(10)</p> <ul style="list-style-type: none"> <li>- it is designed, installed, and operated to prevent the migration of liquid out of the system</li> <li>- it is capable of detecting and collecting releases and accumulated liquids until removal is possible</li> <li>- it is constructed of or lined with materials compatible with the wastes</li> <li>- it is placed on a foundation or base that can provide appropriate support and prevent failure due to settlement, compression, or upset</li> <li>- a leak-detection system is present that is designed and operated to detect the failure of either the primary or secondary containment structure or the release of any hazardous waste within 24 h or the earliest practicable time</li> <li>- it is sloped or designed to drain and remove liquids from leaks, spills, or precipitation.</li> </ul> <p>Verify that spilled or leaked wastes are removed from secondary containment within 24 h or as timely as possible. (1)(2)(3)(10)</p> <p>Verify that secondary containment for tanks includes one or more of the following: (1)(2)(3)(5)(10)</p> <ul style="list-style-type: none"> <li>- a liner (external to the tank)</li> <li>- a vault</li> <li>- a double-walled tank</li> <li>- an equivalent approved device.</li> </ul> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p>
<p><b>HW.71.</b> External liners, vaults and double-walled tanks at generators are required to meet specific standards (40 CFR 262.34(a)(1)(ii), 265.190(a), and 265.193(e)).</p>	<p>Verify that external liner systems meet the following requirements: (1)(2)(3)(10)</p> <ul style="list-style-type: none"> <li>- it is designed and operated so that 100 percent of the capacity of the largest tank within the boundary would be contained</li> <li>- it prevents run-on and infiltration of precipitation into the secondary containment unless the collection system has sufficient capacity to handle run-on or infiltration</li> <li>- it is free of cracks or gaps</li> <li>- it surrounds the tank completely and covers all surrounding earth likely to come into contact with the waste if there is a release</li> <li>- capacity is sufficient to contain precipitation from a 25 yr, 24 h rainfall event.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.71. (continued)</b></p>	<p>Verify that vault systems meet the following criteria: (1)(2)(3)(10)</p> <ul style="list-style-type: none"> <li>- it will contain 100 percent of the capacity of the largest tank within its boundary</li> <li>- it prevents run-on and infiltration of precipitation unless there is sufficient excess capacity</li> <li>- it is constructed with chemical-resistant water stops at all joints</li> <li>- it has an impermeable interior coating that is compatible with the wastes it contains</li> <li>- has a means to protect against the formation and ignition of vapors within the vault if the waste is ignitable or reactive</li> <li>- it has an exterior moisture barrier or otherwise operated to prevent migration of moisture into the vault.</li> </ul> <p>Verify that double-walled tanks meet the following criteria: (1)(2)(3)(10)</p> <ul style="list-style-type: none"> <li>- it is designed as an integral structure so that any release is contained by the outer shell</li> <li>- it is protected from both corrosion of the primary tank and the external surface of the outer shell if constructed of metal</li> <li>- it has a built-in continuous leak detection system capable of detecting a release within 24 h.</li> </ul> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p>
<p><b>HW.72. Tank ancillary equipment at generators must also be provided with secondary containment (40 CFR 262.34(a)(1)(ii), 265.190(a), and 265.193(f)).</b></p>	<p>Verify that ancillary equipment, except for the following, has secondary containment: (1)(2)(3)(10)</p> <ul style="list-style-type: none"> <li>- aboveground piping that are visually inspected for leaks on a daily basis</li> <li>- welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis</li> <li>- sealless or magnetic coupling pumps and sealless valves, that are visually inspected for leaks on a daily basis</li> <li>- pressurized aboveground piping systems with automatic shutoff valves that are visually inspected for leaks on a daily basis.</li> </ul> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.73.</b> Tank systems that are required to have secondary containment at generators (see checklist item HW.69) that do not have secondary containment are required to meet specific requirements 40 CFR 262.34.(a)(1)(ii), 265.190(a), 265.191 (a) through 265.191(c) and 265.193(i).</p> <p><b>HW.74.</b> Generators with new tank systems must submit to the Regional Administrator a written assessment reviewed and certified by an independent, qualified, registered professional engineer to certify that the tank system was installed according to specific standards (40 CFR 262.34(a)(1)(ii) and 265.192).</p>	<p>Verify that tank systems without secondary containment meet the following: (1)(2)(3)(10)</p> <ul style="list-style-type: none"> <li>- for nonenterable underground tanks a leak test is conducted annually</li> <li>- for other than nonenterable underground tanks either a leak test is done annually or the installation develops a schedule and procedure for an assessment of the overall condition by an independent, qualified, registered professional engineer</li> <li>- for ancillary equipment a leak test or other approved integrity assessment at least annually.</li> </ul> <p>Verify that the installation maintains a record of the results of testing and assessments. (1)(2)(3)(10)</p> <p>Verify that tank systems which store or treat materials that become hazardous waste after 14 July 1986 are assessed within 12 mo after the waste becomes hazardous. (1)(2)(3)(10)</p> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p> <p>Determine if the installation has any new tank systems. (1)(2)(3)(10)</p> <p>Verify that when the tanks are installed they are handled so as to prevent damage to the tank and any backfill material that is used is a noncorrosive, porous, homogeneous substance. (1)(2)(3)(10)</p> <p>Verify that the installation keeps on file the written assessments from the individuals required to certify the tank and supervise the installation of the tank. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.75.</b> Tanks used for hazardous waste treatment or storage at generators must follow certain operating requirements (40 CFR 262.34(a)(1)(ii) and 265.194).</p> <p><b>HW.76.</b> Tank systems at generators must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 262.34(a)(1)(ii), and 265.198, and 265.199).</p>	<p>Verify that hazardous wastes or treatment reagents are not placed in tanks if they could cause the tank system (including ancillary equipment, or containment system) to fail. (1)(2)(3)(10)</p> <p>Verify that appropriate measures are taken to prevent overfill, including: (1)(2)(3)(10)</p> <ul style="list-style-type: none"> <li>- spill prevention controls</li> <li>- overfill prevention controls</li> <li>- maintenance of sufficient freeboard in uncovered tanks to prevent overtopping by wave, wind action or precipitation for uncovered tanks.</li> </ul> <p>Verify that ignitable or reactive wastes are not placed in a tank system, unless one of the following is met: (1)(2)(3)(10)</p> <ul style="list-style-type: none"> <li>- the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable and the minimum requirements for reactive and ignitable wastes are met</li> <li>- the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react</li> <li>- the tank system is used solely for emergencies.</li> </ul> <p>Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the NFPA's <i>Flammable and Combustible Liquids Code</i> are maintained. (1)(2)(3)(5)(10)</p> <p>Verify that incompatible waste, or incompatible wastes and materials, are not placed in the same tank system unless minimum safety requirements are met. (1)(2)(3)(10)</p> <p>Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless minimum safety requirements are met. (1)(2)(3)(10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.79.</b> Generators are required to follow specific procedures when closing a tank system (40 CFR 262.34(a)(1)(ii), 265.197(a), and 265.197(b)).</p> <p><b>Containment Buildings</b></p> <p><b>HW.80.</b> Generators with containment buildings that are in compliance are not subject to the definition of land disposal if specific requirements are met (40 CFR 262.34(a)(1)(iv), 264.1100, and 265.1100).</p>	<p>Determine if the installation has closed any tank systems. (1)(2)</p> <p>Verify that all waste residues, contaminated containment system components, contaminated soils, and structures and equipment contaminated with waste have been removed or decontaminated. (1)(2)(3)(10)</p> <p>Verify that if it is not possible and/or practicable to remove or decontaminate all soils, the installation closes the tank and performs postclosure care as is required for landfills. (1)(2)(3)(10)</p> <p>(NOTE: According to the Background Information published on page 37221 of the 18 August 1992 edition of the Federal Register, a hazardous waste containment building involves "the management of a hazardous waste inside a unit designed and operated to contain the hazardous waste within the unit." This is not a building that holds drums or tanks filled with hazardous waste, but a building that holds the hazardous waste itself.)</p> <p>Verify that the containment building meets the following: (3)(10)</p> <ul style="list-style-type: none"> <li>- it is a completely enclosed, self-supporting structure that is designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit</li> <li>- it is designed to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations</li> <li>- it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling of equipment within the unit</li> <li>- if the unit is used to manage liquids:             <ul style="list-style-type: none"> <li>- there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier</li> <li>- there is a liquid collection system designed and constructed of materials to minimized the accumulation of liquid on the primary barrier</li> <li>- there is a secondary containment system designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time</li> </ul> </li> <li>- it has controls sufficient to prevent fugitive dust emissions</li> <li>- it is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel and equipment.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.81.</b> Containment buildings are required to be designed according to specific standards (40 CFR 262.34(a)(1)(iv), 264.1101(a)(1) through 264.1101(a)(2), 264.1101(b), 265.1101(a)(1) through 265.1101(a)(2), and 265.1101(b)).</p>	<p>Verify that containment buildings meet the following design standards: (3)(10)</p> <ul style="list-style-type: none"> <li>- it is completely enclosed with a floor, walls, and a roof to prevent exposure to the elements and to assure containment of wastes</li> <li>- the floor and containment walls, including any required secondary containment system, are designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit</li> <li>- it is designed to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations</li> <li>- it has sufficient structural strength to prevent collapse or other failure</li> <li>- all surfaces in contact with hazardous wastes are compatible with the wastes</li> <li>- it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling of equipment within the unit and is appropriate for the chemical and physical characteristics of the waste.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>HW.81. (continued)</b>	<p>Verify that if the containment building is going to manage hazardous wastes with free liquids or treated with free liquids the following design requirements are also met: (3)(10)</p> <ul style="list-style-type: none"> <li>- there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier (e.g., a geomembrane covered by a concrete wear surface)</li> <li>- there is a liquid collection and removal system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier:               <ul style="list-style-type: none"> <li>- the primary barrier is sloped to drain liquids to the associated collection system</li> </ul> </li> <li>- liquids and wastes are collected and removed to minimized hydraulic head on the containment system at the earliest practicable time</li> <li>- there is a secondary containment system, including a secondary barrier, designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time</li> <li>- the leak detection component of the secondary containment system meets the following:               <ul style="list-style-type: none"> <li>- it is constructed with a bottom slope of 1 percent or more</li> <li>- it is constructed of a granular drainage materials with a hydraulic conductivity of <math>1 \times 10^{-2}</math> cm/s or more and a thickness of 12 in. (30.5 cm) or more, or constructed of synthetic or geonet drainage materials with a transmissivity of <math>3 \times 10^{-5}</math> m<sup>2</sup>/s or more</li> </ul> </li> <li>- if treatment is to be conducted in the building, the treatment area is designed to prevent the release of liquids, wet materials, or liquid aerosols to other portions of the building.</li> <li>- the secondary containment system is constructed of materials that are chemically resistant to the waste and liquids managed in the building and of sufficient strength and thickness to prevent collapse under pressure exerted by overlaying materials and by any equipment used.</li> </ul> <p>(NOTE: An exception to the structural strength requirement may be made for light-weight doors and windows based on the nature of the waste management operations if the following criteria are met:</p> <ul style="list-style-type: none"> <li>- the doors and windows provide an effective barrier against fugitive dust emissions</li> <li>- the unit is designed and operated in a manner that ensures that the waste will not come in contact with the doors or windows.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.83.</b> Containment buildings are required to be certified by a registered professional engineer (40 CFR 262.34(a)(1)(iv), 264.1101(c)(2), 265.1101(c)(2)).</p>	<p>Verify that the building has been certified. (3)(10)</p>
<p><b>HW.84.</b> Leaks in containment buildings must be repaired and reported (40 CFR 262.34(a)(1)(iv), 264.1101(c)(3), and 265.1101(c)(3)).</p>	<p>Verify that if a condition is detected that could lead to a leak or has already caused a leak, it is repaired promptly. (3)(10)</p> <p>Verify that when a leak is discovered: (3)(10)</p> <ul style="list-style-type: none"> <li>- the discovery is recorded in the installation operating record</li> <li>- the portion of the containment building that is affected is removed from service</li> <li>- a cleanup and repair schedule is established</li> <li>- within 7 day the Regional Administrator is notified and within 14 working days written notice is provided to the Regional Administrator</li> <li>- the Regional Administrator is notified upon the completion of all repairs and certification from a registered professional engineer is also submitted.</li> </ul>
<p><b>HW.85.</b> Containment buildings that contain both areas with and without secondary containment must meet specific requirements (40 CFR 262.34(a)(1)(iv), 264.1101(d), and 265.1101(d)).</p>	<p>Verify that each area is designed and operated according to the appropriate requirements. (3)(10)</p> <p>Verify that measures are taken to prevent the release of liquids or wet materials into areas without secondary containment. (3)(10)</p> <p>Verify that a written description is maintained in the installations operating log of operating procedures used to maintain the integrity of areas without secondary containment. (3)(10)</p>
<p><b>HW.86.</b> When a containment building is closed specific requirements must be met (40 CFR 262.34(a)(1)(iv), 264.1102, and 265.1102).</p>	<p>Determine if the installation has closed a containment building recently. (3)(10)</p> <p>Verify that at closure, all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate were removed or decontaminated. (3)(10)</p> <p>Verify that the containment building is closed in accordance with closure and post-closure requirements for TSDFs as outlined in the sections titled ALL TSDFs - Documentation Requirements and ALL TSDFs - Closure. (3)(10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.86. (continued)</b></p> <p><b>Disposal of Restricted Wastes</b></p> <p><b>HW.87.</b> Installation that generate hazardous wastes must test their wastes or use process knowledge to determine if they are restricted from land disposal (40 CFR 268.7).</p> <p><b>HW.88.</b> The Base Environmental Manager is responsible for completing the information required on the Hazardous Waste Profile Sheet concerning land disposal restrictions (Air Force Hazardous Waste Management Policy, 6 June 1991).</p> <p><b>HW.89.</b> When a generator is managing a restricted waste a notice must be issued to the TSDF in writing of the appropriate treatment standards and prohibition levels (40 CFR 268.7(a)(1) through 268.7(a)(3) and 268.7(a)(10)).</p>	<p>Verify that if it is found that not all contaminated subsoils can be practicably removed or decontaminated, the facility is closed and landfill postclosure requirements are implemented. (3)(10)</p> <p>Determine whether the generator tests for restricted wastes. (1)(10)</p> <p>Determine if the installation generates restricted wastes by reviewing test results (see Table 3-9). (10)</p> <p>Verify that the following information relating to land disposal restrictions is filled in on the Hazardous Waste Profile Sheet: (1)(10)</p> <ul style="list-style-type: none"> <li>- treatability groups</li> <li>- the USEPA hazardous waste code</li> <li>- all subcategories if there is more than one code</li> <li>- the five letter treatment code or the sections of the CFR where the treatment appears</li> <li>- whether or not a lab pack contains a waste identified as a restricted waste.</li> </ul> <p>Verify that for restricted waste that does not meet the applicable treatment standards or exceeds the applicable prohibition levels the notice is issued and includes: (1)(10)</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- for hazardous debris, the contaminants subject to treatment and the following statement "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45"</li> <li>- the waste analysis data, when available.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>HW.89. (continued)</b>	<p>Verify that for restricted waste that can be land disposed without further treatment (this does not include debris that does not contain hazardous waste) the notice includes: (1)(10)</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- the waste analysis data, when available</li> <li>- the signature of an authorized representative certifying that the waste complies with the treatment standards of 40 CFR 268.</li> </ul> <p>Verify that, for restricted waste that is subject to an exemption from a prohibition of the type of land disposal used, the notice states that the waste is not prohibited from land disposal and includes: (1)(10)</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- the waste analysis data, when available</li> <li>- for hazardous debris, the contaminant subject to treatment</li> <li>- the date the waste is subject to prohibitions.</li> </ul>
<p><b>HW.90.</b> Generators that are managing prohibited wastes in tanks, containers, or containment buildings and treating the waste to meet applicable treatment standards, must develop and follow a written waste analysis plan (40 CFR 268.7(a)(4) and 268.7(a)(10)).</p>	<p>Verify that the plan describes the procedures that the generator will carry out to comply with treatment standards. (10)</p> <p>(NOTE: Generators treating hazardous debris under the alternative treatment standards are not required to conduct waste analysis.)</p> <p>Verify that the plan is kept onsite and: (10)</p> <ul style="list-style-type: none"> <li>- the plan is based on a detailed chemical and physical analysis of representative sample of the prohibited waste being treated</li> <li>- the plan is filed with the USEPA Regional Administrator or state authorized official at least 30 days prior to the treatment activity, with delivery verified.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.91.</b> Generators are required to keep specific documents pertaining to restricted wastes onsite (40 CFR 268.7(a)(5) through 268.7(a)(7) and 268.7(a)(10)).</p> <p><b>HW.92.</b> Generators who first claim that hazardous debris is excluded from the definition of hazardous waste are required to meet specific notification and certification requirements (40 CFR 268.7(d)).</p> <p><b>HW.93.</b> The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).</p>	<p>Verify that if the installation is using generator knowledge to determine whether a waste meets land disposal restriction requirements, the supporting data used in making this determination is retained in the facility operating record. (1)(10)</p> <p>Verify that if the installation has determined whether a waste is restricted using appropriate test methods, the waste analysis data is retained. (3)(10)</p> <p>Verify that if the installation has determined that they are managing a restricted waste that is excluded from the definition of a hazardous waste or solid waste or exempt from RCRA-C, a one-time notice is placed in the installations files stating that the generated waste is excluded. (3)(10)</p> <p>Verify that a copy of all notices, certifications, demonstrations, waste analysis data and other documentation is kept for at least 5 yr from the date that the waste was last sent to onsite or offsite treatment, storage, or disposal. (3)(10)</p> <p>Verify that a one-time notification is submitted to the Director or authorized state including the following: (1)(10)</p> <ul style="list-style-type: none"> <li>- the name and address of the facility receiving the treated waste</li> <li>- a description of the hazardous debris as initially generated, including the applicable USEPA Hazardous Waste Number</li> <li>- for excluded debris, the technology used to treat the debris.</li> </ul> <p>Verify that the notification is updated if the debris is shipped to a different facility. (1)</p> <p>Verify that for debris that is excluded, if a different type of debris is treated or if a different technology is used to treat the debris the notification is updated. (1)(10)</p> <p>Verify that land disposal restricted waste is not stored at the facility unless: (1)(10)</p> <ul style="list-style-type: none"> <li>- the generator is storing the wastes in tanks, containers, or containment buildings onsite only for the purpose of accumulating enough quantity of hazardous waste to facilitate proper recovery, treatment, or disposal and all appropriate standards for containers, tanks, and containment buildings are met.</li> </ul> <p>(NOTE: If the 90 day storage period is exceeded, the generator is required to be permitted as a TSDF.)</p> <p>Verify that transporters do not store manifested shipments of land disposal restricted wastes for more than 10 days. (1)(10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.95.</b> Before transporting hazardous waste or offering hazardous waste for transportation offsite in the United States, the installation must package and label the waste in accordance with DOT regulations contained in 49 CFR 172, 173, 178, and 179 (40 CFR 262.30 through 262.33).</p>	<p>Determine what pretransport procedures for hazardous waste are used. (1)(2)(8)</p> <p>Verify that containers are properly constructed and contain no leaks, corrosion, or bulges by inspecting a sample of containers awaiting transport. (1)(2)(8)</p> <p>Examine end-seams for minor weeping that indicates drum failure. (1)(2)(8)</p> <p>Verify labeling and marking on each container is compatible with the manifests. (1)</p> <p>Verify that the following information is displayed on a random sample of containers of 110 gal [416.40 L] or less in accordance with 49 CFR 172.304: (1)(2)</p> <p align="center"><i>HAZARDOUS WASTE - Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency. Generator's name and address Manifest Document Number _____.</i></p> <p>Verify that proper DOT placarding is available for the transporter. (1)(2)(8)</p>
<p><b>HW.96.</b> Transporters of waste offbase must take immediate notification and clean-up action if a discharge occurs during transport (40 CFR 263.30 and 263.31).</p>	<p>Verify that transport operators have instructions to notify local authorities and take clean-up action so that the discharge does not present a hazard. (1)(2)(8)</p> <p>Verify that transporters give notice to the NRC and report in writing as required by 49 CFR 171.15 and 171.16. (1)(2)(8)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.97.</b> The installation should ensure that transportation of hazardous wastes between buildings is accomplished in accordance with good management practices to help prevent spills, releases, and accidents (MP).</p>	<p>Determine from the base transportation branch if procedures exist to manage movement of hazardous wastes throughout the installation. (1)(2)(8)(10)</p> <p>Determine if drivers are trained in spill control procedures. (1)(2)(8)(10)</p> <p>Determine if provisions have been made for securing wastes in vehicles when transporting.</p>
<p><b>HW.98.</b> Transporters must not store manifested shipments in containers meeting DOT packaging requirements for more than 10 days at a transfer facility (40 CFR 263.12).</p> <p><b>ALL TSDFs</b></p> <p><b>General</b></p> <p><b>HW.99.</b> All permitted facilities are required to meet the hazardous waste management requirements outlined in their permit (40 CFR 270.10 and 270.30 through 270.33).</p>	<p>Determine if the installation has a transfer facility. (1)(2)(8)</p> <p>Verify the following: (1)(2)(8)</p> <ul style="list-style-type: none"> <li>- transfer facility storage is for 10 days or less</li> <li>- DOT packaging requirements are met</li> <li>- shipments are manifested and manifests accompany shipments</li> <li>- storage is consistent with good management practice.</li> </ul> <p>(NOTE: Storage for more than 10 days will require a TSD permit.)</p> <p>Verify that the facility is not treating, storing, or disposing of waste other than those listed in their Part A Application, Part A permit, or Part B Permit. (1)(2)(5)</p> <p>Verify that the installation is meeting the requirements outlined in the permit for the following: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- reporting and recordkeeping</li> <li>- compliance schedules</li> <li>- allowable wastes</li> <li>- allowable activities.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.100.</b> All TSDFs which have Interim Status are required to meet the hazardous waste management requirements of 40 CFR 265 and apply for a Part B permit (40 CFR 270.71 and 279.73(g)).</p> <p><b>HW.101.</b> All TSDFs that store, treat, transport, or handle hazardous wastes must obtain an USEPA identification number (40 CFR 264.11 and 265.11).</p> <p><b>HW.102.</b> Installations with TSDFs must control entry to the active portion of each facility (40 CFR 264.14 and 265.14).</p>	<p>Determine if the installation is an Interim Status facility. (1)(2)(5)</p> <p>Verify that the facility is only treating, storing, or disposing of wastes listed in their Part A application. (1)(2)(5)</p> <p>Verify that the facility is meeting all the requirements for Interim Status facilities outlined in 40 CFR 265. (1)(2)(5)</p> <p>Verify that the facility has submitted a Part B permit application. (1)(2)(5)</p> <p>Examine documentation from USEPA for the base's generator, transporter, or TSDF identification number. (1)(2)(5)</p> <p>Verify that correct identification number is used on all appropriate documentation (i.e., manifests). (1)(2)(5)</p> <p>Inspect each TSDF on the installation. (1)(2)(5)</p> <p>Verify that unless the installation can demonstrate that physical contact with the waste, structures, and equipment within the active portion of the facility will not injure unknowing or unauthorized person or livestock, and that the waste would not be disturbed, the following items are in place at the facility: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- a 24 h surveillance system (e.g., television monitors, surveillance by guards) is in place and in operation</li> <li>- the facility is surrounded by a fence or natural barrier and controlled entry is provided (an attendant, television monitors, locked entrances controlled roadway access)</li> <li>- signs with the wording DANGER UNAUTHORIZED PERSONNEL KEEP OUT, are posted at each entrance and other locations as appropriate</li> <li>- signs are legible from 25 ft [7.62 m].</li> </ul> <p>(NOTE: These requirements are satisfied if the installation in which the active portion is located has a surveillance system, or a barrier and means to control entry.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.103.</b> All TSDF facilities must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 264.30 through 264.37 and 265.30 through 265.37).</p>	<p>Determine if the following required equipment is easily accessible and in working condition by inspecting the TSDF: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- an internal communications or alarm system capable of providing immediate emergency instruction to facility personnel</li> <li>- a telephone or hand-held two way radio</li> <li>- portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals)</li> <li>- spill control equipment</li> <li>- decontamination equipment</li> <li>- fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, or automatic sprinklers, or water spray systems.</li> </ul> <p>Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency. (5)(6)(7)</p> <p>Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility operation. (5)</p> <p>Verify that police, fire departments, and emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations unless they have declined such an arrangement. (4)(6)(7)</p> <p>Verify that the hospital is familiar with the properties of hazardous waste handled and the types of injuries that could result in an emergency. (4)</p> <p>(NOTE: When state or local police, fire departments, emergency response teams, or hospitals decline to enter into arrangements, than the refusal must be documented.)</p>
<p><b>HW.104.</b> All TSDFs must take precautions to prevent accidental ignition or reaction of ignitable or reactive wastes (40 CFR 264.17(a) and 265.17(a)).</p>	<p>Verify from the operating record and/or observation that the following safe management practices are used: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- wastes are separated and protected from sources of ignition or reaction</li> <li>- smoking and open flame is confined to specially designated locations when ignitable or reactive wastes is handled</li> <li>- NO SMOKING signs are used when necessary.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.105.</b> When TSDFs are required by specific treatment, storage, or disposal sections to prevent reactions from ignitable, reactive, or incompatible wastes, specific standards must be met (40 CFR 264.17(b) and 265.17(b)).</p>	<p>Verify from the operating record and/or observation that during treatment, storage, or disposal of ignitable or reactive wastes, or during mixing of incompatible wastes and other materials, precautions are taken to prevent the following reactions: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- generation of extreme heat or pressure, fire or explosions, or violent reactions</li> <li>- production of uncontrolled toxic mists, fumes, dusts, or gases sufficient to threaten human health or the environment</li> <li>- production of uncontrolled flammable fumes or gases sufficient to pose a risk of fire or explosions</li> <li>- damage the structural integrity of the device or facility</li> <li>- threats to human health or the environment through other like means.</li> </ul>
<p><b>HW.106.</b> A detailed chemical and physical analysis of a representative sample, as specified in the waste analysis plan, of the hazardous waste must be obtained prior to treatment, storage or disposal (40 CFR 264.13(a) and 265.13(a)).</p>	<p>Verify that a detailed physical and chemical analysis is done of a representative sample of the wastes prior to treatment, storage, or disposal. (1)(2)(5)(7)</p> <p>(NOTE: Prior studies, published information may be included as a part of the analysis.)</p> <p>Verify that the analysis is repeated as necessary to ensure that it is accurate and up to date, specifically when the process or operation generating the waste has changed. (1)(2)(5)</p>
<p><b>HW.107.</b> Each TSDF must have an emergency coordinator on the facility premises or on call at all times (40 CFR 264.55 and 265.55).</p>	<p>Verify that, at all times, there is at least one employee at the facility or on call with responsibility for coordinating all emergency response measures. (1)(2)(5)(7)</p> <p>Verify that the emergency coordinator is thoroughly familiar with the facility, the characteristics of the waste handled, and the provisions of the contingency plan. In addition, verify the emergency coordinator has the authority to commit the resources needed to carry out the contingency plan. (1)(2)(5)(7)</p>

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<p><b>HW.108.</b> TSDF emergency coordinators must follow certain emergency procedures whenever there is an imminent or actual emergency situation (40 CFR 264.56(a) through 264.56(i) and 265.56(a) through 265.56(i)).</p>	<p>Review the contingency plan for the TSDF. (1)(2)(5)</p> <p>Verify that the emergency coordinator is required to follow these emergency procedures: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- immediately activate facility alarms or communication systems and notify appropriate base, state, and local response parties</li> <li>- identify the character, exact source, amount, and a real extent of any released materials</li> <li>- assess possible hazards to human health or the environment, including direct and indirect effects (e.g., release of gases, surface runoff from water or chemicals used to control fire or explosions, etc.)</li> <li>- stop processes and operations at the facility when necessary to prevent fires, explosions, or further releases</li> <li>- collect and contain the released waste</li> <li>- remove or isolate containers when necessary</li> <li>- monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment whenever appropriate</li> <li>- provide for treatment, storage, or disposal of recovered waste, contaminated soil, or surface water, or other material</li> <li>- ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup is completed</li> <li>- ensure that all emergency equipment is cleaned and fit for its intended use before operations are resumed</li> <li>- notify MAJCOM, USEPA, and appropriate state and local authorities when cleanup is complete and operation resumes.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Personnel Training</b></p> <p><b>HW.109.</b> All TSDF personnel who handle hazardous waste must meet certain training requirements (40 CFR 264.16(a) through 264.16(c) and 265.16(a) through 265.16(c)).</p>	<p>Verify that the training program is directed by a person trained in hazardous waste management procedures. (1)(2)(5)</p> <p>Verify that the training program includes the following: (5)</p> <ul style="list-style-type: none"> <li>- contingency plan implementation (emergency procedures, equipment, and systems)</li> <li>- key parameters for automatic waste feed cut-off system</li> <li>- procedures for using, inspecting, and repairing emergency and monitoring equipment</li> <li>- operation of communications and alarm systems</li> <li>- response to fire or explosion</li> <li>- response to leaks or spills</li> <li>- waste turn in procedures</li> <li>- identification of hazardous wastes</li> <li>- container use, marking, labeling, and onbase transportation</li> <li>- manifesting and off-base transportation</li> <li>- accumulation point management</li> <li>- personnel health and safety and fire safety</li> <li>- facility shutdown procedures.</li> </ul> <p>Verify that new employee training is completed within 6 mo of employment. (5)</p> <p>Verify that an annual review of initial training is provided. (5)</p> <p>Verify that employees do not work unsupervised until training is completed. (5)</p> <p>Verify specifically that accumulation point managers and hazardous waste handlers have been trained. (1)(2)(5)</p> <p>(NOTE: HAZWOPER training will fulfill this requirement.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.110.</b> Training records must be maintained for all installation staff who manage hazardous waste (40 CFR 264.16(d), 264.16(e), 265.16(d), and 265.16(e)).</p> <p><b>Containers</b></p> <p><b>HW.111.</b> Empty containers at TSDFs previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).</p> <p><b>HW.112.</b> Containers used to store hazardous waste at TSDFs must be in good condition and not leaking (40 CFR 264.171 and 265.171).</p>	<p>Examine training records and verify they include the following: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- job title and description for each employee by name</li> <li>- written description of how much training each position will obtain</li> <li>- documentation of training received by name.</li> </ul> <p>Determine if training records are retained for 3 yr after employment at the installation. (1)(2)(5)</p> <p>Verify that records accompany employees transferred within the Air Force. (1)(2)(5)</p> <p>Verify that for containers or inner liners holding hazardous wastes: (2)(3)(5)</p> <ul style="list-style-type: none"> <li>- wastes are removed that can be removed using common practices</li> <li>- no more than 2.5 cm [1 in.] of residue remains</li> <li>- if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains</li> <li>- when the container is greater than 110 gal [416.40 L] no more than 0.3 percent by weight of the total container capacity remains.</li> </ul> <p>Verify that for containers that held a compressed gas, the pressure in the container approaches atmospheric. (2)(3)(5)</p> <p>Verify that for containers or inner liners that held an acute hazardous waste listed in Table 3-7 that one of the following is done: (3)(5)(10)</p> <ul style="list-style-type: none"> <li>- it is triple rinsed</li> <li>- it is cleaned by another method identified through the literature or testing as achieving equivalent removal</li> <li>- the inner liner is removed.</li> </ul> <p>Verify that containers are not leaking, bulging, rusting, damaged or dented. (2)(3)(5)</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary. (2)(3)(5)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.113.</b> Containers used at TSDFs must be made of or lined with materials compatible with the waste stored in them (40 CFR 264.172 and 265.172).</p> <p><b>HW.114.</b> Containers at TSDFs must be closed during storage and handled in a safe manner (40 CFR 264.173 and 265.173).</p> <p><b>HW.115.</b> The handling of incompatible wastes, or incompatible wastes and materials in containers at TSDFs must comply with safe management practices (40 CFR 264.17(b), 264.177, 265.17(b), and 265.177).</p>	<p>Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums. (2)(3)(5)</p> <p>Verify that containers are closed except when it is necessary to add or remove waste (check bungs and look for open funnels). (2)(3)(5)</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak. (2)(3)(5)</p> <p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers unless it is done so that it does not: (2)(3)(5)</p> <ul style="list-style-type: none"> <li>- generate extreme heat or pressure, fire, or explosion, or violent reaction</li> <li>- produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health</li> <li>- produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions</li> <li>- damage the structural integrity of the device or facility</li> <li>- by any other like means threaten human health.</li> </ul> <p>(NOTE: Incompatible wastes as listed in Table 3-8 should not be placed in the same containers.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material. (2)(3)(5)</p> <p>Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall, or other device. (2)(3)(5)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.116.</b> Containers of hazardous waste at TSDFs should be managed in accordance with good management practices (MP).</p> <p><b>Container Storage Areas</b></p> <p><b>HW.117.</b> Containers at TSDFs should be kept in storage areas designated in the management plan and identified by signs (MP).</p> <p><b>HW.118.</b> Containers holding ignitable or reactive waste must be located 15 m (50 ft) from the property line of a TSDF (40 CFR 264.176 and 265.176).</p> <p><b>HW.119.</b> TSDF personnel must conduct weekly inspections of container storage areas (40 CFR 264.174 and 265.174).</p>	<p>Inspect containers and storage areas to determine the following: (2)(3)(5)</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</li> <li>- at least 3 ft [0.91 m] of aisle space is provided between rows of containers.</li> </ul> <p>Verify that all containers are identified and stored in appropriate areas. (2)(3)(5)</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p> <p>Determine the distance from any storage containers to the property line. (2)(5)</p> <p>(NOTE: This restriction does not apply to SQGs.)</p> <p>Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers. (2)(3)(5)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Tank Systems</b></p> <p><b>HW.120.</b> Secondary containment is required for specific types of tank systems used to store or treat hazardous waste at TSDFs (40 CFR 264.190 (a), 264.190 (b), 264.193(a), 265.190(a), 265.190(b), and 265.193(a)).</p> <p><b>HW.121.</b> Secondary containment on tank systems at TSDFs must meet specific requirements (40 CFR 264.190(a), 264.193 (b) through 264.193(d), 265.190(a), and 265.193(b) through 265.193(d)).</p>	<p>Verify that the following types of tanks used to store or treat hazardous waste have secondary containment: (1)(2)(3)(5)</p> <ul style="list-style-type: none"> <li>- all new tank systems or components</li> <li>- all existing tank systems used to store or treat USEPA Hazardous Waste Numbers FO20, FO21, FO22, FO23, FO26 and FO27</li> <li>- existing tank systems of known documented age that are 15 yr of age</li> <li>- existing tank systems for which the age cannot be documented but is located at a facility that is older than 15 yr.</li> </ul> <p>(NOTE: The following are exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor</li> <li>- tank systems, including sumps, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes.)</li> </ul> <p>Verify that secondary containment meets the following criteria: (1)(2)(3)(5)</p> <ul style="list-style-type: none"> <li>- it is designed, installed, and operated to prevent the migration of liquid out of the system</li> <li>- it is capable of detecting and collecting releases and accumulated liquids until removal is possible</li> <li>- it is constructed of or lined with materials compatible with the wastes</li> <li>- it is placed on a foundation or base that can provide appropriate support and prevent failure due to settlement, compression, or upset</li> <li>- a leak-detection system is present that is designed and operated to detect the failure of either the primary or secondary containment structure or the release of any hazardous waste within 24 h or the earliest practicable time</li> <li>- it is sloped or designed to drain and remove liquids from leaks, spills, or precipitation.</li> </ul> <p>Verify that spilled or leaked wastes are removed from secondary containment within 24 h or as timely as possible. (1)(2)(3)(5)(10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.124.</b> Tank systems at TSDFs that are required to have secondary containment (see checklist item HW.120) that do not have secondary containment must meet specific requirements (40 CFR 264.190(a), 264.191(a) through 264.191(c), 264.193(i), 265.190(a), 265.191(a) through 265.191(c), and 265.193(i)).</p> <p><b>HW.125.</b> TSDFs with new tank systems must submit to the Regional Administrator a written assessment reviewed and certified by an independent, qualified, registered professional engineer certifying that the tank was installed according to specific standards (40 CFR 264.192 and 265.192).</p>	<p>Verify that tank systems without secondary containment meet the following: (1)(2)(3)(5)</p> <ul style="list-style-type: none"> <li>- for nonenterable underground tanks a leak test is conducted annually</li> <li>- for other than nonenterable underground tanks either a leak test is done annually or the installation develops a schedule and procedure for an assessment of the overall condition by an independent, qualified, registered professional engineer</li> <li>- for ancillary equipment a leak test or other approved integrity assessment at least annually.</li> </ul> <p>Verify that the installation maintains a record of the results of testing and assessments. (1)(2)(3)(5)</p> <p>Verify that tank systems which store or treat materials that become hazardous waste after July 14 July 1986 are assessed within 12 mo after the waste becomes hazardous. (1)(2)(3)(5)</p> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p> <p>Determine if the installation TSDF has any new tank systems. (1)(2)(3)(5)</p> <p>Verify that when the tanks are installed they are handled so as to prevent damage to the tank and any backfill material that is used is a noncorrosive, porous, homogeneous substance. (1)(2)(3)(5)</p> <p>Verify that the installation keeps on file the written assessments from the individuals required to certify the tank and supervise the installation of the tank. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.126.</b> Tanks used for hazardous waste treatment or storage at TSDFs must follow certain operating requirements (40 CFR 264.194 and 265.194).</p> <p><b>HW.127.</b> Tank systems at TSDFs must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 264.198, 264.199, 265.198, and 265.199).</p>	<p>Verify that hazardous wastes or treatment reagents are not placed in tanks if they could cause the tank system (including ancillary equipment, or containment system) to fail. (1)(2)(3)(5)</p> <p>Verify that appropriate measures are taken to prevent overfill, including: (1)(2)(3)(5)</p> <ul style="list-style-type: none"> <li>- spill prevention controls</li> <li>- overfill prevention controls</li> <li>- maintenance of sufficient freeboard to prevent overtopping by wave, wind action or precipitation for uncovered tanks.</li> </ul> <p>Verify that ignitable or reactive wastes are not placed in a tank system, unless one of the following is met: (1)(2)(3)(5)</p> <ul style="list-style-type: none"> <li>- the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable and the minimum requirements for reactive and ignitable wastes are met</li> <li>- the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react</li> <li>- the tank system is used solely for emergencies.</li> </ul> <p>Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the NFPA's <i>Flammable and Combustible Liquids Code</i> are maintained. (1)(2)(3)(5)</p> <p>Verify that incompatible waste, or incompatible wastes and materials, are not placed in the same tank system unless minimum safety requirements are met. (1)(2)(3)(5)</p> <p>Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless minimum safety requirements are met. (1)(2)(3)(5)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>HW.129. (continued)</b>	Verify that the tank and/or secondary containment is repaired prior to its return to service and that extensive repairs are certified by an independent, qualified, registered, professional engineer. (1)(2)(3)(5)
<b>HW.130.</b> TSDFs are required to follow specific procedures when closing a tank system (40 CFR 264.197(a), 264.197(b), 265.197(a), and 265.197(b)).	<p>Determine if the installation TSDF has closed any tank systems. (1)(2)(5)</p> <p>Verify that all waste residues, contaminated containment system components, contaminated soils, and structures and equipment contaminated with waste have been removed or decontaminated. (1)(2)(3)(5)</p> <p>Verify that if it is not possible and/or practicable to remove or decontaminate all soils, the installation closes the tank and performs postclosure care as is required for landfills. (1)(2)(3)(5)</p>
<b>Containment Buildings</b>	(NOTE: According to the Background Information published on page 37221 of the 18 August 1992 edition of the Federal Register, a hazardous waste containment building involves "the management of a hazardous waste inside a unit designed and operated to contain the hazardous waste within the unit". This is not a building that holds drums or tanks filled with hazardous waste, but a building that holds the hazardous waste itself.)
<b>HW.131.</b> Installations with containment buildings that are in compliance are not subject to the definition of land disposal if specific requirements are met (40 CFR 264.1100 and 265.1100).	<p>Verify that the containment building meets the following: (2)(5)</p> <ul style="list-style-type: none"> <li>- it is a completely enclosed, self-supporting structure that is designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit</li> <li>- it is designed to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations</li> <li>- it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling of equipment within the unit</li> <li>- if the unit is used to manage liquids: <ul style="list-style-type: none"> <li>- there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier</li> <li>- there is a liquid collection system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier</li> <li>- there is a secondary containment system designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.131. (continued)</b></p> <p><b>HW.132.</b> Containment buildings are required to be designed according to specific standards (40 CFR 264.1101(a)(1) through 264.1101(a)(2), 264.1101(b), 265.1101(a)(1) through 265.1101(a)(2), and 265.1101(b)).</p>	<ul style="list-style-type: none"> <li>- it has controls sufficient to prevent fugitive dust emissions</li> <li>- it is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel and equipment.</li> </ul> <p>Verify that containment buildings meet the following design standards: (2)(5)</p> <ul style="list-style-type: none"> <li>- it is completely enclosed with a floor, walls, and a roof to prevent exposure to the elements and to assure containment of wastes</li> <li>- the floor and containment walls, including any required secondary containment system, are designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit</li> <li>- it is designed to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations</li> <li>- it has sufficient structural strength to prevent collapse or other failure</li> <li>- all surfaces in contact with hazardous wastes are compatible with the wastes</li> <li>- it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling of equipment within the unit and is appropriate for the chemical and physical characteristics of the waste.</li> </ul> <p>Verify that if the containment building is going to manage hazardous wastes with free liquids or treated with free liquids the following design requirements are also met: (2)(5)</p> <ul style="list-style-type: none"> <li>- there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier (e.g., a geomembrane covered by a concrete wear surface)</li> <li>- there is a liquid collection and removal system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier:</li> <li>- the primary barrier is sloped to drain liquids to the associated collection system</li> <li>- liquids and wastes are collected and removed to minimized hydraulic head on the containment system at the earliest practicable time</li> <li>- there is a secondary containment system, including a secondary barrier, designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>HW.132. (continued)</b>	<ul style="list-style-type: none"> <li>- the leak detection component of the secondary containment system meets the following:               <ul style="list-style-type: none"> <li>- it is constructed with a bottom slope of 1 percent or more</li> <li>- it is constructed of a granular drainage materials with a hydraulic conductivity of <math>1 \times 10^{-2}</math> cm/s or more and a thickness of 12 in (30.5 cm) or more, or constructed of synthetic or geonet drainage materials with a transmissivity of <math>3 \times 10^{-5}</math> m<sup>2</sup>/s or more</li> </ul> </li> <li>- if treatment is to be conducted in the building, the treatment area is designed to prevent the release of liquids, wet materials, or liquid aerosols to other portions of the building</li> <li>- the secondary containment system is constructed of materials that are chemically resistant to the waste and liquids managed in the building and of sufficient strength and thickness to prevent collapse under pressure exerted by overlaying materials and by any equipment used.</li> </ul> <p>(NOTE: An exception to the structural strength requirement may be made for light-weight doors and windows based on the nature of the waste management operations if the following criteria are met:</p> <ul style="list-style-type: none"> <li>- the doors and windows provide an effective barrier again fugitive dust emissions</li> <li>- the unit is designed and operated in a manner that ensures that the waste will not come in contact with the doors or windows.)</li> </ul> <p>(NOTE: A containment building can serve as secondary containment systems for tanks within the building if:</p> <ul style="list-style-type: none"> <li>- it meets the requirements of 264.193(d)(1) (see checklist item HW.121)</li> <li>- it meets the requirements of 264.193(b) and 264.193(c)(1 - 2) (see checklist item HW.121).)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.133.</b> Containment buildings are required to be operated according to specific standards (40 CFR 264.1101(a)(3), 264.1101(c)(1), 264.1101(c)(4), 265.1101(a)(3), 265.1101(c)(1), and 265.1101(c)(4)).</p>	<p>Verify that incompatible wastes or treatment reagents are not placed in the building or its secondary containment system if they could cause the unit or the secondary containment system to leak, corrode, or otherwise fail. (2)(5)</p> <p>Verify that the following operational procedures are done: (2)(5)</p> <ul style="list-style-type: none"> <li>- controls and practices are used to ensure the containment of the waste within the building</li> <li>- the primary barrier is maintained so that it is free of significant cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier</li> <li>- the level of the stored/treated hazardous waste is maintained so that the height of any containment wall is not exceeded</li> <li>- measures are implemented to prevent the tracking of hazardous waste out of the unit by personnel or equipment used in the handling of the waste</li> <li>- there is a designated area for the decontamination of equipment and collection of rinsate</li> <li>- any collected rinsate is managed as needed according to its constituents</li> <li>- measures are implemented to control fugitive dust emissions so that no openings exhibit visible emissions</li> <li>- particulate collection devices are maintained and operated according to sound air pollution control practices.</li> </ul> <p>Verify that data is gathered from monitoring equipment and leak detection equipment and the site is inspected at least once every 7 days and the results recorded in the operating record. (2)(5)</p>
<p><b>HW.134.</b> Containment buildings are required to be certified by a registered professional engineer (40 CFR 264.1101(c)(2) and 265.1101(c)(2)).</p>	<p>Verify that the building has been certified. (1)(2)(5)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.135.</b> Leaks in containment buildings must be repaired and reported (40 CFR 264.1101(c)(3) and 265.1101(c)(3)).</p>	<p>Verify that if a condition is detected that could lead to a leak or has already caused a leak, it is repaired promptly. (2)(5)</p> <p>Verify that when a leak is discovered: (2)(5)</p> <ul style="list-style-type: none"> <li>- the discovery is recorded in the installation operating record</li> <li>- the portion of the containment building that is affected is removed from service</li> <li>- a cleanup and repair schedule is established</li> <li>- within 7 day the Regional Administrator is notified and within 14 working days written notice is provided to the Regional Administrator</li> <li>- the Regional Administrator is notified upon the completion of all repairs and certification from a registered professional engineer is also submitted.</li> </ul>
<p><b>HW.136.</b> Containment buildings that contain both areas with and without secondary containment must meet specific requirements (40 CFR 264.1101(d) and 265.1101(d)).</p>	<p>Verify that each area is designed and operated according to the appropriate requirements (2)(5)</p> <p>Verify that measures are taken to prevent the release of liquids or wet materials into areas without secondary containment. (2)(5)</p> <p>Verify that a written description is maintained in the installation operating log of operating procedures used to maintain the integrity of areas without secondary containment. (2)(5)</p>
<p><b>HW.137.</b> When a containment building is closed specific requirements must be met (40 CFR 264.1102 and 265.1102).</p>	<p>Determine if the installation has closed a containment building recently. (1)(2)(5)</p> <p>Verify that at closure, all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate were removed or decontaminated. (1)(2)(5)</p> <p>Verify that the containment building is closed in accordance with closure and post-closure requirements for TSDFs as outlined in the sections titled ALL TSDFs - Documentation Requirements and ALL TSDFs - Closure. (1)(2)(5)</p> <p>Verify that if it is found that not all contaminated subsoils can be practicably removed or decontaminated, the facility is closed and landfill postclosure requirements are implemented. (1)(2)(5)</p>

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**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Restricted Wastes</b></p> <p><b>HW.138.</b> Installations must not dispose of the wastes listed in Table 3-9 on land unless specific parameters are met (40 CFR 268.1, 268.4, and Appendix VII).</p>	<p>Verify that the wastes listed in Table 3-9 are not land disposed after the indicated dates in the Table unless: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- the installation was granted an extension</li> <li>- the waste is hazardous only because it exhibits a hazardous characteristic, and is otherwise prohibited from land disposal, is not prohibited from land disposal if the waste:               <ul style="list-style-type: none"> <li>- is disposed of into a nonhazardous or hazardous injection well</li> <li>- does not exhibit any prohibited characteristic of a hazardous waste at the point of injection</li> <li>- disposal is done in a surface impoundment and:                   <ul style="list-style-type: none"> <li>- treatment of the wastes occurs at the impoundment</li> <li>- sampling, testing, and removal procedures and design requirements outlined in 40 CFR 268.4 are followed</li> </ul> </li> <li>- the waste is treated.</li> </ul> </li> </ul> <p>(NOTE: The following are exempted from all of the requirements concerning restricted wastes found in 40 CFR 268:</p> <ul style="list-style-type: none"> <li>- waste generated by SQG of less than 100 kg [220.46 lb] of nonacute hazardous waste or less than 1 kilogram of acute hazardous waste per month</li> <li>- waste pesticides that a farmer disposes of</li> <li>- wastes identified or listed as hazardous after 8 November 1984 for which USEPA has not promulgated land disposal prohibitions or treatment standards</li> <li>- De minimis losses to wastewater treatment systems of commercial chemical product or chemical intermediates that are ignitable (D001), or corrosive (D002), and that contain underlying hazardous constituents</li> <li>- laboratory wastes displaying the characteristic of ignitability (D001), or corrosivity (D002), that are commingled with other plant wastewaters under designated circumstances</li> <li>- laboratory wastes that are ignitable and corrosive containing underlying hazardous constituents from laboratory operations that are mixed with other plant wastewaters at facilities whose ultimate discharge is subject to CWA regulations, if the annualized flow of laboratory wastewater into the facility's headwork does not exceed 1 percent or the laboratory wastes combined annualized sewage concentration does not exceed 1 ppm in the facility's headwork.)</li> </ul> <p>(NOTE: As of 8 May 1993, debris that is contaminated with the wastes listed in Table 3-9 and debris that is contaminated with any characteristic waste for which there are treatment standards is prohibited from land disposal.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.139.</b> Wastes that are restricted from land disposal or the residual from the treatment of a waste restricted from land disposal shall not be diluted as a substitute for adequate treatment (40 CFR 268.3).</p> <p><b>HW.140.</b> A restricted waste may be land disposed only if the constituent concentrations in the waste or waste treatment residue meet applicable treatment standards, or if the waste is treated using a specified treatment technology or equivalent treatment method (40 CFR 268.40 through 268.43).</p>	<p>Verify that restricted wastes or the residual from the treatment of restricted wastes are not diluted unless they are hazardous only because they exhibit a characteristic in a treatment system which treats wastes that are then discharged into a waste of the United States by permit or which treats wastes for the purpose of pre-treatment or unless the waste is a D003 reactive cyanide wastewater or nonwastewater. (1)(2)(5)</p> <p>Verify that for restricted wastes identified in Table 3-10 that are land disposed, the associated constituent concentrations in the extract of the waste or waste treatment residual do not exceed the values shown in Table 3-10. (1)(2)(5)</p> <p>Verify that for restricted wastes listed in Table 3-11 that are land disposed, the waste is treated using the treatment technology specified in Table 3-11 or an equivalent treatment method approved by the administrator. (1)(2)(5)</p> <p>Verify that for restricted wastes identified in Table 3-12 that are land disposed, the associated constituent concentrations in the waste or waste treatment residue do not exceed the values shown in Table 3-12. (1)(2)(5)</p> <p>(NOTE: As used in Tables 3-11, and 3-12, the term wastewater has the following meaning: wastes that contain less than 1 percent by weight total organic carbon (TOC) and less than 1 percent by weight TSS, with the following exceptions:</p> <ul style="list-style-type: none"> <li>- F001, F002, F003, F004, F005 wastewaters are solvent-water mixtures that contain less than 1 percent by weight TOC or less than 1 percent by weight total F001, F002, F003, F004, F005 solvent constituents listed in Table 3-10</li> <li>- K011, K013, K014 wastewaters contain less than 5 percent by weight TOC and less than 1 percent by weight TSS, as generated</li> <li>- K103 and K104 wastewaters contain less than 4 percent by weight TOC and less than 1 percent by weight TSS.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.145.</b> When a facility uses a closed vent system and control device to meet the standards for total organic emissions, the closed vent system and control device must meet certain minimum requirements (40 CFR 264.1033 and 265.1033)</p>	<p>Verify that control devices involving vapor recovery are designed and operated to recovery the organic vapors vented to the air with an efficiency of 95 weight percent or greater unless the total organic emission limit can be attained at an efficiency of less than 95 weight percent. (1)(2)(5)</p> <p>Verify that if an enclosed combustion device is used (i.e., vapor incinerator, boiler, or process heater), it is designed and operated to reduce the organic emissions vented to it by 95 weight percent or greater, to achieve a total organic compound concentration of 20 ppmv or to provide a minimum residence time of 0.50 seconds at a minimum temperature of 760 °C. (1)(2)(5)</p> <p>Verify that if a boiler or process heater is used as the control device, the vent stream is introduced into the flame zone of the boiler or process heater. (1)(2)(5)</p> <p>Verify that if flares are used: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- they are designed and operated with no visible emissions except for periods not in excess of 5 min during any 2 consecutive hours</li> <li>- it is operated with a flame present at all times</li> <li>- it is used only if the net heating value of the gas being combusted is 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam assisted or air-assisted</li> <li>- that are nonassisted, the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater</li> <li>- that are nonassisted or steam assisted, they have an exit velocity less than 18.3 m/s (60 ft/s) except:               <ul style="list-style-type: none"> <li>- when the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1000 Btu/scf) and the exit velocity is equal to or greater than 18.3 m/s (60 ft/s) but less than 122 m/s (400 ft/s).</li> </ul> </li> </ul> <p>Verify that each monitor and control device is inspected on a routine basis. (1)(2)(5)</p>
<p><b>HW.146.</b> TSDFs are required to maintain specific records pertaining to process vent emissions (40 CFR 264.1035 and 265.1035).</p>	<p>Verify that the following information is kept in the operating record:(1)(2)(5)</p> <ul style="list-style-type: none"> <li>- an implementation schedule</li> <li>- up-to-date documentation of compliance</li> <li>- the test plan if test data is used to determine the organic removal efficiency or total organic compound concentration achieved by a control device</li> <li>- design documentation</li> <li>- monitoring and inspection results</li> <li>- notations of exceedences.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.146. (continued)</b></p> <p><b>Air Emission Standards for Equipment Leaks</b></p> <p><b>HW.147.</b> TSDFs with pumps in light liquid service that contain or contacts hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b) 264.1052, 265.1050(b), and 265.1052).</p>	<p>Verify that records of monitoring operations and inspection information are kept for 3 yr. (1)(2)(5)</p> <p>Verify that pumps in light liquid service are monitored monthly according to designated reference methods and inspected visually weekly. (1)(2)(5)</p> <p>(NOTE: A leak is detected if there is an instrument reading of 10,000 ppm or greater or if there is an indication of liquid dripping from the pump seal.)</p> <p>Verify that when a leak is detected, the first attempt at repair is made within 5 calendar days and repair is completed within 15 calendar days. (1)(2)(5)</p> <p>(NOTE: Pumps equipped with dual mechanical seal systems and pumps designated for no detectable emissions that meet standards outlined below do not have to be monitored monthly or visually checked weekly.)</p> <p>Verify that pumps equipped with a dual mechanical seal system meet the following design and operation requirements: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- the dual mechanical seal system is operated with barrier fluid at a pressure that is at all times greater than the pump stuffing box or equipped with a barrier fluid degassing reservoir that is connected by a closed vent system to a control device or equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emission to the atmosphere</li> <li>- the barrier fluid system has no hazardous waste with organic concentrations 10 percent or greater by weight</li> <li>- the barrier fluid system is equipped with a sensor that will detect failure if the seal is broken.</li> <li>- pumps are checked by visual inspection weekly</li> <li>- sensors are checked daily or equipped with an audible alarm that is checked monthly.</li> </ul> <p>Verify that pumps that are designated for no detectable emissions as indicated by an instrument reading of 500 ppm above background or less meet the following: (2)(5)</p> <ul style="list-style-type: none"> <li>- they are operated with no detectable emissions</li> <li>- they are tested for compliance initially upon designation, annually, and at other times as requested by the Regional Administrator.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.148. (continued)</b></p> <p><b>HW.149.</b> TSDFs with pressure relief devices in gas/vapor service that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1054, 265.1050(b), and 265.1054).</p> <p><b>HW.150.</b> TSDFs with sampling connecting systems that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1055, 265.1050(b), and 265.1055).</p>	<p>(NOTE: These standards apply to facilities that are required to have a permit and hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p> <p>Verify that except during pressure releases, each pressure relief device in gas/vapor service is operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background. (1)(2)(5)</p> <p>Verify that if there is a pressure release, the device is returned to a no detectable emission status within 5 calendar days and the device is monitored to ensure compliance. (1)(2)(5)</p> <p>(NOTE: Any pressure relief device that equipped with a closed-vent system capable of capturing and transporting leakage from the pressure relief device to a control device is exempt from these requirements.)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p> <p>Verify that each sampling connection system is equipped with a closed purge system or closed-vent system. (1)(2)(5)</p> <p>Verify that each closed purge system or closed-vent system does one of the following: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- returns the purged hazardous waste stream directly to the hazardous waste management process line with no detectable emissions to atmosphere</li> <li>- collects and recycles the purged hazardous waste stream with no detectable emissions to the atmosphere</li> <li>- is designed and operated to capture and transport all the purged hazardous waste stream to a control device.</li> </ul> <p>(NOTE: <i>In-situ</i> sampling systems are exempt from these requirements.)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.151.</b> TSDFs with open-ended valves or lines that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1056, 265.1050(b), and 265.1056).</p> <p><b>HW.152.</b> TSDFs with valves in gas/vapor service or light liquid service that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1057, 264.1061, 265.1050(b), 265.1057, and 265.1061).</p>	<p>Verify that each open-ended valve or line is equipped with a cap, blind flange, plug, or a second valve. (1)(2)(5)</p> <p>Verify that the cap, blind flange, plug, or second valve seals the open end at all times except during operations requiring hazardous waste stream flow through the open-ended valve of line. (1)(2)(5)</p> <p>Verify that each open-ended valve of line equipped with a second valve is operated so that the valve on the hazardous waste stream end is closed before the second valve is closed. (1)(2)(5)</p> <p>Verify that when a double block and bleed system is being used, the bleed valve is shut or plugged except during operations that require venting the line between the block valves. (1)(2)(5)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p> <p>Verify that valves in gas/vapor service or light liquid service are monitored monthly to detect leaks. (1)(2)(5)</p> <p>(NOTE: A leak is detected if an instrument reading of 10,000 ppm or greater is measured. But, if a leak is not detected for 2 consecutive months, monitoring may be cut back to quarterly until a leak is detected.)</p> <p>Verify that the first attempt at repairing a leak is done with 5 calendar days after detection and leak repair is completed within 15 days after detection. (1)(2)(5)</p> <p>(NOTE: Valve that are designated for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background do not have to be monitored monthly if:</p> <ul style="list-style-type: none"> <li>- the valve has no external actuating mechanism on contact with the hazardous waste stream</li> <li>- the valve is operated with emission less than 500 ppm above background</li> <li>- the valve is tested initially upon designation, annual, and at the request of the Regional Administrator.)</li> </ul> <p>(NOTE: Valves that are designated as unsafe-to-monitor are exempt from the requirement for monthly monitoring if:</p> <ul style="list-style-type: none"> <li>- the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger</li> <li>- a written monitoring plan is followed that requires monitoring as often as is reasonably practicable during safe-to-monitor times.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.154.</b> TSDFs are required to keep specific records pertaining to the valves, pumps, pressure relief devices, and connecting systems being monitored for leaks and submit certain reports (40 CFR 264.1050(b), 264.1064, 264.1065, 265.1050(b), and 265.1064).</p>	<p>Verify that the following information is maintained in the facility operating record: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- equipment identification number and hazardous management unit identification</li> <li>- approximate locations</li> <li>- type of equipment</li> <li>- percent-by-weight total organics in the hazardous waste stream at the equipment</li> <li>- hazardous waste state at the equipment (gas, liquid, vapor)</li> <li>- method of compliance</li> <li>- implementation schedule if needed</li> <li>- a performance plan for control devices as needed</li> <li>- documentation of compliance</li> <li>- documentation of repair.</li> </ul> <p>Verify that permitted TSDFs submit a semiannual report indicating leaks and repairs to the Regional Administrator. (1)(2)(5)</p> <p>(NOTE: If repairs are made and the control device does not exceed or operate outside of the design specifications for more than 24 h a report to the Regional Administrator is not required.)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Documentation Requirements</b></p> <p><b>HW.155.</b> Installations that treat, store, or dispose of hazardous wastes must develop and follow a written waste analysis plan (40 CFR 264.13(b), 264.13(c), 265.13(b), and 265.13(c)).</p> <p><b>HW.156.</b> TSDFs on the installation must have formal written inspection schedule and a log of inspection results (40 CFR 264.15 and 265.15).</p>	<p>Determine if the installation treats, stores, or disposes of hazardous waste. (1)(2)(5)</p> <p>Verify that the installation has a waste analysis plan. (1)(2)(5)</p> <p>Verify that the installation is following the waste analysis plan by comparing the plan and records of actual procedures. (1)(2)(5)</p> <p>Verify that the waste analysis plan contains the following: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- testing parameters for which each hazardous waste will be analyzed</li> <li>- test methods</li> <li>- sampling methods used to obtain a representative sample</li> <li>- frequency in which the analysis will be reviewed or repeated to ensure that the analysis is up-to-date and accurate</li> <li>- waste analysis supplied by offsite generators</li> <li>- methods used to meet the additional analysis requirements for management of ignitable, reactive, or incompatible materials, bulk and containerized liquids, and incineration are stated (if applicable)</li> <li>- additional information as follows for offsite facilities: <ul style="list-style-type: none"> <li>- specific procedures to inspect (and analyze if necessary) each movement of hazardous waste received to ensure that it matches the identity of the waste designated in the manifest</li> <li>- the method of sampling used to obtain a representative sample (if the identification method includes sampling)</li> <li>- the procedures that an offsite landfill receiving containerized hazardous waste will use to determine if a hazardous waste generator or treater has added a biodegradable sorbent to the waste in the container.</li> </ul> </li> </ul> <p>Verify that the facility has a formal written inspection schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards. (1)(2)(5)</p> <p>Verify that the schedule is kept at the facility and lists types of problems to be looked for at the facility. (1)(2)(5)</p> <p>Verify that areas subject to spills, such as loading and unloading areas, are inspected daily when in use. (1)(2)(5)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.158.</b> TSDF operators must record the time, date, and details of any incident that requires implementing the contingency plan (40 CFR 264.56(j) and 265.56(j)).</p> <p><b>HW.159.</b> TSDF operators must keep written operating records at the facility (40 CFR 264.73 through 264.74, and 265.73 through 265.74).</p>	<p>Determine if incidents have been recorded and corrective actions taken through a review of TSDF operating records. (1)(2)(5)</p> <p>Verify that written reports have been submitted to the USEPA regional administrator within 15 days after the incident. (1)(2)(5)</p> <p>Verify that the installation has a written operating record. (1)(2)(5)</p> <p>Determine if the operating record includes: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- a description and quantity of each hazardous waste received at the facility and the method(s) and date(s) of treatment, storage, or disposal of each waste received at the facility</li> <li>- the location of each hazardous waste within the facility (cross-referenced to specific manifest document numbers and the quantity at each location)</li> <li>- for disposal facilities, the location and quantity is recorded on a map or diagram of each cell or disposal area</li> <li>- records and results of waste analyses</li> <li>- reports of all the incidents that required the implementation of the contingency plan</li> <li>- records and results of inspections (only a 3 yr retention period)</li> <li>- monitoring, testing, and analytical data (where required)</li> <li>- for offsite facilities, notices to the generator</li> <li>- annual certification that the installation has a program in place to reduce the volume and toxicity of hazardous waste, and that the proposed method of treatment, storage, or disposal minimizes the present and future threat to human health and the environment</li> <li>- the record of the quantities and date of placement for each shipment of hazardous waste placed in land disposal units under extension granted by 40 CFR 268.5, a petition granted under 40 CFR 268.6, or a certification granted under 40 CFR 268.8</li> <li>- a copy of the applicable notice, demonstration, and certification required for any restricted hazardous wastes</li> <li>- certifications and demonstrations provided to generators or received from generators.</li> </ul> <p>(NOTE: This information must be recorded and maintained in the operating record until closure of the facility.)</p> <p>(NOTE: The retention period for all records is extended automatically during the course of any unresolved enforcement action or as required by the USEPA Administrator.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.160.</b> Installations with TSDFs must prepare and submit a single copy of a biennial report to the USEPA Regional Administrator by 1 March of each even numbered year (40 CFR 264.75 and 265.75).</p> <p><b>HW.161.</b> Installations with TSDFs must have a written closure plan for each facility (40 CFR 264.110, 264.112(a), 264.112(b), 265.110, 265.112(a), and 265.112(b)).</p> <p><b>HW.162.</b> Installations with hazardous waste disposal units are required to have a written postclosure plan (40 CFR 264.118, 265.118(a) through 265.118(d)).</p>	<p>Obtain a copy of the biennial report (USEPA Form 8700-13D or applicable state form). (1)(2)(5)</p> <p>Verify that biennial reports are prepared and submitted and contain the following information: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- USEPA identification number</li> <li>- facility name and address</li> <li>- calendar year covered by report</li> <li>- description and quantity of each waste received</li> <li>- method of treatment, storage, or disposal for each waste</li> <li>- certification signed by owner or operator of the facility</li> <li>- offsite facilities must also report USEPA identification number for each hazardous waste generator from which waste was received</li> <li>- description of efforts undertaken during the year to reduce the volume and toxicity of waste generated</li> <li>- description of changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent that information is available for the years prior to 1984.</li> </ul> <p>(NOTE: This is not required if annual or biennial reports are submitted to the state.)</p> <p>Determine if the facility has a written closure plan. (1)(2)(5)(7)</p> <p>Determine, by review, if the closure plan addresses: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- how the facility will be closed</li> <li>- estimates of the maximum amount of wastes in storage and in treatment during the life of the facility</li> <li>- description of decontamination procedures to be used during closure</li> <li>- schedule for closure of each unit.</li> </ul> <p>Verify that the plan includes the following information: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- identifies the activities that will be carried on after closure of each disposal unit and the frequency of these activities</li> <li>- name address and phone number of the person or office to contact during postclosure care.</li> </ul> <p>Verify that the plan is amended if there is a change in the expected year of final closure, events occur during the life of the facility that impact closure care, or a change in facility design. (1)(2)(5)</p>

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**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.163.</b> Installations that have TSDFs that receive waste from off-site sources must comply with manifest requirements (40 CFR 264.70 and 264.71, 265.70, and 265.71).</p> <p><b>HW.164.</b> TSDFs receiving hazardous waste from a foreign source must notify the Regional Administrator (40 CFR 264.12(a) and 265.12(a)).</p> <p><b>HW.165.</b> Installations with TSDFs which receive waste from off-site sources are required to attempt to resolve manifest discrepancies when they occur (40 CFR 264.72 and 265.72).</p>	<p>Determine if the installation receives waste from offsite sources and if their permit allows for the receipt of offsite waste. (1)(2)(5)(8)</p> <p>Determine if manifests contain the following by reviewing a random number of manifests: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- proper signature</li> <li>- date of receipt.</li> </ul> <p>Verify that a copy was sent to the generator within 30 days of receipt of waste. (1)(2)(5)</p> <p>Verify that copies are retained at the facility for 3 yr. (1)(2)(5)</p> <p>Verify that exclusion certification from very small quantity generators are kept on file. (1)(2)(5)</p> <p>(NOTE: Periods of retention of records are extended automatically during the course of any unresolved enforcement action or as requested by the USEPA Administrator.)</p> <p>Verify that notification is sent in writing at least 4 weeks before delivery is expected. (1)(2)(5)(8)</p> <p>Determine if significant discrepancies existed between the quantity or type of waste designated on the manifest or shipping paper, and the quantity or type of waste the facility received. (1)(2)(5)(8)</p> <p>Verify that on discovery of a significant discrepancy, an attempt was made to reconcile the discrepancy with the generator and/or the transporter. (1)(2)(5)(8)</p> <p>Verify that if the discrepancy could not be resolved within 15 days after receipt of the waste, the Regional Administrator was notified by mail and the following was included: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- a letter describing the discrepancy and the attempts to reconcile it</li> <li>- copy of the manifest or shipping paper at issue.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.168.</b> All TSDFs are required to follow certain notification procedures for partial and final closure (40 CFR 264.112(d)(1) and 265.112(d)(1)).</p>	<p>Verify that TSDFs with surface impoundments, waste piles, land treatment or landfill units notify the Regional Administrator: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- 180 days prior to expected date of beginning closure of first unit for interim status TSDFs without an approved closure plan, 60 days with an approved closure plan</li> <li>- 60 days prior to expected date of beginning closure for all permitted facilities.</li> </ul>
<p><b>HW.169.</b> Within 60 days of completion of closure of each hazardous waste surface impoundment, waste pile, land treatment, and landfill unit installations must submit a certification of closure to the Regional Administrator (40 CFR 264.115 and 265.115).</p>	<p>Verify that TSDFs with only tanks, containers or incinerator units notify the Regional Administrator within 45 days prior to date of beginning final closure. (1)(2)(5)</p> <p>Verify that a certification of closure was sent to the Regional Administrator by registered mail. (1)(2)(5)</p>
<p><b>HW.170.</b> By the time that certification of closure has been submitted, installations are required to submit a survey plat indicating the location and dimensions of land-fill cells in relationship to permanently surveyed landmarks to specific authorities (40 CFR 264.116 and 265.116).</p>	<p>Verify that a survey plat was submitted to the local zoning authorities or the authority with jurisdiction over local land use, and the Regional Administrator. (1)(2)(5)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.171.</b> Postclosure care of hazardous waste management units must meet specific parameters (40 CFR 264.117 and 265.117).</p> <p><b>ADDITIONAL REQUIREMENTS FOR PERMITTED TSDFs</b></p> <p><b>General</b></p> <p><b>HW.172.</b> Permitted facilities that receive hazardous waste from offsite sources must inform the generator in writing that the facility has the appropriate permit and will accept the waste (40 CFR 264.12(b)).</p> <p><b>HW.173.</b> Permitted facilities that treat, store, or dispose of hazardous waste with solid waste management units are required to institute corrective actions as outlined in the permit to protect human health and the environment from releases (40 CFR 264.90(a) and 264.101).</p>	<p>Verify that postclosure care last for 30 yr after closure and consists of the following: (1)(2)(5)(7)</p> <ul style="list-style-type: none"> <li>- monitoring and reporting as required in other sections</li> <li>- maintenance of waste containment systems</li> <li>- use of the property is not allowed to disturb the integrity of the final cover, liner, or any other components.</li> </ul> <p>Verify that notification is sent and a copy is kept in the operating record. (1)(2)(5)</p> <p>(NOTE: This applies regardless of when the waste was placed in solid waste management units.)</p> <p>Verify that corrective actions required by the permit are being done. (1)(2)(5)</p> <p>(NOTE: The Regional Administrator may identify the unit as not having to comply with this requirement.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.174.</b> Container storage areas at TSDFs must have a containment system that meets specific standards (40 CFR 264.175(a) and 264.175(b)).</p>	<p>Verify that all container storage areas meet the following criteria: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- containers are stored on a base that is free from cracks or gaps and is impervious so that leaks, spills, and precipitation are contained</li> <li>- the base is sloped (or otherwise designed) to drain and remove liquids resulting from leaks, spills, or precipitation unless the containers are elevated</li> <li>- spilled or leaked waste and accumulated precipitation is removed in a timely manner</li> <li>- the containment system has adequate capacity to contain 10 percent of the volume of the containers or the volume of the largest container whichever is greater</li> <li>- run-on into the containment system is prevented unless the system has sufficient capacity to contain any run-on that might enter the system in addition to the already required capacity.</li> </ul> <p>(NOTE: If the collected material is a hazardous waste, it must be handled accordingly. If it is discharged through a point source, it is subject to the CWA requirements.)</p>
<p><b>HW.175.</b> Containment at permitted TSDFs for containers holding wastes that do not contain free liquids must meet specific criteria which is lesser than that for general containment areas (40 CFR 264.175(c))</p>	<p>Verify that the following storage area criteria is met: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- the area is sloped or able to drain and remove liquid resulting from precipitation</li> <li>- containers are elevated or protected from contact with accumulated liquid.</li> </ul> <p>(NOTE: Storage areas must have complete containment systems when the containers holding F020, F022, F023, F026, and F027 do not contain free liquids.)</p>
<p><b>HW.176.</b> When container storage areas are closed at permitted TSDFs, specific conditions must be met (40 CFR 264.178).</p>	<p>Verify that closure criteria was met: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- all hazardous waste and residues were removed from the containment system</li> <li>- remaining containers, liners, bases, and soils (containing or contaminated with hazardous waste or hazardous waste residues) were decontaminated or removed</li> <li>- all hazardous wastes (including materials removed from the containment system) were managed appropriately.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.177.</b> Installations with permitted surface impoundments, waste piles, and land treatment units or landfills that received hazardous waste after 26 July 1982 are required to conduct monitoring and response program under specific circumstances (40 CFR 264.90(a)(2) and 264.91).</p> <p><b>HW.178.</b> Installations with permitted surface impoundments, waste piles, and land treatment units or landfills that received hazardous waste after 26 July 1982 are required to comply with specific concentration limits in the groundwater for hazardous constituents as designated by the Regional Administrator in the permit (40 CFR 264.94).</p>	<p>Verify that whenever hazardous constituents specified in the permit by the Regional Administrator are detected at designated compliance points, a compliance monitoring program is started. (1)(2)(5)</p> <p>Verify that whenever groundwater protection limits are exceeded, a corrective action program is initiated. (1)(2)(5)</p> <p>Verify that whenever hazardous constituents specified in the permit by the Regional Administrator exceed concentration limits under 264.94 (See Table 3-13) in groundwater between a designated compliance point and the downgradient facility property boundary a corrective action program or a detection monitoring program is started at the installation. (1)(2)(5)</p> <p>Verify that the installation is meeting the elements of the monitoring and response program specified by the Regional Administrator in the permit. (1)(2)(5)</p> <p>Verify that the concentration of hazardous constituents: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- do not exceed the background level of that constituent in the groundwater at the time that limit is specified in the permit</li> <li>- do not exceed the limits outlined in Table 3-13.</li> <li>- do not exceed an alternate limit set by the Regional Administrator.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.179.</b> Installations with permitted surface impoundments, waste piles, and land treatment units or landfills that received hazardous waste after 26 July 1982 and that detect statistically significant evidence of contamination for chemical parameters or hazardous constituents designated in the permit must meet specific requirements (40 CFR 264.98(g)).</p>	<p>Verify that the following steps are taken if there is significant evidence of contamination: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- the Regional Administrator is notified in writing within 7 days</li> <li>- the groundwater in all monitoring wells is immediately sampled and analyzed for constituents in Appendix IX of 40 CFR 264</li> <li>- sampling is repeated after 1 mo for any compounds detected that are listed in Appendix IX of 40 CFR 264</li> <li>- within 90 days an application for a permit modification is submitted to the Regional Administrator to establish a compliance monitoring program.</li> </ul>
<p><b>HW.180.</b> If during a compliance monitoring program the installation determines that the concentration limits listed in 264.94 are being exceeded at any monitoring well at the point of compliance, specific actions are required (40 CFR 264.99(h)).</p>	<p>Verify that the following actions are taken when concentration are exceeded: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- the Regional Administrator is notified in writing within 7 days</li> <li>- an application for a permit modification to establish a corrective action program is submitted within 180 days.</li> </ul>
<p><b>HW.181.</b> Installations operating corrective actions programs are required to report semi-annually to the Regional Administrator on their effectiveness (40 CFR 264.100(g)).</p>	<p>Determine if the installation operates a corrective action program. (1)(2)(5)</p> <p>Verify that a semi-annual progress report is sent to the Regional Administrator. (1)(2)(5)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.182.</b> Installations that are seeking a permit for the treatment, storage, or disposal of hazardous waste must initiate the corrective actions needed to protect human health and the environment from all releases of hazardous waste of constituents from any solid waste management unit, regardless of when the waste was placed in the unit (40 CFR 264.101).</p>	<p>Verify that the corrective actions specified in the permit are being done and the compliance schedule is being met. (1)(2)(5)</p> <p>(NOTE: As a part of the corrective action program the Regional Administrator may designate an area of the facility as a CAMU or a temporary unit (TU).)</p>
<p><b>HW.183.</b> All permitted TSDFs are required to document compliance with ignitable, reactive, or incompatible waste management requirements (40 CFR 264.17(c)).</p>	<p>Verify that compliance documentation is maintained at the facility, and that it is based on published scientific or engineering literature, data from field tests, or the results of the treatment of similar wastes by similar treatment processes or similar operating conditions. (1)(2)(5)</p>
<p><b>HW.184.</b> Permitted TSDFs with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that manage hazardous wastes with organic concentrations of at least 10 ppmw are required to submit a semi-annual report concerning process vent emissions (40 CFR 264.1036).</p>	<p>Verify that a semi-annual report is submitted to the Regional Administrator and that it includes the following: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- the USEPA identification number, name, and address of the facility</li> <li>- dates when the control device exceeded or operated outside of design specification and the exceedences were not corrected within 24 h</li> <li>- dates when a flare operated with visible emissions</li> <li>- the duration and cause of exceedences and corrective measures taken.</li> </ul> <p>(NOTE: If there are no exceedences a report is not required.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Miscellaneous Units (OB/OD)</b></p> <p><b>HW.185.</b> Facilities that treat, store, or dispose of hazardous wastes in permitted miscellaneous units must comply with specific environmental performance standard requirements (40 CFR 264.601).</p>	<p>(NOTE: The OB/OD of waste explosives at permitted TSDFs is done under the classification of miscellaneous unit. This is also sometimes referred to as a Subpart X Permit.</p> <p>Determine whether the facility treats, stores, or disposes of any hazardous waste in miscellaneous units. (1)(2)(5)</p> <p>Verify that miscellaneous units are located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment including: (1)(2)(5)</p> <ul style="list-style-type: none"> <li>- prevention of any release due to migration in the surface water, wetlands, or the soil surface, taking in to consideration:               <ul style="list-style-type: none"> <li>- volume and physical and chemical characteristics of the waste in the unit</li> <li>- the effectiveness of containing, confining, and collection systems and structures in preventing migration</li> <li>- the hydrologic characteristics of the unit and surrounding area, including the topography of the land around the unit</li> <li>- regional patterns of precipitation</li> <li>- existing quality, quantity, and direction of groundwater flow</li> <li>- the proximity of the unit to surface waters</li> <li>- the current and potential uses of nearby surface waters and any water quality standards established for those surface waters</li> <li>- the existing quality of surface waters and surface soils including other sources of contamination and their cumulative impact</li> <li>- regional pattern of land use</li> <li>- potential health risks caused by human exposure to the waste</li> <li>- potential for damage from exposure to domestic animals, wildlife, crops, vegetation, and physical structures.</li> </ul> </li> </ul>

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<p><b>ADDITIONAL REQUIREMENTS FOR INTERIM STATUS TSDFs</b></p> <p><b>HW.188.</b> Interim status TSDFs are allowed to conduct OB/OD of waste explosives under specific conditions (40 CFR 265.382).</p> <p><b>HW.189.</b> Interim status TSDFs with a tank system that is used to treat or store a substantially different waste than before or if a substantially different process is used than previously, must conduct waste analysis and trial tests (40 CFR 265.200).</p> <p><b>HW.190.</b> Installations operating surface impoundments, landfills, or land treatment facilities are required to have a groundwater monitoring program that it can determine the impact of the facility on the uppermost aquifer (40 CFR 265.90(a) through 265.90(c) and 265.90(e)).</p>	<p>Determine if the facility is conducting OB/OD activities. (1)(2)(5)</p> <p>Verify that the OB/OD occurs at the distance from an adjoining property line indicated in the following chart: (1)(2)(5)</p> <table border="0"> <thead> <tr> <th>Lb of Waste Explosive or propellants</th> <th>Minimum distance from OB/OD activity to the property of others</th> </tr> </thead> <tbody> <tr> <td>0 to 100</td> <td>204 m (670 ft)</td> </tr> <tr> <td>101 to 1000</td> <td>380 m (1250 ft)</td> </tr> <tr> <td>1001 to 10,000</td> <td>530 m (1730 ft)</td> </tr> <tr> <td>10,000 to 30,000</td> <td>690 m (2260 ft)</td> </tr> </tbody> </table> <p>Verify that if the facility has interim status proper waste analysis and trial tests are completed when a tank system is used to treat or store a substantially different waste than before or if a substantially different process is used than previously. (1)(2)(5)</p> <p>Verify that if similar waste under similar operating conditions is to be treated or stored, written documentation on the waste exists. (1)(2)(5)</p> <p>Verify that unless the installation has demonstrated in writing that there is a low potential for water migration or received a waiver, the installation has a groundwater monitoring program. (1)(2)(5)</p> <p>Verify that the monitoring program is carried out throughout the active life of the facility and also during postclosure for disposal facilities. (1)(2)(5)</p>	Lb of Waste Explosive or propellants	Minimum distance from OB/OD activity to the property of others	0 to 100	204 m (670 ft)	101 to 1000	380 m (1250 ft)	1001 to 10,000	530 m (1730 ft)	10,000 to 30,000	690 m (2260 ft)
Lb of Waste Explosive or propellants	Minimum distance from OB/OD activity to the property of others										
0 to 100	204 m (670 ft)										
101 to 1000	380 m (1250 ft)										
1001 to 10,000	530 m (1730 ft)										
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.193.</b> Installations with interim status TSDFs must have an outline of a more extensive groundwater quality assessment program (40 CFR 265.93(a)).</p>	<p>Determine if a groundwater quality assessment program outline has been developed. (2)(5)(7)</p> <p>Verify that the program is capable of determining: (2)(5)(7)</p> <ul style="list-style-type: none"> <li>- whether or not hazardous waste or hazardous waste constituents have entered the groundwater</li> <li>- the rate and extent of migration of hazardous waste or hazardous waste constituents in the groundwater</li> <li>- the concentrations of hazardous waste or hazardous waste constituents in the groundwater.</li> </ul>
<p><b>HW.194.</b> When there is a significant increase for pH, specific conductance, TOC, or total organic halogen (or pH decrease) in the downgradient wells the installation must perform specific actions (40 CFR 265.93(c)(2) and 265.93(d)(1) through 265.93(d)(4)).</p>	<p>Verify that additional samples are taken from the wells showing a significant change. (2)(5)(7)</p> <p>Verify that if a significant increase (or pH decrease) is confirmed, written notice is issued to the Regional Administrator within 7 days of the confirmation. (2)(5)(7)</p> <p>Verify that within 15 days after the notification was submitted, the installation submits a groundwater quality assessment program. (2)(5)(7)</p> <p>Verify that the program is implemented. (2)(5)(7)</p>
<p><b>HW.195.</b> If an installation is required to have a groundwater assessment program, specific reports must be submitted and actions taken depending on the results of the program (40 CFR 265.93(d)(5) through 265.93(d)(7)).</p>	<p>Verify that the program was implemented as soon as possible and a written report containing an assessment of the water was sent to the Regional Administrator. (1)(2)(5)(7)</p> <p>(NOTE: If the results of the first determinations under the program show that no hazardous waste or hazardous waste constituents have entered the groundwater, the installation can return to its usual practices of monitoring.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.196.</b> Unless the groundwater is being monitored to satisfy a groundwater assessment program, the installation is required to meet specific reporting and record keeping requirements (40 CFR 265.94(a)).</p> <p><b>HW.197.</b> When the groundwater is being monitored to satisfy a groundwater assessment program, records have to be maintained of the analyses and annual reported submitted (40 CFR 265.94(b)).</p>	<p>Verify that records on analyses, groundwater elevations, are kept throughout the life of the facility, and for disposal facilities through post closure. (1)(2)(5)(7)</p> <p>Verify that during the first year of groundwater monitoring the results of parameter monitoring is submitted to the Regional Administrator within 15 days after completing each quarterly analysis. (1)(2)(5)</p> <p>Verify that after the first year, concentrations and values for monitored parameters are reported annually. (1)(2)(5)</p> <p>Verify that records of analyses and evaluations specified in the plan are maintained throughout the active life of the facility, and for disposal facilities throughout post-closure. (1)(2)(5)(7)</p> <p>Verify that the results of the program are submitted annually to the Regional Administrator by 1 March of each calendar year. (1)(2)(5)(7)</p>

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U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>EXPORT/IMPORT OF HAZARDOUS WASTE</b></p> <p><b>HW.198.</b> Installations that export hazardous waste outside the United States must comply with specific notification requirements (40 CFR 262.53(a) and 262.53(b)).</p> <p><b>HW.199.</b> When shipping hazardous waste outside the United States, the installation is required to have an USEPA acknowledgment of consent that confirms the consent of the foreign country to receive the waste (40 CFR 262.52(c) and 262.53(f)).</p>	<p>Verify that 60 days prior to the initial shipment of hazardous waste to each country in each calendar year, the installation has notified the USEPA (in writing) of the following: (1)(8)</p> <ul style="list-style-type: none"> <li>- name, mailing address, telephone number, and USEPA identification number of the primary exporter</li> <li>- by consignee, for each hazardous waste type</li> <li>- identification of the hazardous waste shipped by USEPA identification number</li> <li>- DOT shipping name, hazard class, and Importer for the waste</li> <li>- estimated frequency/rate at which such waste(s) is to be exported</li> <li>- estimated total quantity (in units)</li> <li>- all points of entry to and departure from each foreign country the waste will pass through</li> <li>- a description of the approximate length of time the waste will remain in each country, and how it will be handled there</li> <li>- the mode of transportation used to transport the waste</li> <li>- type(s) of containers used</li> <li>- description of the treatment, storage, or disposal method to be used in the receiving country</li> <li>- name and address of the foreign consignee.</li> </ul> <p>Verify that a copy of the USEPA acknowledgment of consent is on file by checking the records. (1)(2)(8)</p>

(1) Environmental Planning (BCE) (2) Defense Reutilization and Marketing Office (DRMO) (3) Accumulation Point Managers; (4) Fire Department (5) Treatment Storage Disposal (TSD) Facility Officer (6) Safety Officer (7) Bioenvironmental Engineer (BEE) (8) Transportation Officer (9) Base Supply (10) Generating Activities

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.200.</b> Primary exporters of hazardous waste must require confirmation of the delivery of the hazardous waste and a description of any significant discrepancies (40 CFR 262.54(f)).</p> <p><b>HW.201.</b> Primary exporters of hazardous waste outside the United States are required to use manifests with special additions (40 CFR 262.54(a) through 262.54(e) and 262.54(i)).</p>	<p>Verify that the installation has been receiving confirmation of delivery by reviewing the manifest files. (1)(2)(8)</p> <p>Determine if there are any notations of discrepancies. (1)(2)(8)</p> <p>Verify that the manifest copies comply with the general manifest requirements of 40 CFR 262.20 through 262.23. (1)(8)</p> <p>Determine if the following exceptions and additions are noted by reviewing the manifest copies: (1)(8)</p> <ul style="list-style-type: none"> <li>- the name and address of the foreign consignee is put in the place of the designated facility's name, address, and USEPA identification number</li> <li>- the point of departure through which the waste must travel in the United States before entering the foreign country is indicated</li> <li>- this statement "and conform to the terms of the attached USEPA Acknowledgment of Consent" is added to the end of the first sentence of the certification in Item 16.</li> </ul> <p>Verify that a copy of the manifest is provided for delivery to the U.S. Customs Official at the United States point of departure. (1)(8)</p> <p>(NOTE: The primary exporter's state may require the use of its manifest. Primary exporters of hazardous waste outside the United States are required to file an exception report under certain conditions (40 CFR 262.55).)</p> <p>Verify that an exception report was filed if: (1)(2)(8)</p> <ul style="list-style-type: none"> <li>- a signed copy of the manifest from the transporter containing the following information was not received within 45 days from the day it was accepted by the initial transporter: <ul style="list-style-type: none"> <li>- date of departure of the waste from the United States</li> <li>- place of departure of the waste from the United States</li> <li>- within 90 days from the date the waste was accepted by the initial transporter, the installation has not received a written confirmation from the foreign consignee stating that the hazardous waste was received</li> </ul> </li> <li>- the waste is returned to the United States.</li> </ul>

(1) Environmental Planning (BCE) (2) Defense Reutilization and Marketing Office (DRMO) (3) Accumulation Point Managers; (4) Fire Department (5) Treatment Storage Disposal (TSD) Facility Officer (6) Safety Officer (7) Bioenvironmental Engineer (BEE) (8) Transportation Officer (9) Base Supply (10) Generating Activities

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.202.</b> Primary exporters of hazardous waste are required to follow specific procedures when a shipment cannot be delivered to the designated or alternate consignee (40 CFR 262.54(g)).</p> <p><b>HW.203.</b> An Annual Report must be filed with the Regional Administrator by 1 March of each year by the primary exporter (40 CFR 262.56).</p>	<p>Verify that when a shipment cannot be delivered, the installation does one of the following: (1)(2)(8)</p> <ul style="list-style-type: none"> <li>- renotifies USEPA of a change in the conditions of the original notification to allow shipment to a new consignee and obtains an USEPA Acknowledgment of Consent prior to delivery</li> <li>- instructs the transporter to return the waste to the primary exporter in the United States or designates another facility within the United States.</li> </ul> <p>Verify that the installation instructs the transporter to revise the manifest to reflect changes made. (1)(2)(8)</p> <p>Verify that an Annual Report has been submitted by 1 March of every calendar year by checking the records. (1)(2)(8)</p> <p>Determine if the Annual Reports contain the following information for all hazardous waste exported during the previous calendar year by checking a random sample: (1)(2)(8)</p> <ul style="list-style-type: none"> <li>- type, USEPA hazardous waste number, DOT hazard class and name for each hazardous waste(s) exported</li> <li>- USEPA identification number for each transporter (where applicable)</li> <li>- quantity of hazardous waste(s) exported</li> <li>- frequency (dates) of hazardous waste(s) exported</li> <li>- ultimate destination for all hazardous waste(s) exported</li> <li>- efforts used to reduce the volume and toxicity of the waste (and the changes achieved during the year in comparison to previous years)</li> <li>- a certification signed by the primary exporter that states:</li> </ul> <p><i>"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment."</i></p>

(1) Environmental Planning (BCE) (2) Defense Reutilization and Marketing Office (DRMO) (3) Accumulation Point Managers (4) Fire Department (5) Treatment Storage Disposal (TSD) Facility Officer (6) Safety Officer (7) Biocumulative Engineer (BEE) (8) Transportation Officer (9) Base Supply (10) Generating Activities

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HW.204.</b> Primary exporters of hazardous wastes must maintain additional records that relate to their export activities (40 CFR 262.57).</p>	<p>Verify that the following are kept for at least 3 yr: (1)(2)(8)</p> <ul style="list-style-type: none"> <li>- a copy of each notification of intent to export</li> <li>- a copy of each USEPA Acknowledgment of Consent</li> <li>- a copy of each confirmation of delivery (signed manifests) of the waste</li> <li>- a copy of each annual report.</li> </ul> <p>(NOTE: Periods of retention are automatically extended during the course of any unresolved enforcement action.)</p>

(1) Environmental Planning (BCE) (2) Defense Reutilization and Marketing Office (DRMO) (3) Accumulation Point Managers (4) Fire Department (5) Treatment Storage Disposal (TSD) Facility Officer (6) Safety Officer (7) Bioenvironmental Engineer (BEE) (8) Transportation Officer (9) Base Supply (10) Generating Activities



**Table 3-1**

**Reevaluation Frequencies for Chemical Mixtures  
(AFI 32-7042, Table 2)**

1. **High Volume Hazardous Waste Streams.** Sample and analyze each high volume waste stream (more than 3, 55 gal drums per year) at least once a year or whenever there are process, material, or material manufacturer changes.
2. **Low Volume Hazardous Waste Streams.** Sample and analyze each low volume waste stream (3, 55 gal drums or less per year) at least every 3 yr or whenever there are process, material, or material manufacturer changes.



**Table 3-2**

**Identification and Listing of Hazardous Waste.  
40 CFR 261**

**Chart I  
Hazardous Waste from Nonspecific Sources  
(40 CFR 261.30 through .31)**

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
<u>Generic</u>		
F001	The spent halogenated solvents used in degreasing. Trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and the chlorinated fluorocarbons; all spent solvent mixtures or blends used in degreasing containing before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents listed in F002, F004, F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(t)
F002	the following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,1,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures or blends containing, before use, a total of 10 percent or more by volume, of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(t)
F003	the spent nonhalogenated solvents, xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents and spent solvent mixtures.	(i)

\* HAZARD CODES (Column 3)

- t = toxic waste
- i = ignitable waste
- r = reactive waste
- h = acute hazardous waste

\*\* (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for f020 and f023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.

(continued)



**Table 3-2 (continued)**

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F004	the spent nonhalogenated solvents, cresols and cresylic acid, and nitrobenzene; and the still bottoms from the recovery of these solvents.	(t)
F005	the following spent nonhalogenated solvents: toluene, methyl ethyl ketone, carbons disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures or blends containing, before use, a total of 10 percent or more by volume of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these solvents.	(i,t)
F006	wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(t)
F007	spent cyanide plating bath solution from electroplating operations.	(r,t)
F008	plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(r,t)
F009	spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.	(r,t)
F010	quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.	(r,t)
F011	spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	(r,t)

\* HAZARD CODES (Column 3)

- t = toxic waste
- i = ignitable waste
- r = reactive waste
- h = acute hazardous waste

\*\* (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for f020 and f023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.

(continued)

**Table 3-2 (continued)**

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F012	quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process.	(t)
F019	wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process.	(t)
F020	wastes from use of tri-, or tetrachlorophenol, or intermediates used to produce its pesticide derivatives. **	(h)
F021	wastes of pentachlorophenol, or intermediates used to produce its derivatives. **	(h)
F022	wastes, of tetra-, penta-, or hexachlorobenzenes under alkaline conditions. **	(h)
F023	wastes, of tri and tetrachlorophenols. **	(t)
F024	wastes, including but not limited to distillation residues, heavy ends, tars and reactor cleanout wastes from the production of chlorinated aliphatic hydrocarbons, utilizing free radical catalyzed processes having carbon chain lengths from one to five. (Omits light ends, spent filters and filter aids, spent desiccants, wastewater, wastewater treatment sludges, spent catalysts and wastes listed in 40 CFR 261.32).	(t)
F025	condensed light ends, spent filters aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.	(t)

\* HAZARD CODES (Column 3)

- t = toxic waste
- i = ignitable waste
- r = reactive waste
- h = acute hazardous waste

\*\* (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for f020 and f023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.

(continued)

**Table 3-2 (continued)**

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F026	wastes of tetra-, penta-, or hexachlorobenzene under alkaline conditions.	(h)
F027	discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols (does not include hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component.	(h)
F028	residues from incineration or thermal treatment of soil contaminated with USEPA hazardous waste numbers F020, F021, F022, F023, F026 and F027.	(t)
F032	wastewaters (except those that have not come into contact with process contaminants), process residue, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use of have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with 261.35 and where the generator does not resume or initiate use of chlorophenolic formulations). This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.	(t)
F034	wastewaters (except those that have come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood perserving processes generated at plants that use cresote formulations. This listing does not include K001 bottom sludge from the treatment of wastewater from wood preserving processes that use creosote and or phentachlorophenol.	(t)

\* HAZARD CODES (Column 3)

- t = toxic waste
- i = ignitable waste
- r = reactive waste
- h = acute hazardous waste

\*\* (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for f020 and f023 does not include wastes from the production of Hexach' .ophene from highly purified 2,4,5-trichlorophenol.

(continued)

**Table 3-2 (continued)**

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F035	wastewaters (except those that have come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.	(t)
F037	petroleum refinery primary oil/water/solids separation sludge--Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refiners. This includes, but is not limited to, sludges generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow.	(t)

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\* HAZARD CODES (Column 3)

- t = toxic waste
- i = ignitable waste
- r = reactive waste
- h = acute hazardous waste

\*\* (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for f020 and f023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.

(continued)

**Table 3-2 (continued)**

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F037 (cont)	Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from noncontact once through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units*** (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing.	
F038	petroleum refinery secondary (emulsified) oil/water/solids separation sludge--Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries.	(t)

**\* HAZARD CODE**

- t = toxic waste
- i = ignitable waste
- r = reactive waste
- h = acute hazardous waste
- c = corrosive waste
- e = toxicity characteristic waste

**\* NOTE:** The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F034 or F035 listings. These stays will remain in effect until further administrative action is taken.

**\*\*** (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5- trichlorophenol.

**\*\*\*** Aggressive biological treatment units are defined as units which employ one of the following treatment methods: activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the units employs a minimum of 6hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; of (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the Toxicity Characteristic.

(continued)

**Table 3-2 (continued)**

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F038 (cont)	Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges and floats generated in aggressive biological treatment units*** (including sludges and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are not included in this listing.	
F039	leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than one restricted waste classified as hazardous under Subpart D.	

**\* HAZARD CODE**

- t = toxic waste
- i = ignitable waste
- r = reactive waste
- h = acute hazardous waste
- c = corrosive waste
- e = toxicity characteristic waste

\* NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F034 or F035 listings. These stays will remain in effect until further administrative action is taken.

\*\* (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5- trichlorophenol.

\*\*\* Aggressive biological treatment units are defined as units which employ one of the following treatment methods: activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the units employs a minimum of 6hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; of (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the Toxicity Characteristic.

(continued)

Table 3-2 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F039 (cont)	(Leachate resulting from the management of one or more of the following wastes and no other hazardous waste retains its hazardous waste number(s): F020, F021, F022, F023, F026, F027, and/or F028.)	
	<b>* HAZARD CODE</b>	
	t = toxic waste i = ignitable waste r = reactive waste h = acute hazardous waste c = corrosive waste e = toxicity characteristic waste	
	<b>* NOTE:</b> The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F034 or F035 listings. These stays will remain in effect until further administrative action is taken.	
	<b>**</b> (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5- trichlorophenol.	
	<b>***</b> Aggressive biological treatment units are defined as units which employ one of the following treatment methods: activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the units employs a minimum of 6hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; of (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the Toxicity Characteristic.	

(continued)

**Table 3-2 (continued)**

**Chart 2**  
**Hazardous Wastes from Organic and Inorganic Chemical Industries**  
**(40 CFR 261.30 through .31)**

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
<u>Organic Chemicals</u>		
K009	distillation bottoms from the production of acetaldehyde from ethylene.	(t)
K010	distillation side cuts from the production of acetaldehyde from ethylene.	(t)
K011	bottom stream from the wastewater stripper in the production of acrylonitrile.	(r,t)
K013	bottom stream from the acetonitrile column in the production of acrylonitrile.	(r,t)
K014	bottoms from the acetonitrile purification column in the production of acrylonitrile.	(t)
K015	still bottoms from the distillation of benzyl chloride.	(t)
K016	heavy ends or distillation residues from the production of carbon tetrachloride.	(t)
K017	heavy ends (still bottoms) from the purification column in the production of epichlorohydrin.	(t)
K018	heavy ends from fractionation in ethyl chloride production.	(t)
K019	heavy ends from the distillation of ethylene dichloride in ethylene dichloride production.	(t)
K020	heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production.	(t)
K021	aqueous spent antimony catalyst waste from fluoromethanes production.	(t)
K022	distillation bottom tars from the production of phenol/acetone from cumene.	(t)
K023	distillation light ends from the production of phthalic anhydride from naphthalene.	(t)
K024	distillation bottoms from the production of phthalic anhydride from naphthalene.	(t)
K025	distillation bottoms from the production of nitrobenzene by the nitration of benzene.	(t)
K026	stripping still tails from the production of methyl ethyl pyridines.	(t)

\* HAZARD CODES (Column 3)

r = reactive waste

t = toxic waste

(continued)



**Table 3-2 (continued)**

<b>Industry and USEPA Hazardous Waste Number</b>	<b>Hazardous Waste</b>	<b>Hazard Code*</b>
K027	centrifuge residue from toluene diisocyanate production.	(r,t)
K028	spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane.	(t)
K029	waste from the product stream stripper in the production of 1,1,1-trichloroethane.	(t)
K030	column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.	(t)
K083	distillation bottoms from aniline production.	(t)
K085	distillation of fractionation column bottoms from the production of chlorobenzene.	(t)
K103	process residues from aniline extraction from the production of aniline.	(t)
K104	combined wastewater streams generated from nitrobenzene or aniline production.	(t)
K105	separated aqueous stream from the reactor product washing step in the production of chlorobenzenes.	(t)
K107	Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid	(C,T)
K108	Condensed Column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	(I,T)
K109	Spent filter cartridges from product purification from production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	(T)
K110	Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	(T)
K093	distillation light ends from the production of phthalic anhydride from orthoxylene.	(t)
K094	distillation bottoms from the production of phthalic anhydride from orthoxylene.	(t)
K095	distillation bottoms from the production of 1,1,1-trichloroethane.	(t)
K096	heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane.	(t)
K111	product washwaters from the production of dinitrotoluene via nitration of toluene.	(c,t)

\* HAZARD CODES (Column 3)

r = reactive waste

t = toxic waste

(continued)

**Table 3-2 (continued)**

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
K112	reaction byproduct water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene.	(t)
K113	condensed liquid light ennation of dinitrotoluene.	(t)
K114	vicinals from the purification of toluenediamine in the production of toluenediamine.	(t)
K115	heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(t)
K116	organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine.	(t)
K117	wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene.	(t)
K118	spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(t)
K136	still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(t)
<u>Inorganic Chemicals</u>		
K071	brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.	(t)
K073	chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.	(t)
K106	wastewater treatment sludge from the mercury cell process in chlorine production.	(t)
<u>Hazardous Waste from Explosives Manufacturing</u>		
k044	wastewater treatment sludge from the manufacturing and processing of explosives.	(r)
k045	spent carbon from the treatment of wastewater containing explosives.	(r)
k046	wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds.	(t)
k047	pink/red water from TNT operations.	(t)
<p>* HAZARD CODES (Column 3)  r = reactive waste  t = toxic waste</p>		



**Table 3-3****Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Toxic Wastes****40 CFR 261.33**

(COMMENT: Primary hazardous properties of these materials have been indicated by the letter (t) toxicity, (r) reactivity, (i) ignitability, and (c) corrocivity; absence of a letter indicates that the compound is only listed for acute toxicity.)

<b>USEPA Hazardous Waste Number</b>	<b>Substance</b>
U001	acetaldehyde (i)
U034	acetaldehyde, trichloro-
U187	acetamide, N-(4-ethoxyphenyl)-
U005	acetamide, N-9H-fluoren-2-yl-
U240	acetic acid, (2,4-dichlorophenoxy)-, salts and esters
U112	acetic acid, ethyl ester (i)
U144	acetic acid, lead(2+) salt
U214	acetic acid, thallium(1+) salt
see F027	acetic acid, (2,4,5-trichlorophenoxy)-
U002	acetone (i)
U003	acetonitrile (i,t)
U004	acetophenone
U005	2-acetylaminoflourene
U006	acetyl chloride (c, r, t)
U007	acrylamide
U008	acrylic acid (i)
U009	acrylonitrile
U011	amitrole
U012	aniline (i, t)
U136	arsenic acid, dimethyl-
U014	auramine
U015	azaserine

(continued)

**Table 3-3 (continued)**

USEPA Hazardous Waste Number	Substance
U010	azirino(2,3,3,4(pyrrolo(1,2-a)indole -4,7-dione, 6-amino-8-(((aminocarbonyl)oxy)methyl)-1,1a,2,8,8a,8b- hexahydro-8a-methoxy-5-methyl-,
U157	benz[j]aceanthrylene, 1,2-dihydro-3- methyl-
U016	benza[c]ridine
U017	benzal chloride
U192	benzamide, 3,5-dichloro-n- (1,1-diethyl-2-propynyl-
U018	benz[a]anthracene
U094	1,2-benzanthracene, 7,12-dimethyl-
U012	benzenamine (i,t)
U014	benzenamine, 4,4-carbonimidoylbis(N,N-dimethyl-
U049	benzenamine, 4-chloro-2-methyl-,hydrochloride
U093	benzenamine, N,N-dimethyl-4-(phenylazo)-
U328	benzenamine, 2-methyl-
U353	benzenamine, 4-methyl-
U158	benzenamine, 4,4-methylenebis(2-chloro-
U222	benzenamine, 2-methyl-, hydrochloride
U181	benzenamine, 2,-methyl-5-nitro
U019	benzene (i, t)
U038	benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy, ethyl ester
U030	benzene, 1-bromo-4-phenoxy-
U035	benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-
U037	benzene, chloro-
U221	benzenediamine, ar-methyl-
U028	1,2-benzendicarboxylic acid, [bis(2-ethyl-hexyl)]ester
U069	1,2-benzenedicarboxylic acid, dibutyl ester
U088	1,2-benzenedicarboxylic acid, diethyl ester
U102	1,2-benzendicarboxylic acid, dimethyl ester
U107	1,2-benzenedicarboxylic acid, dioctyl ester
U070	benzene, 1,2-dichloro-

(continued)

**Table 3-3 (continued)**

<b>USEPA Hazardous Waste Number</b>	<b>Substance</b>
U071	benzene, 1,3-dichloro-
U072	benzene, 1,4-dichloro-
U060	benzene, 1,1'-(2,2-dichloroethylidene) bis[4-chloro-
U017	benzene, (dichloromethyl)-
U223	benzene, 1,3-diisocyanatomethyl- (r,t)
U239	benzene, dimethyl-(i,t)
U201	1,3-benzenediol
U127	benzene, hexachloro-
U056	benzene, hexahydro- (i)
U220	benzene, methyl-
U105	benzene, 1-methyl-2,4-dinitro-
U106	benzene, 2-methyl-1,3-dinitro-
U055	benzene, (1-methylethyl)-(i)
U169	benzene, nitro- (i,t)
U183	Benzene, pentachloro-
U185	benzene, pentachloronitro-
U020	benzenesulfonic acid chloride (c,r)
U020	benzenesulfonyl chloride (c,r)
U207	benzene, 1,2,4,5-tetrachloro-
U061	benzene, 1,1'-(2,2,2-trichloroethylidene) bis[4-chloro-
U247	benzene, 1,1'-(2,2,2-trichloroethylidene)[4-methoxy-
U023	benzene, (trichloromethyl)-
U234	benzene, 1,3,5-trinitro-
U021	benzidine
U202	1,2-benzisothiazolin-3-one, 1,1-dioxide and salts
U203	1,3-benzodioxole, 5-(2-propenyl)-
U141	1,3-benzodioxole, 5-(1-propenyl)-
U090	1,3-benzodioxole, 5-propyl-
U064	benzo[rs]t]pentaphene
U248	2-H-1-benzopyran-2-on-2, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, and salts, when present at concentrations of 0.3% or less

(continued)

**Table 3-3 (continued)**

<b>USEPA Hazardous Waste Number</b>	<b>Substance</b>
U022	benzo[a]pyrene
U197	p-benzoquinone
U023	benzotrichloride (c,r,t)
U085	2,2-bioxirane (i,t)
U021	(1,1-biphenyl)-4,4-diamine
U073	(1,1-biphenyl)-4,4-diamine, 3,3-dichloro
U091	(1,1-biphenyl)-4,4-diamine, 3,3- dimethoxy-
U095	(1,1-biphenyl)4,4-diamine, 3,3- dimethyl-
U225	bromoform
U030	4-bromophenyl phenyl ether
U128	1,3-butadiene, 1,1,2,3,4,4- hexachloro
U172	1-butanamine, N-butyl-N-nitroso-
U031	1-butanol (i)
U159	2-butanone (i,t)
U160	2-butanone peroxide (r,t)
U053	2-butenal
U074	2-butene, 1,4-dichloro- (i,t)
U143	2-butenic acid, 2-methyl-, 7- [(2,3-dihydroxy-2-(1-methoxy-ethyl) -3-methyl-1-oxobutoxy)methyl] -2,3,5,7s-yrtyshyfto-1-pyrrolizin-1-yl ester, [1S-[alpha(Z),7(2S,3R), 7alpha]]-
U031	n-Butyl alcohol (i)
U136	cacodylic acid
U032	calcium chromate
U238	carbamic acid, ethyl ester
U178	carbamic acid, methylnitroso- ethyl ester
U097	carbamic chloride, dimethyl-
U114	carbamdithioic acid, 1,2- ethanediybis-, salts and esters
U062	carbamothioic acid, bis(1-methylethyl)-S- (2,3-dichloro-2-propenyl) ester
U215	carbonic acid, dithallium(1+)salt
U033	carbonic difluoride

(continued)

**Table 3-3 (continued)**

<b>USEPA Hazardous Waste Number</b>	<b>Substance</b>
U156	carbonochlorodic acid, methyl ester (i,t)
U033	carbon oxyfluoride (r,t)
U211	carbon tetrachloride
U034	chloral
U035	chlorambucil
U036	chlordane, alpha and gamma isomers
U026	chlomaphazine
U037	chlorobenzene
U039	p-chloro-m-cresol
U041	1-chloro-2,3-epoxypropane
U042	2-chloroethyl vinyl ether
U044	chloroform
U046	chloromethyl methyl ether
U047	beta-chloronaphthalene
U048	o-chlorophenol
U049	4-chloro-o-toluidine, hydrochloride
U032	chromic acid H <sub>2</sub> CrO <sub>4</sub> , calcium salt
U050	chrysene
U051	creosote
U052	cresols (cresylic acid)
U053	crotonaldehyde
U055	cumene (i)
U246	cyanogen bromide
U197	2,5-cyclohexadiene-1, 4-dione
U056	cyclohexane (i)
U129	cyclohexane 1,2,3,4,5,6- hexachloro-, (1alpha, 2alpha, 3beta, 4alpha, 6beta)-
U057	cyclohexanone (i)
U130	1,3-cyclopentadiene, 1,2,3,4,5,5- hexachloro-
U058	cyclophosphamide
U240	2,4-d, salts and esters

(continued)



**Table 3-3 (continued)**

<b>USEPA Hazardous Waste Number</b>	<b>Substance</b>
U059	daunomycin
U060	ddd
U061	ddt
U062	diallate
U063	dibenz[a,h]anthracene
U064	dibenzo[a,i]pyrene
U066	1,2-dibromo-3-chloropropane
U069	dibutyl phthalate
U070	o-Dichlorobenzene
U071	m-Dichlorobenzene
U072	p-Dichlorobenzene
U073	3,3'-dichlorobenzidine
U074	1,4-dichloro-2-butene (i,t)
U075	dichlorodifluoromethane
U078	1,1-dichloroethylene
U079	1,2-dichloroethylene
U025	dichloroethyl ether
U027	dichloroisopropyl ether
U024	dichloromethoxy ethane
U081	2,4-dichlorophenol
U082	2,6-dichlorophenol
U084	1,3-dichloropropene
U085	1,2:3,4-diepoxybutane (i, t)
U108	1,4-diethyleneoxide
U028	diethylhexyl phthalate
U086	N,N-diethylhydrazine
U087	O,O-diethyl-s-methyl dithiophosphate
U088	diethyl phthalate
U089	diethylstilbestrol
U090	dihydrosafrole

(continued)

**Table 3-3 (continued)**

<b>USEPA Hazardous Waste Number</b>	<b>Substance</b>
U091	3,3'-dimethoxybenzidine
U092	dimethylamine (i)
U093	dimethylaminoazobenzene
U094	7,12-dimethylbenz[a]anthracene
U095	3,3-dimethylbenzidine
U096	alpha, alpha-dimethylbenzylhydroperoxide (r)
U097	dimethylcarbamoyl chloride
U098	1,1-dimethylhydrazine
U099	1,2-dimethylhydrazine
U101	2,4-dimethylphenol
U102	dimethyl phthalate
U103	dimethyl sulfate
U105	2,4-dinitrotoluene
U106	2,6-dinitrotoluene
U107	di-n-octyl phthalate
U108	1,4-dioxane
U109	1,2-diphenylhydrazine
U110	dipropylamine (i)
U111	di-n-propylnitrosamine
U041	epichlorhydrin
U001	ethanal (i)
U174	ethanamine, N-ethyl-N-nitroso-
U155	1,2-ethanediamine, n,n- dimethyl-n'-2-pyridinyl- n'-(2-thienylmethyl)-
U067	ethane, 1,2-dibromo-
U076	ethane, 1,1-dichloro-
U077	ethane, 1,2-dichloro-
U131	ethane, hexachloro-
U024	ethane, 1,1-[methylenebis(oxy)] bis[2-chloro-
U117	ethane, 1,1-oxybis- (i)
U025	ethane 1,1-oxybis[2-chloro-

(continued)

**Table 3-3 (continued)**

<b>USEPA Hazardous Waste Number</b>	<b>Substance</b>
U184	ethane, pentachloro-
U208	ethane, 1,1,1,2-tetrachloro-
U209	ethane, 1,1,2,2-tetrachloro-
U218	ethanethioamide
U359	ethane, 1,1,2-trichloro-
U173	ethanol, 2,2'-(nitrosoimino)bis-
U004	ethanone, 1-phenyl-
U043	ethene, chloro-
U042	ethene, (2-chloroethoxy-)
U078	ethene, 1,1-dichloro-
U079	ethene, 1,2-dichloro- (e)
U210	ethene, tetrachloro-
U228	ethene, trichloro
U112	ethyl acetate (i)
U113	ethyl acrylate (i)
U238	ethyl carbamate (urethane)
U117	ethyl ether (i)
U114	ethylenebisdithiocarbamic acid, salts and esters
U067	ethylene dibromide
U077	ethylene dichloride
U359	ethylene glycol monoethyl ether
U115	ethylene oxide (i,t)
U116	ethylenethiourea
U076	ethylidene dichloride
U118	ethyl methacrylate
U119	ethyl methanesulfonate
U120	fluoranthene
U122	formaldehyde
U123	formic acid (c,t)
U124	furan (i)

(continued)

**Table 3-3 (continued)**

<b>USEPA Hazardous Waste Number</b>	<b>Substance</b>
U125	2-furancarboxaldehyde (i)
U147	2,5-furandione
U213	furan, tetrahydro- (i)
U125	furfural (i)
U124	furfuran (i)
U206	glucopyranose, 2-deoxy-2 (3-methyl-3-nitroso-ureido)-
U126	glycidylaldehyde
U163	guanidine, N-methyl-N'-nitro- N-nitroso-
U127	hexachlorobenzene
U128	hexachlorobutadiene
U130	hexachlorocyclopentadiene
U131	hexachloroethane
U132	hexachlorophene
U243	hexachloropropene
U133	hydrazine (r,t)
U086	hydrazine, 1,2-diethyl-
U098	hydrazine, 1,1-dimethyl-
U099	hydrazine, 1,2-dimethyl-
U109	hydrazine, 1,2-diphenyl-
U134	hydrofluoric acid (c,t)
U134	hydrogen fluoride (c,t)
U135	hydrogen sulfide
U096	hydroperoxide, 1-methyl-1-phenylethyl- (r)
U116	2-imidazolidinethione
U137	indeno(1,2,3-cd)pyrene
U190	1,3-isobenzofurandione
U140	isobutyl alcohol (i,t)
U141	isosafole
U142	kepone
U143	lasiocarpine

(continued)

Table 3-3 (continued)

USEPA Hazardous Waste Number	Substance
U144	lead acetate
U146	lead, bis(acetato-O) tetrahydroxytri-
U145	lead phosphate
U146	lead subacetate
U129	lindane
U163	mngg
U147	maleic anhydride
U148	maleic hydrazide
U149	malononitrile
U150	melphalan
U151	mercury
U152	methacrylonitrile (i,t)
U092	methanamine (N-methyl- (i)
U029	methane, bromo-
U045	methane, chloro- (i,t)
U046	methane, chloromethoxy-
U068	methane, dibromo-
U080	methane, dichloro-
U075	methane, dichlorodifluoro-
U138	methane, iodo-
U119	methanesulfonic acid, ethyl ester
U211	methane, tetrachloro-
U153	methanethiol (i,t)
U225	methane, tribromo-
U044	methane, trichloro-
U121	methane, trichlorofluoro-
U154	methanol (i)
U155	methapyrilene
U142	1,3,4-metheno-2H- cyclobuta[cd]pentalen-2-one- 1,1a,3,3a,4,5,5a,5b,6- decachlorooctahydro-
U247	methoxychlor

(continued)

**Table 3-3 (continued)**

USEPA Hazardous Waste Number	Substance
U154	methyl alcohol (i)
U029	methyl bromide
U186	1-methylbutadiene (i)
U045	methyl chloride (i,t)
U156	methyl chlorocarbonate (i,t)
U226	methyl chloroform
U157	3-methylcholanthrene
U158	4,4-methylenebis-(2-chloroaniline)
U068	methylene bromide
U080	methylene chloride
U159	methyl ethyl ketone (mek) (i,t)
U160	methyl ethyl ketone peroxide (r,t)
U138	methyl iodide
U161	methyl isobutyl ketone (i)
U162	methyl methacrylate (i,t)
U161	4-methyl-2-pentanone (i)
U164	methylthiouracil
U010	mitomycin C
U059	5,12-Naphthacenedione, (Bs(cis)8- acetyl-10-[(3-amino-2,3,6-trideoxy- alpha-L-lyxo-hexopyranosyl)oxyl]- 7-8,9,10-tetrahydro-6,8,11- trihydroxy-1-methoxy-
U167	1-naphthalenamine
U168	2-naphthalenamine
U026	naphthalenamine, N,N'-bis (2-chloroethyl)-
U165	naphthalene
U047	naphthalene, 2-chloro-
U166	1,4-naphthalenedione
U236	2,7-naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl-(1,1'-biphenyl)- bis(azo)bis(5-amino-4-hydroxy)-, tetrasodium salt
U166	1,4-Naphthoquinone
U167	alpha-naphthylamine

(continued)

**USEPA Hazardous  
Waste Number****Substance**

U168	beta-naphthylamine
U217	nitric acid, thallium(1+) salt (2-chloromethyl)-
U169	nitrobenzene (i,t)
U170	p-nitrophenol
U171	2-nitropropane (i)
U172	n-nitrosodi-n-butylamine
U173	n-nitrosodiethanolamine
U174	n-nitrosodiethylamine
U176	n-nitroso-n-ethylurea
U177	n-nitroso-n-methylurea
U178	n-nitroso-n-methylurethane
U179	n-nitrosopiperidine
U180	n-nitrosopyrrolidine
U181	5-nitro-o-toluidine
U193	1,2-oxathiolane, 2,2-dioxide
U058	2H-1,3,2-Oxazaphosphorine,2[bis(2-chloroethyl)amino]tetrahydro-, 2-oxide.
U115	oxirane (i,t)
U126	oxiranecarboxyaldehyde
U041	oxirane, 2-(chloromethyl)-
U182	paraldehyde
U183	pentachlorobenzene
U184	pentachloroethane
U185	pentachloronitrobenzene
see F027	pentachlorophenol
U161	pentanol, 4-methyl-
U186	1,3-pentadiene (i)
U187	phenacetin
U188	phenol
U048	phenol, 2-chloro-
U039	phenol, 4-chloro-3-methyl-

(continued)

**Table 3-3 (continued)**

USEPA Hazardous Waste Number	Substance
U081	phenol, 2,4-dichloro-
U082	phenol, 2,6-dichloro-
U089	phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-,
U101	phenol, 2,4-dimethyl-
U052	phenol, methyl
U132	phenol, 2,2'-methylenebis [3,4,6-trichloro-
U170	phenol, 4-nitro-
see F027	phenol, pentachloro-
see F027	phenol, 2,3,4,6-tetrachloro-
see F027	phenol, 2,4,5-trichloro-
see F027	phenol, 2,4,6-trichloro-
U150	l-phenylalanine (2-chloroethyl)amino]-
U145	phosphoric acid salt
U087	phosphorodithioic acid, O,O-diethyl S-methyl ester
U189	phosphorus sulfide (r)
U190	phthalic anhydride
U191	2-picoline
U179	piperidine, 1-nitroso-
U192	pronamide
U194	1-propanamine (i,t)
U111	1-propanamine, n-nitroso-n-propyl-
U110	1-propanamine, n-propyl- (i)
U066	propane, 1,2-dibromo-3-chloro-
U083	propane, 1,2-dichloro-
U149	propanedinitrile
U171	propane, 2-nitro- (i,t)
U027	propane, 2,2-oxybis[2-chloro-
U193	1,3-propane sultone
see F027	propanoic acid, 2-(2,4,5-trichlorophenoxy)-
U235	1-propanol, 2,3-dibromo-, phosphate (3:1)

(continued)



**Table 3-3 (continued)**

USEPA Hazardous Waste Number	Substance
U140	1-propanol, 2-methyl- (i,t)
U002	2-propanone (i)
U007	2-propenamide
U084	1-propene, 1,3-dichloro-
U243	1-propene, 1,1,2,3,3,3-hexachloro-
U009	2-propenenitrile
U152	2-propanenitrile, 2-methyl- (i,t)
U008	2-propenoic acid (i)
U113	2-propenic acid, ethyl ester (i)
U118	2-propenoic acid, 2-methyl-, ethyl ester
U162	2-propenoic acid, 2-methyl-, methyl ester (i,t)
U194	n-propylamine (i,t)
U083	propylene dichloride
U148	3,6-pyridazinedione, 1,2-dihydro-
U196	pyridine
U191	pyridine, 2-methyl-
U237	2,4(1H,3H)-pyrimidinedione, 5-[bis(2-chloroethyl)amino]-
U164	4(1H)-pyrimidinone, 2,3-dihydro-6-methyl 2-thioxo-
U180	pyrrolidine, 1-nitroso--
U200	reserpine
U201	resorcinol
U202	saccharin and salts
U203	safrole
U204	selenious acid
U204	selenium dioxide
U205	selenium sulfide
U205	selenium sulfide SeS2 (r,t)
U015	l-serine, diazoacetate (ester)
see F027	silvex (2,4,5-tp)
U206	streptozotocin

(continued)

**Table 3-3 (continued)**

<b>USEPA Hazardous Waste Number</b>	<b>Substance</b>
U103	sulfuric acid, dimethyl ester
U189	sulfur phosphide (r)
U232	2,4,5-T
U207	1,2,4,5-tetrachlorobenzene
U208	1,1,1,2-tetrachloroethane
U209	1,1,2,2-tetrachloroethane
U210	tetrachloroethylene
see F027	2,3,4,6-tetrachlorophenol
U213	tetrahydrofuran (i)
U214	thallium (i) acetate
U215	thallium (i) carbonate
U216	thallium chloride
U216	thallium chloride TlCl
U217	thallium (i) nitrate
U218	thioacetamide
U153	thiomethanol (i,t)
U244	thioperoxydicarbonic diamide, tetramethyl-
U219	thiourea
U244	thiuram
U220	toluene
U221	toluenediamine
U223	toluene diisocyanate (r,t)
U328	o-toluidine
U353	p-toluidine
U222	o-toluidine hydrochloride
U011	1H-1,2,4-triazol-3-amine
U227	1,1,2-trichloroethane
U228	trichloroethylene
U121	trichloromonofluoromethane
U230	2,4,5-trichlorophenol

(continued)

**Table 3-3 (continued)**

<b>USEPA Hazardous Waste Number</b>	<b>Substance</b>
U231	2,4,6-trichlorophenol
U234	1,3,5-trinitrobenzene (r,t)
U182	1,3,5-trioxane, 2,4,6-trimethyl-
U235	tris(2,3-dibromopropyl)phosphate
U236	trypan blue
U237	uracil mustard
U176	urea, n-ethyl-n-nitroso-
U177	urea, n-methyl-n-nitroso-
U043	vinyl chloride
U248	Warfarin, when present at concentrations of .3% or less
U239	xylene (i)
U200	yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxy-benzoyl)oxy], methyl ester
U249	Zinc phosphide, when present at concentrations of 10% or less.

Table 3-4

**Toxicity Characteristics Constituents and Regulatory Levels  
(40 CFR 261.24)**

USEPA HW No.	Constituent	CAS No	Chronic toxicity reference level	Regulatory level (mg/L)
D004	Arsenic	7440-38-2	0.05	5.0
D005	Barium	7440-39-3	1.0	100.0
D018	Benzene	71-43-2	0.005	0.5
D006	Cadmium	7440-43-9	0.01	1.0
D019	Carbon tetrachloride	56-23-5	0.005	0.5
D020	Chlordane	57-74-9	0.0003	0.03
D021	Chlorobenzene	108-90-7	1	100.0
D022	Chloroform	67-66-3	0.06	6.0
D007	Chromium	7440-47-3	0.05	5.0
D023	o-Cresol	95-48-7	2	200.0 <sup>1</sup>
D024	m-Cresol	108-39-4	2	200.0 <sup>1</sup>
D025	p-Cresol	106-44-5	2	200.0 <sup>1</sup>
D026	Cresol		2	200.0 <sup>1</sup>
D016	2,4-D	94-75-7	0.1	10.0
D027	1,4-Dichlorobenzene	106-46-7	0.075	7.5
D028	1,2-Dichloroethane	107-06-2	0.005	0.5
D029	1,1-Dichloroethylene	75-35-4	0.007	0.7
D030	2,4-Dinitrotoluene	121-14-2	0.0005	0.13 <sup>2</sup>
D012	Endrin	72-20-8	0.0002	0.02
D031	Heptachlor (and its hydroxide)	76-44-8	0.00008	0.008
D032	Hexachlorobenzene	118-74-1	0.0002	0.13 <sup>2</sup>
D033	Hexachloro-1,3-butadiene	87-68	3	0.005
D034	Hexachloroethane	67-72-1	0.03	3.0
D008	Lead	7439-92-1	0.05	5.0
D013	Lindane	58-89-9	0.004	0.4
D009	Mercury	7439-97-6	0.002	0.2
D014	Methoxychlor	72-43-5	0.1	10.0
D035	Methyl ethyl ketone	78-93-3	2	200.0
D036	Nitrobenzene	98-95-3	0.02	2.0
D037	Pentachlorophenol	87-86-5	1	100.0
D038	Pyridine	110-86-1	0.04	5.0 <sup>2</sup>
D010	Selenium	7782-49-2	0.01	1.0
D011	Silver	7440-22-4	0.05	5.0
D039	Tetrachloroethylene	127-18-4	0.007	0.7
D015	Toxaphene	8001-35-2	0.005	0.5
D040	Trichloroethylene	79-01-6	0.005	0.5
D041	2,4,5-Trichlorophenol	95-95-4	4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	0.02	2.0
D017	2,4,5-TP (Silvex)	93-72-1	0.01	1.0
D043	Vinyl chloride	75-01-4	0.002	0.2

<sup>1</sup> If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used.

<sup>2</sup> Quantitation limit is greater than the calculated regulatory level. Therefore, the quantitation limit becomes the regulatory level.



Table 3-5

Identification of Hazardous Wastes Hazardous Constituents  
(40 CFR 261, Appendix VIII)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Acetonitrile.....	Same .....	75-05-8	U003
Acetophenone.....	Ethanone, 1-phenyl-.....	98-86-2	U004
2-Acetylaminefluorone .....	Acetamide, N-9H-fluoren-2-yl .....	53-96-3	U005
Acetyl chloride.....	Same .....	75-36-5	U006
1-Acetyl-2-thiourea .....	Acetamide, N-(aminothioxomethyl)- .....	591-08-2	P002
Acrolein.....	2-Propenal.....	107-02-8	P003
Acrylamide.....	2-Propenamamide.....	79-06-1	U007
Acrylonitrile .....	2-Propenenitrile .....	107-13-1	U009
Aflatoxins .....	Same .....	1402-68-2	.....
Aldicarb.....	Propanal, 2-methyl-2-(methylthio)-, O- [(methylamino)carbonyl]oxime.	116-06-3	P070
Aldrin .....	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10- hexachloro- 1,4,4a,5,8,8a-hexahydro-, (1 alpha, 4alpha, 4abeta, 5alpha, 8alpha, 8abeta)-.	309-00-2	P004
Allyl alcohol.....	2-Propen-1-ol.....	107-18-6	P005
Allyl chloride .....	1-Propane, 3-chloro .....	107-18-6	.....
Aluminum phosphide.....	Same .....	20859-73-8	P006
4-Aminobiphenyl .....	[1,1'-Biphenyl]-4-amine.....	92-67-1	.....
5-(Aminomethyl)-3-isoxazolol .....	3(2H)-Isoxazolone, 5-(aminomethyl)-.....	2763-96-4	P007
4-Aminopyridine .....	4-Pyridinamine .....	504-24-5	P008
Amitrole .....	1H-1,2,4-Triazol-3-amine .....	61-82-5	U011
Ammonium vanadate .....	Vanadic acid, ammonium salt.....	7803-55-6	P119
Aniline.....	Benzenzmine.....	62-53-3	U012
Antimony.....	Same .....	7440-36-0	.....
Antimony compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Aramite.....	Sulfurous acid, 2-chloroethyl 2-[4-(1,1- dimethylethyl)phenoxy]-1-methylethyl ester.	140-57-8	.....
Arsenic .....	Same .....	7440-38-2	.....
Arsenic compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Arsenic acid.....	Arsenic acid H <sub>3</sub> AsO <sub>4</sub> .....	7778-39-4	P010
Arsenic pentoxide.....	Arsenic oxide As <sub>2</sub> O <sub>5</sub> .....	1303-28-2	P011
Arsenic trioxide.....	Arsenic oxide As <sub>2</sub> O <sub>3</sub> .....	1327-53-3	P012
Auramine.....	Benzenamine, 4,4'-carbonimidoylbis[N,N-dime- thyl.	492-80-8	.....
Azaserine.....	L-Serine, diazoacetate (ester) .....	115-02-6	U015
Barium.....	Same .....	7440-39-3	.....
Barium compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Barium cyanide .....	Same .....	542-62-1	P013
Benz[c]acridine .....	Same .....	225-51-4	U016

(continued)

Table 3-5 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Benz[a]anthracene.....	Same .....	56-55-3	U018
Benzal chloride.....	Benzene, (dichloromethyl)- .....	98-87-3	U017
Benzene.....	Same .....	71-43-2	U019
Benzene arsonic acid.....	Arsonic acid, phenyl-.....	98-05-5	.....
Benzidine.....	[1,1'-Biphenyl]-4,4 <sup>1</sup> -diamine.....	92-87-5	U021
Benzo[b]fluoranthene.....	Benz[e]acephenanthrylene.....	205-99-2	.....
Benzo[j]fluoranthene.....	Same .....	205-82-3	.....
Benzo[k]fluoranthene.....	Same .....	207-08-9	.....
Benzo[a]pyrene.....	Same .....	50-32-8	U022
p-Benzoquinone.....	2,5-Cyclohexadiene-1,4-dione.....	106-51-4	U197
Benzotrichloride.....	Benzene, (trichloromethyl)-.....	98-07-7	U023
Benzyl chloride.....	Benzene, (chloromethyl)-.....	100-44-7	P028
Beryllium.....	Same .....	7440-41-7	P015
Beryllium compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Bromoacetone.....	2-Propanone, 1-bromo-.....	598-31-2	P017
Bromoform.....	Methane, tribromo-.....	75-25-2	U225
4-Bromophenyl phenyl ether.....	Benzene, 1-bromo-4phenoxy-.....	101-55-3	U030
Brucine.....	Strychnidin-10-one, 2,3-dimethoxy-.....	357-57-3	P018
Butyl benzyl phthalate.....	1,2-Benzenedicarboxylic acid, butyl phenyl-methyl ester.	85-68-7	.....
Cacodylic acid.....	Arsinic acid, dimethyl-.....	75-60-5	U136
Cadmium.....	Same .....	7440-43-9	.....
Cadmium compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Calcium chromate.....	Chromic acid H <sub>2</sub> CrO <sub>4</sub> , calcium salt.....	13765-19-0	U032
Calcium cyanide.....	Calcium cyanide Ca(CN) <sub>2</sub> .....	592-0108	P021
Carbon disulfide.....	Same .....	75-15-0	P022
Carbon oxyfluoride.....	Carbonic difluoride.....	353-50-4	U033
Carbon tetrachloride.....	Methane, tetrachloro-.....	56-23-5	U211
Chloral.....	Acetaldehyde, trichloro-.....	75-87-6	U034
Chlorambucil.....	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-.	305-03-3	U035
Chlordane.....	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-.	57-74-9	U036
Chlordane (alpha and gamma isomers).....	.....	.....	.....
Chlorinated benzenes, N.O.S. <sup>1</sup> .....	.....	.....	.....
Chlorinated ethane, N.O.S. <sup>1</sup> .....	.....	.....	.....
Chlorinated fluorocarbons, N.O.S. <sup>1</sup> .....	.....	.....	.....
Chlorinated naphthalene, N.O.S. <sup>1</sup> .....	.....	.....	.....
Chlorinated phenol, N.O.S. <sup>1</sup> .....	.....	.....	.....
Chlomaphazin.....	Naphthalenamine, N,N'-bis(2-chloroethyl)-.....	494-03-1	U026
Chloroacetaldehyde.....	Acetaldehyde, chloro-.....	107-20-0	P023
Chloroalkyl ethers, N.O.S. <sup>1</sup> .....	.....	.....	.....
p-Chloroaniline.....	Benzenamine, 4-chloro-.....	106-47-8	P024
Chlorobenzene.....	Benzene, chloro-.....	108-90-7	U037
Chlorobenzilate.....	Benzenoacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester.	510-15-6	U038

(continued)

Table 3-5 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
p-Chloro-m-cresol.....	Phenol, 4-chloro-3-methyl.....	59-50-7	U039
2-Chloroethyl vinyl ether.....	Ethene, (2-chloroethoxy)-.....	110-75-8	U042
Chloroform.....	Methane, trichloro-.....	67-66-3	U044
Chloromethyl methyl ether.....	Methane, chloromethoxy-.....	107-30-2	U046
beta-Chloronaphthalene.....	Naphthalene, 2-chloro.....	91-58-7	U047
o-Chlorophenol.....	Phenol, 2-chloro.....	95-57-8	U048
1-(o-Chlorophenyl)thiourea.....	Thiourea, (2-chlorophenyl)-.....	5344-82-1	P026
Chloroprene.....	1,3-Butadiene, 2-chloro.....	126-99-8	.....
3-Chloropropionitrile.....	Propanenitrile, 3-chloro.....	542-76-7	P027
Chromium.....	Same.....	7440-47-3	.....
Chromium compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Chrysene.....	Same.....	218-01-9	U050
Citrus red No. 2.....	2-Naphthalenol, 1-[(2,5-dimethoxyphenyl)azo]-.....	6358-53-8	.....
Coal tar creosote.....	Same.....	8007-45-2	.....
Copper cyanide.....	Copper cyanide CuCN.....	544-92-3	P029
Creosote.....	Same.....	.....	U051
Cresol (Cresylic acid).....	Phenol, methyl-.....	1319-77-3	U052
Crotonaldehyde.....	2-Butenal.....	4170-30-3	U053
Cyanides (soluble salts and complexes) N.O.S. <sup>1</sup>	.....	.....	P030
Cyanogen.....	Ethanedinitrile.....	460-19-5	P031
Cyanogen bromide.....	Cyanogen bromide (CN)Br.....	506-68-3	U246
Cyanogen chloride.....	Cyanogen chloride (CN)Cl.....	506-77-4	P033
Cycasin.....	beta-D-Glucopyranoside, (methyl-ONN-azoxy)methyl.....	14901-08-7	.....
2-Cyclohexyl-4,6-dinitrophenol.....	Phenol, 2-cyclohexyl-4,6-dinitro.....	131-89-5	P034
Cyclophosphamide.....	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide.....	50-18-0	U058
2,4-D.....	Acetic acid, (2,4-dichlorophenoxy)-.....	94-75-7	U240
2,4-D, salts, esters.....	.....	.....	U240
Daunomycin.....	5,12-Naphthacenedione, 8-acetyl-10-[(3-amino-2,3,6-trideoxy-alpha-L-lyxohexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-.....	20830-81-3	U059
DDD.....	Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-.....	72-54-8	U060
DDE.....	Benzene, 1,1'-(dichloroethenylidene)bis[4-chloro-.....	72-55-9	.....
DDT.....	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-.....	50-29-3	U061
Diallate.....	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester.....	2303-16-4	U062
Dibenz[a,h]acridine.....	Same.....	226-36-8	.....
Dibenz[a,j]acridine.....	Same.....	224-42-0	.....
Dibenz[a,h]anthracene.....	Same.....	53-70-3	U063
7H-Dibenzo[c,g]carbazole.....	Same.....	194-59-2	.....
Dibenzo[a,e]pyrene.....	Naphtho[1,2,3,4-def]chrysene.....	192-65-4	.....
Dibenzo[a,h]pyrene.....	Dibenzo[b,dif]chrysene.....	189-64-0	.....

(continued)



Table 3-5 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Dibenzo[a,i]pyrene .....	Benzo[ <i>rst</i> ]pentaphene .....	189-55-9	U064
1,2-Dibromo-3-chloropropane .....	Propane, 1,2-dibromo-3-chloro- .....	96-12-8	U066
Dibutyl phthalate .....	1,2-Benzenedicarboxylic acid, dibutyl ester	84-74-2	U069
o-Dichlorobenzene .....	Benzene, 1,2-dichloro-.....	95-50-1	U070
m-Dichlorobenzene .....	Benzene, 1,3-dichloro-.....	541-73-1	U071
p-Dichlorobenzene .....	Benzene, 1,4-dichloro-.....	106-46-7	U072
Dichlorobenzene, N.O.S. <sup>1</sup> .....	Benzene, dichloro-.....	25321-22-6	.....
3,3'-Dichlorobenzidine .....	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-	91-94-1	U073
1,4-Dichloro-2-butene .....	2-Butene, 1,4-dichloro .....	764-41-0	U074
Dichlorodifluoromethane .....	Methane, dichlorodifluoro- .....	75-71-8	U075
Dichloroethylene, N.O.S. <sup>1</sup> .....	Dichloroethylene.....	25323-30-2	.....
1,1-Dichloroethylene .....	Ethene, 1,1-dichloro.....	75-35-4	U078
1,2-Dichloroethylene .....	Ethene, 1,2-dichloro-, (E).....	156-60-5	U079
Dichloroethyl ether .....	Ethane, 1,1'-oxybis(2-chloro-.....	111-44-4	U025
Dichloroisopropyl ether .....	Propane, 2,2'-oxybis(2-chloro.....	108-60-1	U027
Dichloromethoxy ethane .....	Ethane, 1,1'-[methylenebis(oxy)bix(2-chloro-	111-91-1	U024
Dichloromethyl ether .....	Methane, oxybis(chloro-.....	542-88-1	P016
2,4-Dichlorophenol .....	Phenol, 2,4-dichloro- .....	120-83-2	U081
2,6-Dichlorophenol .....	Phenol, 1,6-dichloro- .....	87-65-0	U082
Dichlorophenylarsine .....	Arsonous dichloride, phenyl-.....	696-28-6	P036
Dichloropropane, N.O.S. <sup>1</sup> .....	Propane, dichloro-.....	26638-19-7	.....
Dichloropropanol, N.O.S. <sup>1</sup> .....	Propanol, dichloro- .....	26545-73-3	.....
Dichloropropene, N.O.S. <sup>1</sup> .....	1-Propene, dichloro- .....	26952-23-8	.....
1,3-Dichloropropene .....	1-Propene, 1,3-dichloro-.....	542-75-6	U084
Dieldrin .....	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a- octahydro-, (1alpha,2beta,2alpha,3beta,6beta, 6alpha,7beta,7alpha)-.	60-57-1	P037
1,2:3,4-Diepoxybutane .....	2,2'-Bioxirane.....	1464-53-5	U085
Diethylarsine .....	Arsine, diethyl- .....	692-42-2	P038
1,4-Diethyleneoxide .....	1,4Dioxane.....	123-91-1	U108
Diethylhexyl phthalate .....	1,2-Benzenedicarboxylic acid, bis(2-ethyl-hexyl) ester.	117-81-7	U028
N,N'-Diethylhydrazine .....	Hydrazine, 1,2-diethyl- .....	1615-80-1	U086
O,O-Diethyl S-methyl dithiophosphate .....	Phosphorodithioic acid, O,O-diethyl S-methyl .	3288-58-2	U087
Diethyl-p-nitrophenyl phosphate .....	Phosphoric acid, diethyl 4-nitrophenyl ester .....	311-45-5	P041
Diethyl phthalate .....	1,2-Benzenedicarboxylic acid, diethyl ester .....	84-66-2	U088
O,O-Diethyl O-pyrazinyl phosphoro-thioate .....	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester.	297-97-2	P040
Diethylstilbesterol .....	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)-.	56-53-1	U089
Dihydrosafrole.....	1,3-Benzodioxole, 5-propyl-.....	94-58-6	U090
Diisopropylfluorophosphate (DFP).....	Phosphorofluoridic, bis(1-methylethyl) ester. ....	55-91-4	P043
Dimethoate .....	Phosphorodithioic acid, O,O-dimethyl S-[2- (methylamino)-2-oxoethyl] ester.	60-51-5	P044
3,3'-Dimethoxybenzidine .....	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-..	119-90-4	U091

(continued)

Table 3-5 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
p-Dimethylaminoazobenzene.....	Benzenamine, N,N-dimethyl-4-(phenylazo)- ....	60-11-7	U093
7,12-Dimethylbenz[a]anthracene .....	Benz[a]anthracene, 7,12-dimethyl- .....	57-97-6	U094
3,3'-Dimethylbenzidine.....	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-	119-90-4	U095
Dimethylcarbonyl chloride.....	Carbamic chloride, dimethyl-.....	79-44-7	U097
1,1-Dimethylhydrazine.....	Hydrazine, 1,1-dimethyl-.....	57-14-7	U098
1,2-Dimethylhydrazine.....	Hydrazine, 1,2-dimethyl-.....	540-73-8	U099
alpha,alpha-Dimethylphenethylamine .....	Benzeneethanamine, alpha,alpha-dimethyl .....	122-09-8	P046
2,4-Dimethylphenol .....	Phenol, 2,4-dimethyl- .....	105-67-9	U101
Dimethyl phthalate .....	1,2-Benzenedicarboxylic acid, dimethyl ester ...	131-11-3	U102
Dimethyl sulfate .....	Sulfuric acid, dimethyl ester .....	77-78-1	U103
Dinitrobenzene, N.O.S. <sup>1</sup> .....	Benzene, dinitro-.....	25154-54-5	.....
4,6-Dinitro-o-cresol.....	Phenol, 2-methyl-4,6-dinitro- .....	534-52-1	P047
4,6-Dinitro-o-cresol salts .....	.....	.....	P047
2,4-Dinitrophenol .....	Phenol, 2-methyl-4,6-dinitro- .....	51-28-5	P048
2,4-Dinitrotoluene .....	Benzene, 1-methyl-2,4-dinitro- .....	121-14-2	U105
2,6-Dinitrotoluene .....	Benzene, 2-methyl-1,3-dinitro- .....	606-20-2	U106
Dinoseb .....	Phenol, 2-(1-methylpropyl)-4,6-dinitro-.....	88-85-7	P020
Di-n-octyl phthalate .....	1,2-Benzenedicarboxylic acid, dioctyl ester .....	117-84-0	U017
Diphenylamine .....	Benzenamine, N-phenyl-.....	122-39-4	.....
1,2-Diphenylhydrazine.....	Hydrazine, 1,2-diphenyl-.....	122-66-7	U109
Di-n-propylnitrosamine.....	1-Propanamine, N-nitroso-N-propyl- .....	621-64-7	U111
Disulfoton.....	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl]ester.	298-04-4	P039
Dithiobiuret .....	Thioimidodicarbonic diamide [(H <sub>3</sub> N)C(S)] <sub>2</sub> NH.	541-53-7	P049
Endothall .....	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic	145-73-3	P088
Endrin .....	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octa- hydro-, (1aalpha,2beta,2abeta,3alpha,6alpha, 6abeta,7beta,7aalpha)-.	72-20-8	P051
Endrin metabolites .....	.....	.....	P051
Epichlorohydrin.....	Oxirane, (chloromethyl)- .....	106-89-8	U041
Epinephrine .....	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-.	51-43-4	P042
Ethyl carbamate (urethane) .....	Carbamic acid, ethyl ester.....	51-79-6	U238
Ethyl cyanide.....	Propanenitrile.....	107-12-0	P101
Ethylenebisdithiocarbamic acid .....	Carbamodithioic acid, 1,2-ethanediybis-.....	111-54-6	U114
Ethylenebisdithiocarbamic acid, salts and esters.	.....	.....	U114
Ethylene dibromide .....	Ethane, 1,2-dibromo- .....	106-93-4	U067
Ethylene dichloride .....	Ethane, 1,2-dichloro- .....	107-06-2	U077
Ethylene glycol monoethyl ether .....	Ethanol, 2-ethoxy- .....	110-80-5	U359
Ethyleneimine .....	Aziridine .....	151-56-4	P054
Ethylene oxide.....	Oxirane .....	75-21-8	U115
Ethylenethiourea .....	2-Imidazolidinethione.....	96-45-7	U116
Ethylidene dichloride .....	Ethane, 1,1-dichloro- .....	75-34-3	U076
Ethyl methacrylate .....	2-Propenoic acid, 2-methyl-, ethyl ester.....	97-63-2	U118
Ethyl methanesulfonate.....	Methanesulfonic acid, ethyl ester .....	65-50-0	U119

(continued)

Table 3-5 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Famphur .....	Phosphorothioic acid, 0-[4- [(dimethylamino)sulfonyl]phenyl] O,O-di- methyl ester.	52-85-7	P097
Fluoranthene.....	Same .....	206-44-0	U120
Fluorine .....	Same .....	7782-41-4	P056
Fluoroacetamide.....	Acetamide, 2-fluoro-, sodium salt .....	62-74-8	P058
Formaldehyde.....	Same .....	50-00-0	U122
Formic acid.....	Same .....	64-18-6	U123
Glycidylaldehyde .....	Oxiranecarboxyaldehyde	765-34-4	U126
Halomethanes, N.O.S. <sup>1</sup> .....	.....	.....	.....
Heptachlor .....	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-hep- tachloro-3a,4,7,7a-tetrahydro-	76-44-8	P059
Heptachlor epoxide .....	2,5-Methano-2H-indeno[1,2-b]oxirene, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6,6a- hexa- hydro-, 1aalpha, 1bbeta, 2alpha, 5alpha, 5abeta, 6beta, 6aalpha)-.	.....	.....
Heptachlor epoxide (alpha, beta, and gamma isomers).	.....	.....	.....
Heptachlorodibenzofurans .....	.....	.....	.....
Heptachlorodibenzo-p-dioxins.....	.....	.....	.....
Hexachlorobenzene.....	Benzene, hexachloro-	118-74-1	U127
Hexachlorobutadiene.....	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	87-68-3	U128
Hexachlorocyclopentadiene .....	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	77-47-4	U130
Hexachlorodibenzo-p-dioxins.....	.....	.....	.....
Hexachlorodibenzofurans .....	.....	.....	.....
Hexachloroethane.....	Ethane, hexachloro- .....	67-72-1	U131
Hexachlorophene.....	Phenol, 2,2'-methylenebis[3,4,6-trichloro- .....	70-30-4	U132
Hexachloropropene .....	1-Propene, 1,1,2,3,3,3-hexachloro- .....	1888-71-7	U243
Hexaethyl tetraphosphate .....	Tetraphosphoric acid, hexaethyl ester.....	757-58-4	P062
Hydrazine .....	Same .....	302-01-2	U133
Hydrogen cyanide .....	Hydrocyanic acid .....	74-90-8	P063
Hydrogen fluoride .....	Hydrofluoric acid .....	7654-39-3	U134
Hydrogen sulfide .....	Hydrogen sulfide H <sub>2</sub> S.....	7738-06-4	U135
Indeno[1,2,3-cd]pyrene .....	Same .....	193-39-3	U134
Isobutyl alcohol.....	1-Propanol, 2-methyl-.....	78-83-1	U140
Isodrin .....	1,4,5,8- Dimethanonaphthalene, 1,2,3,4,10,10- hexachloro- 1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5beta,8beta,8abeta)-.	465-73-6	P060
Isosafrole .....	1,3-Benzodioxole, 5-(1-propenyl)-.....	120-58-1	U141
Kepone .....	1,3,4-Methano-2H-cyclobuta[cd]pentalen-2- one, 1,1a,3,3a,4,5,5a,5b,6- decachlorooctahydro-	143-50-0	U142
Lasiocarpine .....	2-Butenoic acid, 2-methyl-, 7-[[2,3-dihydroxy-2- (1-methoxyethyl)-3-methyl-1- oxobutoxy]methyl]-2,3,5,7a-tetrahydro-1H- pyrrolizin-1-yl ester, [S-[1alpha(Z),7(2S*,3R*),7aalpha]]-	303-34-1	4143

(continued)

Table 3-5 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Lead.....	Same.....	7439-92-1	.....
Lead compounds, N.O.S <sup>1</sup> .....	.....	.....	.....
Lead acetate.....	Acetic acid, lead(2+) salt.....	301-04-2	U144
Lead phosphate.....	Phosphoric acid, lead(2+) salt (2:3).....	7446-27-7	U145
Lead subacetate.....	Lead, bis(acetato-O)tetrahydroxytri-.....	1335-32-6	U146
Lindane.....	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha,2alpha,3beta,4alpha,5alpha,6beta)-.	58-89-9	U129
Maleic anhydride.....	2,5-Furandione.....	108-31-6	U147
Maleic hydrazide.....	3,6-Pyridazinedione, 1,2-dihydro-.....	123-33-1	U148
Malononitrile.....	Propanedinitrile.....	109-77-3	U149
Melphalan.....	L-Phenylalanine, 4-[bis(2-chloroethyl)aminol]-.	148-82-3	U150
Mercury.....	Same.....	7439-97-6	U151
Mercury compounds, N.O.S <sup>1</sup> .....	.....	.....	.....
Mercury fulminate.....	Fulminic acid, mercury(2+) salt.....	628-86-4	P065
Methacrylonitrile.....	2Propenenitrile, 2-methyl-.....	126-98-7	U152
Methapyrilene.....	1,2-Ethanediamine, NN-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-.	91-80-5	U155
Methomyl.....	Ethanimidothioic acid, N- [[[(methylamino)carbonyl]oxy]-, methyl ester.	16752-77-5	P066
Methoxychlor.....	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-.	72-43-5	U247
Methyl bromide.....	Methane, bromo-.....	74-83-9	U029
Methyl chloride.....	Methane, chloro-.....	74-87-3	U045
Methyl chlorocarbonate.....	Carbonochloridic acid, methyl ester.....	79-22-1	U158
Methyl chloroform.....	Ethane, 1,1,1-trichloro-.....	71-55-6	U226
3-Methylcholanthrene.....	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl....	56-49-5	U157
4,4'-Methylenebis(2-chloroaniline).....	Benzenamine, 4,4'-methylenebis[2-chloro-.....	101-14-4	U158
Methylene bromide.....	Methane, dibromo-.....	74-95-3	U068
Methylene chloride.....	Methane, dichloro-.....	75-09-2	U080
Methyl ethyl ketone (MEK).....	2-Butanone.....	78-93-3	U159
Methyl ethyl ketone peroxide.....	2-Butanone, peroxide.....	1338-23-4	U160
Methyl hydrazine.....	Hydrazine, methyl-.....	60-34-4	P068
Methyl iodide.....	Methane, iodo-.....	74-88-4	U138
Methyl isocyanate.....	Methane, isocyanato-624-83-9.....	P064	.....
2-Methylacetonitrile.....	Propanenitrile, 2-hydroxy-2-methyl-.....	75-86-5	P069
Methyl methacrylate.....	2-Propenoic acid, 2-methyl-methyl ester.....	80-62-6	U162
Methyl methanesulfonate.....	Methanesulfonic acid, methyl ester.....	66-27-3	.....
Methyl parathion.....	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester.	298-00-0	P071
Methylthiouracil.....	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-.	56-04-2	U164
Mitomycin C.....	Azirino[2',3':3,4]pyrrolo[1,2-a]indole-4,7-dione, 6-amino-8-[[[(aminocarbonyl)oxy]methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1aS-1aalpha,8beta,8alpha,8balpha)]-.	50-07-7	U010

(continued)

Table 3-5 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
MNNG.....	Guanidine, N-methyl-N'-nitro-N-nitroso.....	70-25-7	U163
Mustard gas.....	Ethane, 1,1'-thiobis[2-chloro-.....	505-60-2	.....
Naphthalene.....	Same.....	91-20-3	U165
1,4-Naphthoquinone.....	1,4-Naphthalenedione.....	130-15-4	U166
alpha-Naphthylamine.....	1-Naphthalenamine.....	134-32-7	U167
beta-Naphthylamine.....	2-Naphthalenamine.....	91-59-8	U168
alpha-Naphthylthiourea.....	Thiourea, 1-naphthalenyl-.....	86-88-4	P072
Nickel.....	Same.....	7440-02-0	.....
Nickel compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Nickel carbonyl.....	Nickel carbonyl Ni(CO) <sub>4</sub> , (T-4)-.....	13463-39-3	P073
Nickel cyanide.....	Nickel cyanide Ni(CN) <sub>2</sub> .....	557-19-7	P074
Nicotine.....	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-.....	54-11-5	P075
Nicotine salts.....	.....	.....	P075
Nitric oxide.....	Nitrogen oxide NO.....	10102-43-9	P076
p-Nitroaniline.....	Benzeneamine, 4-nitro-.....	100-01-6	P077
Nitrobenzene.....	Benzene, nitro-.....	98-95-3	U169
Nitrogen dioxide.....	Nitrogen dioxide NO <sub>2</sub> .....	10102-44-0	P078
Nitrogen mustard.....	Ethanamine, 2-chloro-N-(2-chloroethyl)-N-methyl-, N-oxide.....	51-75-2	.....
Nitrogen mustard, N-oxide, hydro-chloride salt.....	.....	.....	.....
Nitroglycerin.....	1,2,3-Propanetriol, trinitrate.....	55-63-0	P081
p-Nitrophenol.....	Phenol, 4-nitro-.....	100-02-7	U170
2-Nitropropane.....	Propane, 2-nitro-.....	79-46-9	U171
Nitrosamines, N.O.S. <sup>1</sup> .....	.....	35576-91-1D	.....
N-Nitrosodi-n-butylamine.....	1-Butamine, N-butyl-N-nitroso.....	924-16-3	U172
N-Nitrosodiethanolamine.....	Ethanol, 2,2'-(nitrosoimino)bis-.....	1116-54-7	U173
N-Nitrosodiethylamine.....	Ethanamine, N-ethyl-N-nitroso-.....	55-18-5	U174
N-Nitrosodimethylamine.....	Methanamine, N-methyl-N-nitroso-.....	62-75-9	P082
N-Nitroso-N-ethylurea.....	Urea, N-ethyl-N-nitroso-.....	759-73-9	U176
N-Nitrosomethylethylamine.....	Ethanamine, N-methyl-N-nitroso-10595-95-6.....	.....	.....
N-Nitroso-N-methylurea.....	Urea, N-methyl-N-nitroso-.....	684-93-5	U177
N-Nitroso-N-methylurethane.....	Carbamic acid, methylnitroso-, ethyl ester.....	615-53-2	U178
N-Nitrosomethylvinylamine.....	Vinylamine, N-methyl-N-nitroso-.....	4549-40-0	P084
N-Nitrosomorpholine.....	Morpholine, 4-nitroso-.....	59-89-2	.....
N-Nitrosomonicotine.....	Pyridine, 3-(1-nitroso-2-pyrrolidinyl)-, (S).....	16543-55-8	.....
N-Nitrosopiperidine.....	Piperidine, 1-nitroso-.....	100-75-4	U179
N-Nitrosopyrrolidine.....	Pyrrolidine, 1-nitroso-.....	930-55-2	U180
N-Nitrososarcosine.....	Glycine, N-methyl-N-nitroso-.....	13256-22-9	.....
5-Nitro-o-toluidine.....	Benzenamine, 2-methyl-5-nitro-.....	99-55-8	U181
Octamethylpyrophosphoramidate.....	Diphosphoramidate, octamethyl-.....	152-16-9	P085
Osmium tetroxide.....	Osmium oxide OsO <sub>4</sub> (T-4)-.....	20816-12-0	P087
Paraldehyde.....	1,3,5-Trioxane, 2,4,6-trimethyl-.....	123-63-7	U182
Parathion.....	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) este.....	56-38-2	P089
Pentachlorobenzene.....	Benzene, pentachloro-.....	608-93-5	U183

(continued)

Table 3-5 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Pentachlorodibenzo-p-dioxins.....	.....	.....	.....
Pentachlorodibenzofurans .....	.....	.....	.....
Pentachloroethane .....	Ethane, pentachloro- .....	76-01-7	U184
Pentachloronitrobenzene (PCNB).....	Benzene, pentachloronitro-.....	82-68-8	U185
Pentachlorophenol.....	Phenol, pentachloro-.....	87-86-5	See F027
Phenacetin .....	Acetamide, N-(4-ethoxyphenyl)-.....	62-44-2	U187
Phenol.....	Same .....	108-95-2	U188
Phenylenediamine .....	Benzenediamine.....	25265-76-3	.....
Phenylmercury acetate .....	Mercury, (acetato-O)phenyl- .....	62-38-4	P092
Phenylthiourea.....	Thiourea, phenyl-.....	103-85-5	P093
Phosgene .....	Carbonic dichloride .....	75-44-5	P095
Phosphine .....	Same .....	7803-51-2	P096
Phorate.....	Phosphorodithioic, O,O-diethyl S- [(ethylthio)methyl] ester.	298-02-2	P094
Phthalic acid esters, N.O.S. <sup>1</sup> .....	.....	.....	.....
Phthalic anhydride.....	1,3-Isobenzofurandione .....	85-44-9	U190
2-Picoline .....	Pyridine, 2-methyl-.....	109-06-8	U191
Polychlorinated biphenyls, N.O.S. <sup>1</sup> .....	.....	.....	.....
Potassium cyanide.....	Potassium cyanide K(CN) .....	151-50-8	P098
Potassium silver cyanide .....	Argentate(1-), bis(cyano-C)-, potassium .....	506-61-6	P099
Pronamide .....	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2- propynyl)-.	23950-58-5	U192
1,3-Propane sultone.....	1,2-Oxathiolane, 2,2-dioxide .....	1120-71-4	U193
n-Propylamine .....	1-Propanamine.....	107-10-8	U194
Propargyl alcohol .....	2-Propyn-1-ol.....	107-19-7	P102
Propylene dichloride .....	Propane, 1,2-dichloro-.....	78-87-5	U083
1,2-Propylenimine .....	Aziridine, 2-methyl- .....	75-55-8	P067
Propylthiouracil.....	4(1H)-Pyrimidinone, 2,3-dihydro-6-propyl-2 thioxo-.	51-52-5	.....
Pyridine .....	Same .....	110-86-1	U196
Reserpine.....	Yohimban-16-carboxylic acid, 11,17-dimeth- oxy-18-[(3,4,5-trimethoxybenzoyl)oxy]- smethyl ester, (3beta,16beta,17alpha,18beta,20alpha)-.	50-55-5	U200
Resorcinol .....	1,3-Benzenediol	108-46-3	U201
Saccharin .....	1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide	81-07-2	U202
Saccharin salts.....	.....	.....	U202
Safrole .....	1,3-Benzodioxole, 5-(2-propenyl)-	94-59-7	U203
Selenium.....	Same .....	7782-49-2	.....
Selenium compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Selenium dioxide.....	Selenious acid .....	7783-00-8	U204
Selenium sulfide.....	Selenium sulfide SeS <sub>2</sub> .....	7488-56-4	U205
Selenourea .....	Same .....	630-10-4	P103
Silver .....	Same .....	7440-22-4	.....
Silver compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Silver cyanide.....	Silver cyanide Ag(CN) .....	506-64-9	P104
Silvex (2,4,5-TP).....	Propanoic acid, 2-(2,4,5-trichlorophenoxy)- .....	93-72-1	See F027

(continued)

Table 3-5 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Sodium cyanide.....	Sodium cyanide Na(CN).....	143-33-9	P106
Streptozotocin .....	D-Glucose, 2-deoxy-2- [[methylnitrosoamino]carbonyl]amino]-.....	18883-66-4	U206
Strychnine .....	Strychnidin-10-one .....	57-24-9	P108
Strychnine salts .....	.....	.....	P108
TCDD.....	Dibenzob,e[[1,4]dioxin, 2,3,7,8-tetrachloro-.....	1746-01-6	.....
1,2,4,5-Tetrachlorobenzene.....	Benzene, 1,2,4,5-tetrachloro-.....	95-94-3	U207
Tetrachlorodibenzo-p-dioxins .....	.....	.....	.....
Tetrachlorodibenzofurans .....	.....	.....	.....
Tetrachloroethane, N.O.S. <sup>1</sup> .....	Ethane, tetrachloro-, N.O.S.....	25322-20-7	.....
1,1,1,2-Tetrachloroethane.....	Ethane, 1,1,1,2-tetrachloro-.....	630-20-6	U208
1,1,2,2-Tetrachloroethane.....	Ethane, 1,1,2,2-tetrachloro-.....	79-34-5	U209
Tetrachloroethylene.....	Ethene, tetrachloro-.....	127-18-4	U210
2,3,4,6-Tetrachlorophenol.....	Phenol, 2,3,4,6-tetrachloro-.....	58-90-2	See F027
Tetraethylthiopyrophosphate.....	Thiodiphosphoric acid, tertaethyl ester.....	3689-24-5	P109
Tetraethyl lead.....	Plumbane, tetraethyl-.....	78-00-2	P110
Tetraethyl pyrophosphate .....	Diphosphoric acid, tetraethyl ester .....	107-49-3	P111
Tetranitromethane .....	Methane, tetranitro-.....	509-14-8	P112
Thallium .....	Same .....	7440-28-0	.....
Thallium compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Thallic oxide.....	Thallium oxide $Tl_2O_3$ .....	1314-32-5	P113
Thallium(I) acetate .....	Acetic acid, thallium(1+) salt .....	563-68-8	U214
Thallium(I) carbonate.....	Carbonic acid, dithallium(1+) salt.....	6533-73-9	U215
Thallium(I) chloride.....	Thallium chloride $TlCl$ .....	7791-12-0	U216
Thallium(I) nitrate .....	Nitric acid, thallium(1+) salt.....	10102-45-1	U217
Thallium selenite.....	Selenious acid, dithallium(1+) salt .....	12039-52-0	P114
Thallium(I) sulfate.....	Sulfuric acid, dithallium(1+) salt.....	7446-18-6	P115
Thioacetamide .....	Ethanethioamide .....	62-55-5	U218
Thiofanox .....	2-Butanone, 3,3-dimethyl-1-(methylthio)-, - [[methylamino]carbonyl] oxime.....	39196-18-4	P045
Thiomethanol .....	Methanethiol .....	74-93-1	U153
Thiophenol .....	Benzenethiol .....	108-98-5	P014
Thiosemicarbazide .....	Hydrazinecarbothioamide.....	79-19-6	P116
Thiourea .....	Same .....	62-56-6	U219
Thiram .....	Thioperoxydicarbonic diamide $[(H_2N)C(S)]_2S_2$ tetramethyl-.....	137-26-8	U244
Toluene.....	Benzene, methyl-.....	108-88-3	U220
Toluenediamine .....	Benzenediamine, ar-methyl-.....	25376-45-8	U221
Toluene-2,4-diamine .....	1,3-Benzenediamine, 4-methyl-.....	95-80-7	.....
Toluene-2,6-diamine .....	1,3-Benzenediamine, 2-methyl-.....	823-40-5	.....
Toluene-3,4-diamine .....	1,2-Benzenediamine, 4-methyl-.....	496-72-0	.....
Toluene diisocyanate.....	Benzene, 1,3-diisocyanatomethyl-.....	26471-62-5	U223
o-Toluidine .....	Benzenamine, 2-methyl-.....	95-53-4	U328
o-Toluidine hydrochloride.....	Benzenamine, 2-methyl-, hydrochloride .....	636-21-5	U222
p-Toluidine .....	Benzenamine, 4-methyl-.....	100-49-0	U353
Toxaphene .....	Same .....	8000-35-2	P123
1,2,4-Trichlorobenzene .....	Benzene, 1,2,4-trichloro .....	120-82-1	.....

(continued)

**Appendix 3-5 (continued)**

<b>Common Name</b>	<b>Chemical Abstracts Name</b>	<b>Chemical Abstracts No.</b>	<b>Hazardous Waste No.</b>
1,1,2-Trichloroethane .....	Ethane, 1,1,3-trichloro- .....	79-00-5	U227
Trichloroethylene .....	Ethene, trichloro- .....	79-01-6	U228
Trichloromethanethiol .....	Methanethiol, trichloro- .....	75-70-7	P118
Trichloromonofluoromethane .....	Methane, trichlorofluoro- .....	75-69-4	U121
2,4,5-Trichlorophenol .....	Phenol, 2,4,5-trichloro- .....	95-95-4	See F027
2,4,6-Trichlorophenol .....	Phenol, 2,4,6-trichloro- .....	88-06-2	See F027
2,4,5-T .....	Acetic acid, (2,4,5-trichlorophenoxy)- .....	93-76-5	See F027
Trichloropropane, N.O.S. <sup>1</sup> .....	.....	25735-29-9	.....
1,2,3-Trichloropropane .....	Propane, 1,2,3-trichloro- .....	96-18-4	.....
O,O,O-Triethyl phosphorothioate .....	Phosphorothioic acid, O,O,O-triethyl ester .....	126-68-1	.....
1,3,5-Trinitrobenzene .....	Benzene, 1,3,5-trinitro- .....	99-35-4	U234
Tris(1-aziridinyl)phosphine sulfide .....	Aziridine, 1,1',1''- phosphinothioylidynetris- .....	.....	.....
Tris(2,3-dibromopropyl) phosphate .....	1-Propanol, 2,3-dibromo-, phosphate (3:1)	126-72-7	U235
Trypan blue .....	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-di methyl[1,1'-biphenyl]-4,4'-diyl)bis(azo)]- bis[5-amino-4-hydroxy-, tetrasodium salt.	72-57-1	U236
Uracil mustard .....	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2- chloroethyl)amino]-.	66-75-1	U237
Vanadium pentoxide .....	Vanadium oxide V <sub>2</sub> O <sub>5</sub> .....	13-14-62-1	P120
Vinyl chloride .....	Ethene, chloro- .....	75-01-4	U043
Warfarin .....	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo- 1-phenylbutyl)-, when present at concentrations greater than 0.3%.	81-81-2	U248
Warfarin salts, when present at concentra- tions less than 0.3%.	.....	.....	U248
Warfarin salts, when present at concentra- tions greater than 0.3%	.....	.....	P001
Zinc cyanide	Zinc cyanide Zn(CN) <sub>2</sub>	557-21-1	P121
Zinc phosphide .....	Zinc phosphide Zn <sub>3</sub> P <sub>2</sub> , when present at concentrations greater than 10%.	1314-84-7	P122
Zinc phosphide .....	Zinc phosphide Zn <sub>3</sub> P <sub>2</sub> , when present at concentrations of 10% or less.	1314-84-7	U248

<sup>1</sup> The abbreviation N.O.S. (not otherwise specified) signifies those members of the general class not specifically listed by name in this appendix.





**Table 3-6**

**Typical Wastes Generated at Air Force Installations Which May Be Hazardous Waste**

Organization	Shops	Waste
Support Group	Diesel Maintenance Shop	Trichloroethane Contaminated Diesel Fuel Carburator Cleaner Used Crankcase Oil
	Entomology Shop	Various pesticides and herbicides
	Interior Electric Shop	PD 680 Solvent
	Paint Shop	Lacquer Thinner Mineral Spirits Alipatic naptha Unusable Paints
	Photo Lab	Silver Recovery
	Power Plant	Morpholine Sulfuric Acid Sodium Hydroxide Trichloroethane Acetone Toluene PD-680 Solvent Waste Paints
	Power Production	Contaminated Diesel Fuel
Logistics	Sheet Metal Shop	PD-680 Solvent
	Jet Engine Shop	Carbon Remover Contaminated JP-4, JP-8 PD-680 Solvent
	Vehicle Maintenance	Degreasers Paint Sand Blast Material Paint Booth Waste Batteries Contaminated Fuels

(continued)

**Table 3-6 (continued)**

<b>Organization</b>	<b>Shops</b>	<b>Waste</b>
<b>Aircraft Maintenance</b>	<b>Electronic Shop</b>	<b>Toluene PD-680 Solvent</b>
	<b>Welding Shop</b>	<b>Ferric Chloride Acetic Acid Sulfuric Acid Cadmium cyanide Trichloroethylene Caustic Cleaning Tank Waste</b>
	<b>NDI Lab</b>	<b>Silver Recovery Solvent</b>
	<b>Battery Shop</b>	<b>Sulfuric Acid</b>
	<b>Tire Shop</b>	<b>PD-680 Solvent</b>
	<b>Corrosion Control Shop</b>	<b>Methyl Ethyl Ketone Aliphatic naphtha Lacquer Thinner Mineral Spirits Paint Remover Unusable Paints</b>
<b>Medical Group</b>	<b>X-Ray and Pharmacy</b>	<b>Silver Recovery Epinephrin Xyless</b>

(continued)

Table 3-7

**Commercial Chemical Products or Manufacturing Chemical  
Intermediates Identified as Acute Hazardous Waste  
40 CFR 261.33(a) - 261.33(e)**

(COMMENT: primary hazardous properties of these materials have been indicated by the letters (t) toxicity, and (r) reactivity; absence of a letter indicates that the compound only is listed for acute toxicity.)

Hazardous Waste No.	Substance	
P023	Acetaldehyde, chloro-	
P002	Acetamide, N-(aminothioxomethyl)-	
P057	Acetamide, 2-fluoro-	
P058	Acetic acid, fluoro-, sodium salt	
P002	1-Acetyl-2-thiourea	
P003	Acrolein	
P070	Aldicarb	
P004	Aldrin	
P005	Allyl alcohol	
P006	Aluminum phosphide	(r,t)
P007	5-(Aminomethyl)-3-isoxazolol	
P008	4-Aminopyridine	
P009	Ammonium picrate	(r)
P119	Ammonium vanadate	
P099	Argebtate(1), bis(cyano-C)-, potassium	
P010	Arsenic acid $H^3AsO^4$	
P012	Arsenic oxide $As^2O^3$	
P011	Arsenic oxide $As^2O^5$	
P011	Arsenic pentoxide	
P012	Arsenic trioxide	
P038	Arsine, diethyl	
P036	Arsonous dichloride, phenyl	
P054	Aziridine	
P067	Aziridine, 2-methyl	
P013	Barium cyanide	
P024	Benzenamine, 4-chloro-	
P077	Benzenamine, 4-nitro-	
P028	Benzene, (chloromethyl)-	
P042	1,2-Benzenediol, 4-[1-hydroxy- 2-(methylamino)ethyl]-	(r)
P046	Benzeneethanamine, alpha,alpha- dimethyl-	(r)
P014	Benzenethiol	
P001	2H-1-Benzopyran-2-one,4-hydroxy-3- (3-oxo-1-phenylbutyl)-, and salts when present at concentrations greater than 0.3%	

(continued)

Table 3-7 (continued)

Hazardous Waste No.	Substance
P028	Benzyl chloride
P015	Beryllium
P016	Bis(chloromethyl)ether
P017	Bromoacetone
P018	Brucine
P021	Calcium cyanide
P021	Calcium cyanide Ca(CN) <sub>2</sub>
P022	Carbon disulfide
P095	Carbonic dichloride
P023	Chloroacetaldehyde
P024	p-Chloroaniline
P026	1-(o-Chlorophenyl)thiourea
P027	3-Chloropropionitrile
P029	Copper cyanide
P029	Copper cyanide Cu(CN)
P030	Cyanides (soluble cyanide salts), n.o.s.
P031	Cyanogen
P033	Cyanogen chloride
P033	Cyanogen chloride (CN)Cl
P034	2-Cyclohexyl-4,6-dinitrophenol
P016	Dichloromethyl ether
P036	Dichlorophenylarsine
P037	Dieldrin
P038	Diethylarsine
P041	Diethyl-p-nitrophenyl phosphate
P040	O,O-Diethyl O-pyrazinyl phosphorothioate
P043	Diisopropyl fluorophosphate (DEP)
P004	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha, 4alpha, 4abeta, 5alpha, 8alpha, 8abeta)-
P060	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha, 4alpha, 4abeta, 5beta, 8beta, 8abeta)-
P037	2,7:3,6-Dimethanonaph[2,3b]oxirane, 3,4,5,6,9,9-hexachloro-1a,2,2a,3, 6,6a,7,7a-octahydro-, (1-alpha, 2beta, 2alpha, 3beta, 6beta, 6alpha, 7beta, 7alpha)-
P051	2,7:3,6-Dimethanonaph[2,3b]oxirane, octahydro-, (1alpha, 2beta, 2abeta, 3alpha, 6alpha, 6abeta, 7beta, 7alpha)-
P044	Dimethoate
P045	3,3-Dimethyl-1-(methylthio)-2-butanone, O-[(methylamino)carbonyl]oxime
P046	alpha, alpha-Dimethylphenethylamine
P047	4,6-Dinitro-o-cresol and salts

(continued)

Table 3-7 (continued)

Hazardous Waste No.	Substance
P048	2,4-Dinitrophenol
P020	Dinoseb
P085	Diphosphoramidate, octamethyl-
P111	Diphosphoric acid, tetraethyl ester
P039	Disulfoton
P049	Dithiobiuret
P050	Endosulfan
P088	Endothall
P051	Endrin
P051	Endrin and metabolites
P042	Epinephrine
P031	Ethanedinitrile
P066	Ethanimidothioic acid, N-[[[(methylamino)carbonyl]oxy]-, methyl ester
P101	Ethyl cyanide
P054	Ethyleneimine
P097	Famphur
P056	Fluorine
P057	Fluoroacetamide
p058	Fluoroacetic acid, sodium salt
p065	Fulminic acid, mercury(2+) salt (r,t)
P059	Heptachlor
P062	Hexaethyl tetraphosphate
p116	Hydrazinecarbothioamide
P068	Hydrazine, methyl-
P063	Hydrocyanic acid
P063	Hydrogen cyanide
P096	Hydrogen phosphide
P064	Isocyanic acid, methyl ester
P060	Isodrin
P007	3(2H)-Isoxazolone, 5-(aminomethyl)-
P092	Mercury (acetato-O)phenyl-
P065	Mercury fulminate (r,t)
P082	Methanamine, N-methyl-N-nitroso
P064	Methane, isocyanato-
P016	Methane, oxybis[chloro-
P112	Methane, tetranitro- (r)
P118	Methanethiol, trichloro-
P050	6,9-Methano-2,4,3-benzodioxathiepen, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-,3-oxide
P059	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
P066	Methomyl
P068	Methyl hydrazine

(continued)

Table 3-7 (continued)

Hazardous Waste No.	Substance
P064	Methyl isocyanate
P069	2-Methylacetonitrile
P071	Methyl parathion
P072	alpha-Naphthylthiourea
P073	Nickel carbonyl
P073	Nickel carbonyl, (T-4)-
P074	Nickel cyanide
P074	Nickel cyanide Ni (CN) <sub>2</sub>
P075	Nicotine and salts
P076	Nitric oxide
P077	p-Nitroaniline
P078	Nitrogen dioxide
P076	Nitrogen oxide NO
P078	Nitrogen oxide
P081	Nitroglycerine (r)
P082	N-Nitrosodimethylamine
P084	N-Nitrosomethylvinylamine
P074	Nickel cyanide
P085	Octamethylpyrophosphoramidate
P087	Osmium oxide
P087	Osmium tetroxide
P088	7-Oxabicyclo[2.2.1]heptane-2,3- dicarboxylic acid
P089	Parathion
P034	Phenol, 2-cyclohexyl-4,6-dinitro
P048	Phenol, 2,4-dinitro
P047	Phenol, 2-methyl-4,6-dinitro- and salts
P020	Phenol, 2-(1-methylpropyl)-4,6-dinitro
P009	Phenol, 2,4,6-trinitro-, ammonium salt (r)
P092	Phenylmercury acetate
P093	Phenylthiourea
P094	Phorate
P095	Phosgene
P096	Phosphine
P041	Phosphoric acid, diethyl 4- nitrophenyl ester
P039	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
P094	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
P044	Phosphorodithioic acid, O,O-dimethyl S[2-(methylamino)-2-oxoethyl] ester
P043	Phosphorofluoric acid, bis(1-methylethyl) -ester
P089	Phosphorothioic acid, O,O-diethyl O- (4-nitrophenyl) ester

(continued)

**Table 3-7 (continued)**

<b>Hazardous Waste No.</b>	<b>Substance</b>
P040	Phosphorothioic acid, O,O-diethyl O- pyrazinyl ester
P097	Phosphorothioic acid, O-[4-[(dimethylamino) sulfonyl]phenyl] O,O-dimethyl ester
P071	Phosphorothioic acid, O,O-dimethyl O- (4-nitrophenyl) ester
P110	Plumbane, tetraethyl-
P098	Potassium cyanide
P098	Potassium cyanide K(CN)
P099	Potassium silver cyanide
P070	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
P101	Propanenitrile
P027	Propanenitrile, 3-chloro-
P069	Propanenitrile, 2-hydroxy-2-methyl
P081	1,2,3-Propanetriol, trinitrate (r)
P017	2-Propanone, 1-bromo-
P102	Propargyl alcohol
P003	2-Propenal
P005	2-Propen- 1 -ol
P067	1,2-Propylenimine
P102	2-Propyn-1 -ol
P008	4-Pyridinamine
P075	Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-,(S)-, and salts
P103	Selenourea
P104	Silver cyanide
P104	Silver cyanide Ag(CN)
P105	Sodium azide
P106	Sodium cyanide
P106	Sodium cyanide Na(CN)
P108	Strychnidin-10-one, and salts
P018	Strychnidin 10-one, 2,3-dimethoxy-
P108	Strychnine and salts
P115	Sulfuric acid, dithallium(I) salt
P109	Tetraethyldithiopyrophosphate
P110	Tetraethyl lead
P111	Tetraethylpyrophosphate
P112	Tetranitromethane (r)
P062	Tetraphosphoric acid, hexaethyl ester
P113	Thallic oxide
P113	Thallium(III) oxide
P114	Thallium(I) selenite
P115	Thallium(I) sulfate
P109	Thiodiphosphoric acid, tetraethyl ester

(continued)



**Table 3-7 (continued)**

<b>Hazardous Waste No.</b>	<b>Substance</b>
P045	Thiofanox
P049	Thiomidodicarbonic diamide
P014	Thiophenol
P116	Thiosemicarbazide
P026	Thiourea, (2-chlorophenyl)-
P072	Thiourea, 1-naphthalenyl-
P093	Thiourea, phenyl-
P123	Toxaphene
P118	Trichloromethanethiol
P119	Vanadic acid, ammonium salt
P120	Vanadium oxide V <sub>2</sub> O <sub>3</sub>
P120	Vanadium pentoxide
P084	Vinylamine, N-methyl-N-nitroso
P001	Warfarin, and salts, when present at concentrations greater than 0.3%
P121	Zinc cyanide
P121	Zinc cyanide Zn(CN) <sub>2</sub>
P122	Zinc phosphide Zn <sub>3</sub> P <sub>2</sub> , when present at concentrations greater than 0.3%

**Table 3-8**

**Potentially Incompatible Hazardous Wastes**

Below are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences that result from mixing materials in one group with materials in another group. The list is intended as a guide to indicate the need for special precautions when managing these potentially incompatible waste materials or components. This list is not intended to be exhaustive. Operators must, as the regulations require, adequately analyze their wastes so they can avoid creating uncontrolled substances or reactions of the type listed below, whether listed below or not.

In the lists below, the mixing of a **Group A** material with a **Group B** material may have the potential consequences as noted.

**Potential Consequences: Heat generation, violent reaction.**

<b>Group 1-A</b>	<b>Group 1-B</b>
Acetylene sludge	Acid sludge
Alkaline caustic liquids	Acid and water
Alkaline cleaner	Battery acid
Alkaline corrosive liquids	Chemical cleaners
Alkaline corrosive battery acid	Electrolyte, acid
Caustic wastewater	Etching acid liquid or solvent
Lime sludge and other corrosive alkalis	Pickling liquor and other corrosive acids
Lime wastewater	Spent acid
Lime and water	Spent mixed acid
Spent caustic	Spent sulfuric acid

**Potential Consequences: Fire or explosion; generation of flammable hydrogen gas.**

<b>Group 2-A</b>	<b>Group 2-B</b>
Aluminum	Any waste in Group 1-A or 1-B
Beryllium	
Calcium	
Lithium	
Magnesium	
Potassium	
Sodium	
Zinc powder	
Other reactive metals and metal hydrides	

(continued)

**Table 3-8 (continued)**

**Potential Consequences: Fire, explosion, or heat generation; generation of flammable or toxic gases.**

Group 3-A	Group 3-B
Alcohols Water	Any concentrated waste in Groups 1-A or 1-B Calcium Lithium Metal hydrides Potassium SO <sup>2</sup> Cl <sup>2</sup> , SOCl <sup>2</sup> , PCl <sup>3</sup> , CH <sup>3</sup> SiCl <sup>3</sup> Other water-reactive waste

**Potential Consequences: Fire explosion, or violent reaction.**

Group 4-A	Group 4-B
Alcohols Aldehydes Halogenated hydrocarbons Nitrated hydrocarbons Unsaturated hydrocarbons Other reactive organic compounds and solvents	Concentrated Group 1-A or Group 1-B wastes Group 2-A wastes

**Potential Consequences: Generation of toxic hydrogen cyanide, or hydrogen sulfide gas.**

Group 5-A	Group 5-B
Spent cyanide and sulfide solutions	Group 1-B wastes

**Potential Consequences: Fire, explosion, or violent reaction.**

Group 6-A	Group 6-B
Chlorates Chlorine Chlorites Chromic acid Hypochlorites Nitrates Nitric acid, fuming Perchlorates Permanganates Peroxides Other strong oxidizers	Acetic acid and other organic acids Concentrated mineral acids Group 2-A wastes Group 4-A wastes Other flammable and combustible wastes

Source: "Law, Regulations, and Guidelines for Handling of Hazardous Waste." California Department of Health, February 1975. (As referenced in 40 CFR, Part 264, Appendix V)

**Table 3-9**

**Land Disposal Restricted Wastes and Their Effective Dates.  
40 CFR 268, Appendix VII**

*Part 1--Land Disposal Restricted Wastes and Their Effective Dates*

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
California list	Liquid hazardous wastes, including free liquids associated with solid or sludge, containing free cyanides at concentrations greater than or equal to 1000 mg/L or certain metals or compounds of these metals greater than or equal to the prohibition levels.	8 July 1987
California list	Liquid (aqueous) hazardous wastes having a pH less than or equal to 2.	8 July 1987
California list	Dilute HOC wastewaters, defined as HOC-waste mixtures that are primarily water and that contain greater than or equal to 1000 mg/L but less than 10,000 mg/L.	8 July 1987
California list	Liquid hazardous waste containing PCBs greater than or equal to 50 ppm.	8 July 1987
California list	Other liquid and nonliquid hazardous wastes containing HOCs in total concentration greater than or equal to 1000 mg.	8 Nov 1988
RCRA Hazardous Wastes	Those that contain naturally occurring radioactive materials.	8 May 1992
RCRA Listed Wastes	Mixed radioactive/hazardous wastes.	8 May 1992
D001	All	8 Aug 1990
D002	All	8 Aug 1990
D003	All	8 Aug 1990
D004	Wastewater	8 Aug 1990
D004	Nonwastewaters	8 May 1992
D005	Nonwastewater	8 May 1992
D006	All	8 Aug 1990
D007	All	8 Aug 1990
D007	All	8 Aug 1990
D008	Lead materials before secondary smelting	8 May 1992
D008	All others	8 Aug 1990
D009	Nonwastewater	8 May 1992
D010	All	8 Aug 1990
D011	All	8 Aug 1990
D012	All	8 Aug 1990
D013	All	8 Aug 1990
D014	All	8 Aug 1990
D015	All	8 Aug 1990
D016	All	8 Aug 1990

(continued)

**Table 3-9 (continued)**

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
D017	All	8 Aug 1990
F001	Small quantity generators (SQGs), CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 Nov 1988
F001	All others	8 Nov 1986
F002 (1,1,2 -trichloroethane)	Wastewater and Nonwastewater	8 Aug 1990
F002	SQGs, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 Nov 1988
F002	All others	8 Nov 1986
F003	SQGs, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 Nov 1988
F003	All others	8 Nov 1986
F004	SQGs, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 Nov 1988
F004	All others	8 Nov 1986
F005 (benzene, 2-ethoxy ethanol, 2-nitropropane).	Wastewater and Nonwastewater	8 Aug 1990
F005	SQGs, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and soils.	8 Nov 1988
F005	All others	8 Nov 1986
F006	Wastewater	8 Aug 1990
F006	Nonwastewater	8 Aug 1988
F006 (cyanides)	Nonwastewater	8 July 1989
F007	All	8 July 1989
F008	All	8 July 1989
F009	All	8 July 1989
F010	All	8 June 1989
F011 (cyanides)	Nonwastewater	8 Dec 1986
F011	All others	8 July 1989
F012 (cyanides)	Nonwastewater	8 Dec 1989
F012	All others	8 July 1989
F019	All	8 Aug 1990
F020	All	8 Nov 1988
F021	All	8 Nov 1988
F022	All	8 Nov 1988
F023	All	8 Nov 1988
F024 (metals)	Wastewater	8 June 1989

(continued)

**Table 3-9 (continued)**

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
F024 (metals)	Nonwastewater	8 Aug 1990
F024 \s-2\ub\d\s0	All others	8 June 1989
F025	All	8 Aug 1990
F026	All	8 Nov 1988
F027	All	8 Nov 1988
F028	All	8 Nov 1988
F039	Wastewater	8 Aug 1990
F039	Nonwastewater	8 May 1992
K001 (organics) <sup>b</sup>	All	8 Aug 1988
K001	All others	8 Aug 1988
K002	All	8 Aug 1990
K003	All	8 Aug 1990
K004	Wastewater	8 Aug 1990
K004 <sup>c</sup>	Nonwastewater	8 Aug 1990
K005	Wastewater	8 Aug 1990
K005 <sup>c</sup>	Nonwastewater	8 June 1989
K006	All	8 Aug 1990
K007	Wastewater	8 Aug 1990
K007 <sup>c</sup>	Nonwastewater	8 June 1989
K008	Wastewater	8 Aug 1990
K008 <sup>c</sup>	Nonwastewater	8 Aug 1988
K009	All	8 June 1989
K010	All	8 June 1989
K011	Wastewater	8 Aug 1990
K011	Nonwastewater	8 June 1989
K013	Wastewater	8 Aug 1990
K013	Nonwastewater	8 June 1989
K014	Wastewater	8 Aug 1990
K014	Nonwastewater	8 June 1989
K015	Wastewater	8 Aug 1988
K015	Nonwastewater	8 Aug 1990
K016	All	8 Aug 1988
K017	All	8 Aug 1990
K018	All	8 Aug 1988
K019	All	8 Aug 1988
K020	All	8 Aug 1988
K021	Wastewater	8 Aug 1990
K021 <sup>c</sup>	Nonwastewater	8 Aug 1988

(continued)

**Table 3-9 (continued)**

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
K022	Wastewater	8 Aug 1990
K022	Nonwastewater	8 Aug 1988
K023	All	8 June 1989
K024	All	8 Aug 1988
K025	Wastewater	8 Aug 1990
K025 <sup>c</sup>	Nonwastewater	8 Aug 1988
K026	All	8 Aug 1990
K027	All	8 June 1989
K028 (metals)	Nonwastewater	8 Aug 1990
K028	All others	8 June 1989
K029	Wastewater	8 Aug 1990
K029	Nonwastewater	8 June 1989
K030	All	8 Aug 1990
K031	Wastewater	8 Aug 1990
K031	Nonwastewater	8 May 1992
K032	All	8 Aug 1990
K033	All	8 Aug 1990
K034	All	8 Aug 1990
K035	All	8 Aug 1990
K036	Wastewater	8 June 1989
K036 <sup>c</sup>	Nonwastewater	8 Aug 1988
K037 <sup>b</sup>	Wastewater	8 Aug 1988
K037	Nonwastewater	8 Aug 1988
K038	All	8 June 1989
K039	All	8 June 1989
K040	All	8 June 1989
K041	All	8 Aug 1990
K042	All	8 Aug 1990
K043	All	8 June 1989
K044 <sup>c</sup>	All	8 Aug 1988
K045 <sup>c</sup>	all	8 Aug 1988
K046 (Nonreactive)	Nonwastewater	8 Aug 1988
K046	All others	8 Aug 1990
K047	All	8 Aug 1988
K048	Wastewater	8 Aug 1990
K048	Nonwastewater	8 Nov 1990
K049	Wastewater	8 Aug 1990
K049	Nonwastewater	8 Nov 1990

(continued)

**Table 3-9 (continued)**

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
K050	Wastewater	8 Aug 1990
K050	Nonwastewater	8 Nov 1990
K051	Wastewater	8 Aug 1990
K051	Nonwastewater	8 Nov 1990
K052	Wastewater	8 Aug 1990
K052	Nonwastewater	8 Nov 1990
K060	Wastewater	8 Aug 1990
K060 <sup>c</sup>	Nonwastewater	8 Aug 1988
K061	Wastewater	8 Aug 1990
K061	Nonwastewater (low zinc) (interim standard for high zinc remains in effect until 7 Aug 1991).	8 Aug 1988
K062	All	8 Aug 1988
K069 (Non-Calcium Sulfate) <sup>c</sup>	Nonwastewater	8 Aug 1988
K069	All others	8 Aug 1990
K071	All	8 Aug 1990
K073	All	8 Aug 1990
K083	All	8 Aug 1990
K084	Wastewater	8 Aug 1990
K084	Nonwastewater	8 May 1992
K085	All	8 Aug 1990
K086 (organics) <sup>b</sup>	All	8 Aug 1988
K086	All others	8 Aug 1988
K087	All	8 Aug 1988
K093	All	8 June 1989
K094	All	8 June 1989
K095	Wastewater	8 Aug 1990
K095	Nonwastewater	8 June 1989
K096	Wastewater	8 Aug 1990
K096	Nonwastewater	8 June 1989
K097	All	8 Aug 1990
K098	All	8 Aug 1990
K099	All	8 Aug 1988
K100	Wastewater	8 Aug 1990
K100 <sup>c</sup>	Nonwastewater	8 Aug 1988
K101 (organics)	Wastewater	8 Aug 1988
K101 (metals)	Wastewater	8 Aug 1990
K101 (organics)	Nonwastewater	8 Aug 1988

(continued)



**Table 3-9 (continued)**

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
K101 (metals)	Nonwastewater	8 May 1992
K102 (organics)	Wastewater	8 Aug 1988
K102 (metals)	Wastewater	8 Aug 1990
K102 (organics)	Nonwastewater	8 Aug 1988
K102 (metals)	Nonwastewater	8 May 1992
K103	All	8 Aug 1988
K104	All	8 Aug 1988
K105	All	8 Aug 1990
K106	Wastewater	8 Aug 1990
K106	Nonwastewater	8 May 1992
K113	All	8 June 1989
K114	All	8 June 1989
K115	All	8 June 1989
K116	All	8 June 1989
P001	All	8 Aug 1990
P002	All	8 Aug 1990
P003	All	8 Aug 1990
P004	All	8 Aug 1990
P005	All	8 Aug 1990
P006	All	8 Aug 1990
P007	All	8 Aug 1990
P008	All	8 Aug 1990
P009	All	8 Aug 1990
P010	Wastewater	8 Aug 1990
P010	Nonwastewater	8 May 1992
P011	Wastewater	8 Aug 1990
P011	Nonwastewater	8 May 1992
P012	Wastewater	8 Aug 1990
P012	Nonwastewater	8 May 1992
P013 (barium)	Nonwastewater	8 Aug 1990
P013	All others	8 June 1989
P014	All	8 Aug 1990
P015	All	8 Aug 1990
P016	All	8 Aug 1990
P017	All	8 Aug 1990
P018	All	8 Aug 1990
P020	All	8 Aug 1990
P021	All	8 June 1989

(continued)

**Table 3-9 (continued)**

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
P022	All	8 Aug 1990
P023	All	8 Aug 1990
P024	All	8 Aug 1990
P026	All	8 Aug 1990
P027	All	8 Aug 1990
P028	All	8 Aug 1990
P029	All	8 June 1989
P030	All	8 June 1989
P031	All	8 Aug 1990
P033	All	8 Aug 1990
P034	All	8 Aug 1990
P036	Wastewater	8 Aug 1990
P036	Nonwastewater	8 May 1992
P037	All	8 Aug 1990
P038	Wastewater	8 Aug 1990
P038	Nonwastewater	8 May 1992
P039	All	8 June 1989
P040	All	8 June 1989
P041	All	8 June 1989
P042	All	8 Aug 1990
P043	All	8 June 1989
P044	All	8 June 1989
P045	All	8 Aug 1990
P046	All	8 Aug 1990
P047	All	8 Aug 1990
P048	All	8 Aug 1990
P049	All	8 Aug 1990
P050	All	8 Aug 1990
P051	All	8 Aug 1990
P054	All	8 Aug 1990
P056	All	8 Aug 1990
P057	All	8 Aug 1990
P058	All	8 Aug 1990
P059	All	8 Aug 1990
P060	All	8 Aug 1990
P062	All	8 June 1989
P063	All	8 June 1989
P064	All	8 Aug 1990

(continued)

**Table 3-9 (continued)**

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
P065	Wastewater	8 Aug 1990
P065	Nonwastewater	8 May 1992
P066	All	8 Aug 1990
P067	All	8 Aug 1990
P068	All	8 Aug 1990
P069	All	8 Aug 1990
P070	All	8 Aug 1990
P071	All	8 June 1989
P072	All	8 Aug 1990
P073		8 Aug 1990
P074		8 June 1989
P075	All	8 Aug 1990
P076	All	8 Aug 1990
P077	All	8 Aug 1990
P078	All	8 Aug 1990
P079	All	8 Aug 1990
P081	All	8 Aug 1990
P082	All	8 Aug 1990
P084	All	8 Aug 1990
P085	All	8 June 1989
P087	All	8 May 1992
P088	All	8 Aug 1990
P089	All	8 June 1989
P092	Wastewater	8 Aug 1990
P092	Nonwastewater	8 May 1992
P093	All	8 Aug 1990
P094	All	8 June 1989
P095	All	8 Aug 1990
P096	All	8 Aug 1990
P099 (silver)	Wastewater	8 Aug 1990
P099	All others	8 June 1989
P101	All	8 Aug 1990
P102	All	8 Aug 1990
P103	All	8 Aug 1990
P104 (silver)	Wastewater	8 Aug 1990
P104	All others	8 June 1989
P105	All	8 Aug 1990
P106	All	8 June 1989

(continued)

**Table 3-9 (continued)**

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
P108	All	8 Aug 1990
P109	All	8 June 1989
P110	All	8 Aug 1990
P111	All	8 June 1989
P112	All	8 Aug 1990
P113	All	8 Aug 1990
P114	All	8 Aug 1990
P115	All	8 Aug 1990
P116	All	8 Aug 1990
P118	All	8 Aug 1990
P119	All	8 Aug 1990
P120	All	8 Aug 1990
P121	All	8 June 1989
P122	All	8 Aug 1990
P123	All	8 Aug 1990
U001	All	8 Aug 1990
U002	All	8 Aug 1990
U003	All	8 Aug 1990
U004	All	8 Aug 1990
U005	All	8 Aug 1990
U006	All	8 Aug 1990
U007	All	8 Aug 1990
U008	All	8 Aug 1990
U009	All	8 Aug 1990
U010	All	8 Aug 1990
U011	All	8 Aug 1990
U012	All	8 Aug 1990
U014	All	8 Aug 1990
U015	All	8 Aug 1990
U016	All	8 Aug 1990
U017	All	8 Aug 1990
U018	All	8 Aug 1990
U019	All	8 Aug 1990
U020	All	8 Aug 1990
U021	All	8 Aug 1990
U022	All	8 Aug 1990
U023	All	8 Aug 1990
U024	All	8 Aug 1990

(continued)

**Table 3-9 (continued)**

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
U025	All	8 Aug 1990
U026	All	8 Aug 1990
U027	All	8 Aug 1990
U028	All	8 June 1989
U029	All	8 Aug 1990
U030	All	8 Aug 1990
U031	All	8 Aug 1990
U032	All	8 Aug 1990
U033	All	8 Aug 1990
U034	All	8 Aug 1990
U035	All	8 Aug 1990
U036	All	8 Aug 1990
U037	All	8 Aug 1990
U038	All	8 Aug 1990
U039	All	8 Aug 1990
U041	All	8 Aug 1990
U042	All	8 Aug 1990
U043	All	8 Aug 1990
U044	All	8 Aug 1990
U045	All	8 Aug 1990
U046	All	8 Aug 1990
U047	All	8 Aug 1990
U048	All	8 Aug 1990
U049	All	8 Aug 1990
U050	All	8 Aug 1990
U051	All	8 Aug 1990
U052	All	8 Aug 1990
U053	All	8 Aug 1990
U055	All	8 Aug 1990
U056	All	8 Aug 1990
U057	All	8 Aug 1990
U058	All	8 June 1989
U059	All	8 Aug 1990
U060	All	8 Aug 1990
U061	All	8 Aug 1990
U062	All	8 Aug 1990
U063	All	8 Aug 1990
U064	All	8 Aug 1990

(continued)

**Table 3-9 (continued)**

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
U066	All	8 Aug 1990
U067	All	8 Aug 1990
U068	All	8 Aug 1990
U069	All	8 June 1989
U070	All	8 Aug 1990
U071	All	8 Aug 1990
U072	All	8 Aug 1990
U073	All	8 Aug 1990
U074	All	8 Aug 1990
U075	All	8 Aug 1990
U076	All	8 Aug 1990
U077	All	8 Aug 1990
U078	All	8 Aug 1990
U079	All	8 Aug 1990
U080	All	8 Aug 1990
U081	All	8 Aug 1990
U082	All	8 Aug 1990
U083	All	8 Aug 1990
U084	All	8 Aug 1990
U084	All	8 Aug 1990
U085	All	8 Aug 1990
U086	All	8 Aug 1990
U087	All	8 June 1989
U088	All	8 June 1989
U089	All	8 Aug 1990
U090	All	8 Aug 1990
U091	All	8 Aug 1990
U092	All	8 Aug 1990
U093	All	8 Aug 1990
U094	All	8 Aug 1990
U095	All	8 Aug 1990
U096	All	8 Aug 1990
U097	All	8 Aug 1990
U098	All	8 Aug 1990
U099	All	8 Aug 1990
U101	All	8 Aug 1990
U101	All	8 June 1989
U103	All	8 Aug 1990

(continued)

**Table 3-9 (continued)**

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
U105	All	8 Aug 1990
U106	All	8 Aug 1990
U107	All	8 June 1989
U108	All	8 Aug 1990
U109	All	8 Aug 1990
U110	All	8 Aug 1990
U111	All	8 Aug 1990
U112	All	8 Aug 1990
U113	All	8 Aug 1990
U114	All	8 Aug 1990
U115	All	8 Aug 1990
U116	All	8 Aug 1990
U117	All	8 Aug 1990
U118	All	8 Aug 1990
U119	All	8 Aug 1990
U120	All	8 Aug 1990
U121	All	8 Aug 1990
U122	All	8 Aug 1990
U123	All	8 Aug 1990
U124	All	8 Aug 1990
U125	All	8 Aug 1990
U126	All	8 Aug 1990
U127	All	8 Aug 1990
U128	All	8 Aug 1990
U129	All	8 Aug 1990
U130	All	8 Aug 1990
U131	All	8 Aug 1990
U132	All	8 Aug 1990
U133	All	8 Aug 1990
U134	All	8 Aug 1990
U135	All	8 Aug 1990
U136	Wastewater	8 Aug 1990
U136	Nonwastewater	8 May 1992
U137	All	8 Aug 1990
U138	All	8 Aug 1990
U140	All	8 Aug 1990
U141	All	8 Aug 1990
U142	All	8 Aug 1990

(continued)

**Table 3-9 (continued)**

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
U143	All	8 Aug 1990
U144	All	8 Aug 1990
U145	All	8 Aug 1990
U146	All	8 Aug 1990
U147	All	8 Aug 1990
U148	All	8 Aug 1990
U149	All	8 Aug 1990
U150	All	8 Aug 1990
U151	Wastewater	8 Aug 1990
U151	Nonwastewater	8 May 1992
U152	All	8 Aug 1990
U153	All	8 Aug 1990
U154	All	8 Aug 1990
U155	All	8 Aug 1990
U156	All	8 Aug 1990
U157	All	8 Aug 1990
U158	All	8 Aug 1990
U159	All	8 Aug 1990
U160	All	8 Aug 1990
U161	All	8 Aug 1990
U162	All	8 Aug 1990
U163	All	8 Aug 1990
U164	All	8 Aug 1990
U165	All	8 Aug 1990
U166	All	8 Aug 1990
U167	All	8 Aug 1990
U168	All	8 Aug 1990
U169	All	8 Aug 1990
U170	All	8 Aug 1990
U171	All	8 Aug 1990
U172	All	8 Aug 1990
U173	All	8 Aug 1990
U174	All	8 Aug 1990
U176	All	8 Aug 1990
U177	All	8 Aug 1990
U178	All	8 Aug 1990
U179	All	8 Aug 1990
U180	All	8 Aug 1990

(continued)



**Table 3-9 (continued)**

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
U181	All	8 Aug 1990
U182	All	8 Aug 1990
U183	All	8 Aug 1990
U184	All	8 Aug 1990
U185	All	8 Aug 1990
U186	All	8 Aug 1990
U187	All	8 Aug 1990
U188	All	8 Aug 1990
U189	All	8 Aug 1990
U190	All	8 June 1989
U191	All	8 Aug 1990
U192	All	8 Aug 1990
U193	All	8 Aug 1990
U194	All	8 Aug 1990
U196	All	8 Aug 1990
U197	All	8 Aug 1990
U200	All	8 Aug 1990
U201	All	8 Aug 1990
U202	All	8 Aug 1990
U203	All	8 Aug 1990
U204	All	8 Aug 1990
U205	All	8 Aug 1990
U206	All	8 Aug 1990
U207	All	8 Aug 1990
U208	All	8 Aug 1990
U209	All	8 Aug 1990
U210	All	8 Aug 1990
U211	All	8 Aug 1990
U212	All	8 Aug 1990
U213	All	8 Aug 1990
U214	All	8 Aug 1990
U215	All	8 Aug 1990
U216	All	8 Aug 1990
U217	All	8 Aug 1990
U218	All	8 Aug 1990
U219	All	8 Aug 1990
U220	All	8 Aug 1990
U221	All	8 June 1989

(continued)

**Table 3-9 (continued)**

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
U222	All	8 Aug 1990
U223	All	8 June 1989
U225	All	8 Aug 1990
U226	All	8 Aug 1990
U227	All	8 Aug 1990
U228	All	8 Aug 1990
U234	All	8 Aug 1990
U235	All	8 June 1989
U236	All	8 Aug 1990
U237	All	8 Aug 1990
U238	All	8 Aug 1990
U239	All	8 Aug 1990
U240	All	8 Aug 1990
U243	All	8 Aug 1990
U244	All	8 Aug 1990
U246	All	8 Aug 1990
U247	All	8 Aug 1990
U248	All	8 Aug 1990
U249	All	8 Aug 1990

a This table also does not include contaminated soil and debris wastes.

b The standard has been revised in the Third Third Final Rule.

c No land disposal standard has been revised in the Third Third Final Rule.

(continued)

**Table 3-9 (continued)**

*Part 2--Summary of Effective Dates of Land Disposal Restrictions for Contaminated Soil and Debris (CSD)*

	<b>Restricted hazardous waste in CSD</b>	<b>Effective date</b>
1.	Solvent-(F001-F005) and dioxin-(F020-F023 and F026-F028) containing soil and debris from CERCLA response of RCRA corrective actions.	8 Nov 1990
2.	Soil and debris not from CERCLA response or RCRA corrective actions contaminated with less than 1 percent total solvents (F001-F005) or dioxins (F020-F023 and F026-F028).	8 Nov 1990
3.	Soil and debris contaminated with California list HOCs from CERCLA response or RCRA corrective actions.	8 Nov 1990
4.	Soil and debris contaminated with California list HOCs not from CERCLA response or RCRA corrective actions.	8 July 1989
5.	All soil and debris contaminated with First Third wastes for which treatment standards are based on incineration.	8 Aug 1990
6.	All soil and debris contaminated with Second Third wastes for which treatment standards are based on incineration.	8 June 1991
7.	All soil and debris contaminated with Third Third wastes or, First or Second Third "soft hammer" wastes which had treatment standards promulgated in the Third Third rule, for which treatment standards are based on incineration, vitrification, mercury retorting, acid leaching followed by chemical precipitation, or thermal recovery of metals; as well as all inorganic solids debris contaminated with D004-D011 wastes, and all soil and debris contaminated with mixed RCRA/radioactive wastes.	8 May 1993
8.	Debris that is contaminated with wastes listed in 40 CFR 268.10, 268.11, and 268.12 (including such wastes that are mixed radioactive hazardous wastes), and debris that is contaminated with any characteristic waste for which treatment standards are established (including such wastes that are mixed radioactive hazardous wastes).	8 May 1993
9.	Hazardous soil having treatment standards based on incineration, mercury retorting or vitrification, and soils contaminated with hazardous wastes listed in 40 CFR 268.10, 268.11, 268.12 that are mixed radioactive hazardous wastes.	8 May 1993

**NOTE:**

1. Appendix VII is provided for the convenience of the reader.
2. Contaminated Soil and Debris Rule will be promulgated in the future.

[56 FR 3912, Jan. 31, 1991]

**Table 3-10**

**Constituent Concentrations in Waste Extract (CCWE)**

Waste code	Concentration (mg/L)	
	Wastewater	Non-wastewater
D004* Arsenic (CAS 7440-38-2)	NA	5.0***
D005* Barium (CAS 7440-39-3)	NA	100
D006* Cadmium (CAS 7440-43-9).	NA	1.0
D007* Chromium (Total) (CAS 7440-47-32).	NA	5.0
D008* Lead (CAS 7439-92-1)	NA	5.0
D009** (Low Mercury Subcategory less than 260 mg/kg) Mercury (CAS 7439-97-6).	NA	0.20
D010* Selenium (CAS 7782-49-2).	NA	5.7
D011* Silver (CAS 7440-22-4)	NA	5.0
F001-F005** (spent solvents)		
Acetone (CAS 67-64-1)	0.05	0.59
n-Butyl alcohol (CAS 71-36-3).	5.0	5.0
Carbon disulfide (CAS 75-15-0)	NA	4.8
Carbon tetrachloride (CAS 56-23-5).	0.05	0.96
Chlorobenzene (CAS 108-90-7)	0.15	0.05
Cresols (and cresylic acid)	2.82	0.75
Cyclohexanone (CAS 108-94-1).	NA	0.75
1,2-Dichlorobenzene (CAS 95-50-1)	0.65	0.125
Ethyl acetate (CAS 141-78-6).	0.05	0.75
Ethylbenzene (CAS 100-41-4)	0.05	0.053
Ethyl ether (CAS 60-29-7).	0.05	0.75
Isobutanol (CAS 78-83-1)	5.0	5.0
Methanol (CAS 67-56-1).	NA	0.75
Methylene chloride (CAS 75-9-2).	0.20	0.96
Methyl ethyl ketone (CAS 78-93-3)	0.05	0.75
Methyl isobutyl ketone (CAS 108-10-1).	0.05	0.33
Nitrobenzene (CAS 98-95-3)	0.66	0.125
Pyridine (CAS 110-86-1).	1.12	0.33
Tetrachloroethylene (CAS 127-18-4).	0.079	0.05
Toluene (CAS 108-88-3).	1.12	0.33
1,1,1-Trichloroethane (CAS 71-55-6).	1.05	0.41

(continued)

Table 3-10 (continued)

Waste code	Concentration (mg/L)	
	Wastewater	Non-wastewater
1,1,2-Trichloro-1,2,2-Trifluoroethane (CAS 76-13-1)	1.05	0.96
Trichloroethylene (CAS 79-01-6).	0.062	0.091
Trichlorofluoromethane (CAS 75-69-4)	0.05	0.96
Xylene	0.05	0.15
<b>F006*</b>		
Cadmium (CAS 7440-43-9).	NA	0.066
Chromium (total) (CAS 7440-47-32)	NA	5.2
Lead (CAS 7439-92-1)	NA	0.51
Nickel (CAS 7440-02-0)	NA	0.32
Silver (CAS 7440-22-4)	NA	0.072
<b>F007*, F008*, F009*, F011* and F012*</b>		
Cadmium (CAS 7440-43-9)	NA	0.066
Chromium (total)(CAS 7440-47-32)	NA	5.2
Lead (CAS 7439-92-1)	NA	0.51
Nickel (CAS 7440-02-0)	NA	0.32
Silver (CAS 7440-22-4)	NA	0.072
<b>F019*</b>		
Chromium (Total) (CAS 7440-47-32)	NA	5.2
<b>F020-F023 and F026-F026 dioxin containing wastes (same for wastewaters and non-wastewaters)</b>		
HxCDD--All Hexachlorodibenzo-p-dioxins		< 1 ppb
HxCDF--All Hexachlorodibenzofurans		< 1 ppb
PeCDD--All Pentachlorodibenzo-p-dioxins		< 1 ppb
PeCDF--All Pentachlorodibenzofurans		< 1 ppb
TCDD--All Tetrachlorodibenzo-p-dioxins		< 1 ppb
TCDF--All Tetrachlorodibenzofurans		< 1 ppb
2,4,5-Trichlorophenol (CAS 95-95-4).		< 1 ppm
2,4,6-Trichlorophenol (CAS 86-06-2).		< 0.05 ppm
2,3,4,6-Tetrachlorophenol (CAS 58-90-2).		< 0.05 ppm
Pentachlorophenol (CAS 87-66-5)		< 0.01 ppm
<b>F024*</b>		
Chromium (total) (CAS 7440-47-32)	NA	0.073
Lead (CAS 7439-92-1)	NA	Reserved
Nickel (CAS 7440-02-0)	NA	0.088
<b>F037*</b>		
Chromium(total).	NA	1.7
Nickel.	NA	0.20
<b>F038*</b>		
Chromium(total).	NA	1.7
Nickel.	NA	0.20

(continued)

Table 3-10 (continued)

Waste code	Concentration (mg/L)	
	Wastewater	Non-wastewater
<b>F039*</b>		
Antimony (CAS 7440-36-0)	NA	0.23
Arsenic (CAS 7440-38-2)	NA	5.0
Barium (CAS 7440-39-3)	NA	52
Cadmium (CAS 7440-43-9)	NA	0.066
Chromium (CAS 7440-47-32)	NA	5.2
Lead (CAS 7439-92-1)	NA	0.51
Mercury (CAS 7439-97-6)	NA	0.025
Nickel (CAS 7440-02-0)	NA	0.32
Selenium (CAS 7782-49-2)	NA	5.7
Silver (CAS 7440-22-4)	NA	0.072
<b>K001*</b>		
Lead (CAS 7439-92-1)	NA	0.51
<b>K002*, K003*, K004*, and K005*</b>		
Chromium(Total) (CAS 7440-47-32)	NA	0.094
Lead (CAS 7439-92-1).	NA	0.37
<b>K006* (anhydrous)</b>		
Chromium (Total) (CAS 7440-47-32)	NA	0.094
Lead (CAS 7439-92-1)	NA	0.37
<b>K006* (hydrated)</b>		
Chromium (Total) (CAS 7440-47-32)	NA	5.2
<b>K007* and K008*</b>		
Chromium(Total) (CAS 7440-47-32)	NA	0.094
Lead (CAS 7439-92-1).	NA	0.37
<b>K015*</b>		
Chromium(Total) (CAS 7440-47-32).	NA	1.7
Nickel (CAS 7440-02-0)	NA	0.2
<b>K021*</b>		
Antimony (CAS 7440-36-0)	NA	0.23
<b>K022*</b>		
Chromium(Total) (CAS 7440-47-32)	NA	5.2
Nickel (CAS 7440-02-0)	NA	0.32
<b>K028*</b>		
Chromium(Total) (CAS 74440-47-32)	NA	0.073
Lead (CAS 7439-92-1)	NA	0.021
Nickel (CAS 7440-02-0)	NA	0.088
<b>K031*</b>		
Arsenic (CAS 7440-38-2)	NA	5.6*
<b>K046*</b>		
Lead (CAS 7439-92-1)	NA	0.18

(continued)

**Table 3-10 (continued)**

Waste code	Concentration (mg/L)	
	Wastewater	Non-wastewater
K048*, K049*, K050*, K051*, and K052*		
Chromium(Total) (CAS 7440-47-32)	NA	1.7
Nickel (CAS 7440-02-0)	NA	0.20
K061*		
antimony.	NA	2.1
arsenic	NA	0.055
barium.	NA	7.6
beryllium.	NA	0.014
cadmium	NA	0.19
chromium (total)	NA	0.33
lead	NA	0.37
mercury	NA	0.009
nickel	NA	5.
selenium	NA	0.16
silver	NA	0.3
thallium	NA	0.078
zinc	NA	5.3
K062*		
Chromium (Total) (CAS 7440-47-32).	NA	0.094
Lead (CAS 7439-92-1)	NA	0.37
K069** (Calcium Sulfate subcategory)		
Cadmium (CAS 7440-43-9).	NA	0.14
Lead (CAS 7439-92-1)	NA	0.24
K071*		
Mercury (CAS 7439-97-6).	NA	0.025
K083*		
Nickel (CAS 7440-02-2)	NA	0.088
K084*		
Arsenic (CAS 7440-38-2)	NA	5.6*
K086*		
Chromium(Total) (CAS 7440-47-32).	NA	0.094
Lead (CAS 7439-92-1)	NA	0.37
K087*		
Lead (CAS 7439-92-1).	NA	0.51
K100*		
Cadmium (CAS 7440-43-9).	NA	0.066
Chromium(Total) (CAS 7440-47-32)	NA	5.2
Lead (CAS 7439-92-1)	NA	0.51
K101* and K102*		
Arsenic (CAS 7440-38-2).	NA	5.6*

(continued)

Table 3-10 (continued)

Waste code	Concentration (mg/L)	
	Wastewater	Non-wastewater
K106** (Low Mercury Subcategory--less than 260 mg/kg residues from RMERC) Mercury (CAS 7439-97-6)	NA	0.020
K106** (Low Mercury Subcategory--less than 260 mg/kg that are not residues from RMERC) Mercury (CAS 7439-97-6)	NA	0.025
K115* Nickel (CAS 7440-02-0)	NA	0.32
P010* (Arsenic acid)** Arsenic (CAS 7440-38-2).	NA	5.6*
P011* (Arsenic pentoxide) Arsenic (CAS 7440-38-2).	NA	5.6*
P012* (Arsenic trioxide) Arsenic (CAS 7440-38-2)	NA	5.6*
P013* (Barium cyanide) Barium (CAS 7440-39-3)	NA	52
P036* (Dichlorophenylarsine) Arsenic (CAS 7440-38-2)	NA	5.6*
P038* (Diethylarsine) Arsenic (CAS 7440-38-2)	NA	5.6*
P065** (Low Mercury Subcategory--less than 260 mg/kg Mercury residues from RMERC) (mercury fulminate) Mercury (CAS 7439-97-6)	NA	0.20
P065** (Low Mercury Subcategory--less than 260 mg/kg Mercury incinerator residues (not residues from RMERC) (Mercury fulminate) Mercury (CAS 7439-97-6).	NA	0.025
P073* (Nickel carbonyl) Nickel (CAS 7440-02-0)	NA	0.32
P074* (Nickel cyanide) Nickel (CAS 7440-02-0)	NA	0.32
P092** (Low Mercury Subcategory--less than 260 mg/kg Mercury residues from RMERC) (Phenyl mercury acetate) Mercury (CAS 7439-97-6)	NA	0.20
P092** (Low Mercury Subcategory--less than 260 mg/kg Mercury-incinerator residues (not residues from RMERC) (Phenyl mercury acetate) Mercury (CAS 7439-97-6)	NA	0.025
P099* (Potassium silver cyanide) Silver (CAS 7440-22-4)	NA	0.072

(continued)



**Table 3-10 (continued)**

Waste code	Concentration (mg/L)	
	Wastewater	Non-wastewater
P103* (Selenourea) Selenium (CAS 7782-49-2)	NA	5.7
P104* (Silver cyanide) Silver (CAS 7440-22-4)	NA	0.072
P110* (Tetraethyl lead) Lead (CAS 7439-92-1)	NA	0.51
P114* (Thallium selenite) Selenium (CAS 7782-49-2).	NA	5.7
U032* (Calcium chromate) Chromium(Total) (CAS 7440-47-32)	NA	0.094
U051* (Creosote) Lead (CAS 7439-92-1).	NA	0.51
U136* (Cacodylic acid) Arsenic (CAS 7440-38-2)	NA	5.6*
U144* (Lead acetate) Lead (CAS 7439-92-1).	NA	0.51
U145* (Lead phosphate) Lead (CAS 7439-92-1)	NA	0.51
U146* (Lead subacetate) Lead (CAS 7439-92-1)	NA	0.51
U151** (Low Mercury Subcategory--less than 260 mg/kg Mercury-- residues from RMERC) (mercury) Mercury (CAS 7439-97-6)	NA	0.20
U151** (Low Mercury Subcategory--less than 260 mg/kg Mercury-- that are not residues form RMERC) (mercury) Mercury (CAS 7439-97-6)	NA	0.025
U204* (Selenium dioxide) Selenium (CAS 7782-49-2).	NA	5.7
U205* (Selenium sulfide) Selenium (CAS 7782-49-2)	NA	5.7

\*See also Table CCW in 268.43 .

\*\*See also Table 2 in 268.42

\*\*\*These treatment standards have been based on EP Leachate analysis but this does not preclude the use of TCLP analysis.

**Table 3-11**

**Treatment Methods Expressed as Specific Technologies  
(40 CFR 268.42)**

**Chart 1: Technology Codes and Description of Technology-Based Standards**

Technology code	Description of technology-based standards
ADGAS	Venting of compressed gases into an absorbing or reacting media (i.e., solid or liquid)--venting can be accomplished through physical release utilizing valves/piping, physical penetration of the container, and/or penetration through detonation.
AMLGM	Amalgamation of liquid, elemental mercury contaminated with radioactive materials utilizing inorganic reagents such as copper, zinc, nickel, gold, and sulfur that result in a nonliquid, semi-solid amalgam and thereby reducing potential emissions of elemental mercury vapors to the air.
BIODG	Biodegradation of organics or non-organics (i.e., degradable inorganics that contain the elements of phosphorus, nitrogen, and sulfur) in units operated under either aerobic or anaerobic conditions such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., TOC can often be used as an indicator parameter for the biodegradation of many organic constituents that cannot be directly analyzed in wastewater residues).
CARBN	Carbon adsorption (granulated or powered) of nonmetallic inorganics, organo-metallics, and/or organic constituents, operated such that a surrogate compound or indicator parameter has not undergone breakthrough (e.g., Total Organic Carbon can often be used as an indicator parameter for adsorption of many organic constituents that cannot be directly analyzed in wastewater residues). Breakthrough occurs when the carbon has become saturated with the constituent (or indicator parameter) and substantial change in adsorption rate associated with that constituent occurs.
CHOXD	Chemical or electrolytic oxidation utilizing the following oxidation reagents (or waste reagents) or combinations of reagents: (1) Hypochlorite (e.g. b;each); (2) chlorine; (3) chlorine dioxide; (4) ozone or UV (ultraviolet light) assisted ozone; (5) peroxides; (6) persulfates; (7) perchlorates; (8) permangantes; and/or (9) other oxidizing reagents of equivalent efficiency, performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as as indicator parameter for the oxidation of many organic constituents that cannot be directly analyzed in wastewater residues). Chemical oxidation specifically indicates what is commonly referred to as alkaline chlorination.

**Note 1:** When a combination of these technologies (i.e., a treatment train) is specified as a single treatment standard, the order of application is specified in 268.42, Table 2 by the five letter technology code that must be applied first, then the designation "fb" (abbreviation for "followed by"), then the five letter technology code for the technology that must be applied next, and so on.

**Note 2:** When more than one technology (or treatment train) are specified as alternative treatment standards, the five letter technology codes (or the treatment trains) are separated by a semicolon (;) with the last technology preceded by the word "or". This indicates that any one of these BDAT technologies or treatment trains can be used for compliance with the standard.

(continued)

**Table 3-11 (continued)**

Technology code	Description of technology-based standards
CHRED	Chemical reduction utilizing the following reducing reagents (or waste reagents) or combination of reagents: (1) Sulfur dioxide; (2) sodium, potassium, alkali salts or sulfides, bisulfites, metabisulfites, and polyethylene glycols (e.g., NaPEG and KPEG); (3) sodium hydrosulfide; (4) ferrous salts; and/or (5) other reducing reagents of equivalent efficiency, performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Halogens can often be used as an indicator parameter for the reduction of many halogenated organic constituents that cannot be directly analyzed in wastewater residues). Chemical reduction is commonly used for the reduction of hexavalent chromium to the trivalent state.
DEACT	Deactivation to remove the hazardous characteristics of a waste due to its ignitability, corrosivity, and/or reactivity.
FSUBS	Fuel substitution in units operated in accordance with applicable technical operating requirements.
HLVIT	Vitrification of high level mixed radioactive wastes in units in compliance with all applicable radioactive protection requirements under control of the Nuclear Regulatory Commission.
IMERC	Incineration of wastes containing organics and mercury in units operated in accordance with the technical operating requirements of 40 CFR 264 subpart O and 265 subpart O. All wastewater and nonwastewater residues derived from this process must then comply with the corresponding treatment standards per waste code with consideration of any applicable subcategories (e.g., High or Low Mercury Subcategories).
INCIN	Incineration in units operated in accordance with the technical operating requirements of 40 CFR 264 subpart O and 265 subpart O.
LLEXT	Liquid-liquid extraction (often referred to as solvent extraction) of organics from liquid wastes into an immiscible solvent for which the hazardous constituents have a greater solvent affinity, resulting in an extract high in organics that must undergo either incineration, reuse as a fuel, or other recovery/reuse and a raffinate (extracted liquid waste) proportionately low in organics that must undergo further treatment as specified in the standard.
MACRO	Macroencapsulation with surface coating materials such as polymeric organic (e.g., resins and plastics) or with a jacket or inert inorganic materials to substantially reduce surface exposure to potential leaching media. Macroencapsulation specifically does not include any material that would be classified as a tank or container according to 40 CFR 260.10.
NEUTRO	Neutralization with the following reagents (or waste reagents) or combination of reagents: (1) Acids; (2) bases; or (3) water (including wastewaters) resulting in a pH greater than 2 but less than 12.5 as measured in the aqueous residuals.

**Note 1:** When a combination of these technologies (i.e., a treatment train) is specified as a single treatment standard, the order of application is specified in 268.42, Table 2 by the five letter technology code that must be applied first, then the designation "fb" (abbreviation for "followed by"), then the five letter technology code for the technology that must be applied next, and so on.

**Note 2:** When more than one technology (or treatment train) are specified as alternative treatment standards, the five letter technology codes (or the treatment trains) are separated by a semicolon (;) with the last technology preceded by the word "or". This indicates that any one of these BDAT technologies or treatment trains can be used for compliance with the standard.

(continued)

**Table 3-11 (continued)**

Technology code	Description of technology-based standards
NLDBR	No land disposal based on recycling.
PRECP	Chemical precipitation of metals and other inorganics as insoluble precipitates of oxides, hydroxides, carbonates, sulfates, chlorides, fluorides, or phosphates. The following reagents (or waste reagents) are typically used alone or in combination: (1) Lime (i.e., containing oxides and/or hydroxides of calcium and/or magnesium); (2) caustic (i.e., sodium and/or potassium hydroxides); (3) soda ash (i.e., sodium carbonate); (4) sodium sulfide; (5) ferric sulfate or ferric chloride; (6) alum; or (7) sodium sulfate. Additional flocculating, coagulation or similar reagents/processes that enhance sludge dewatering characteristics are not precluded from use.
RBERY	Thermal recovery of Beryllium.
RCGAS	Recovery/reuse of compressed gases including techniques such as reprocessing of the gases for reuse/resale; filtering/adsorption of impurities; remixing for direct reuse or resale; and use of the gas as a fuel source.
RCORR	Recovery of acids or bases utilizing one or more of the following recovery technologies: (1) Distillation (i.e., thermal concentration); (2) ion exchange; (3) resin or solid adsorption; (4) reverse osmosis; and/or (5) incineration for the recovery of acid--Note: this does not preclude the use of other physical phase separation or concentration techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RLEAD	Thermal recovery of lead in secondary lead smelters.
RMERC	Retorting or roasting in a thermal processing unit capable of volatilizing mercury and subsequent condensing the volatilized mercury for recovery. The retorting or roasting in a thermal unit (or facility) must be subject to one or more of the following: (a) a National Emissions Standard for Hazardous Air Pollutants (NESHAP) for mercury; (b) a Best Available Control Technology (BACT) or a Lowest Achievable Emission Rate (LAER) standard for mercury imposed pursuant to a Prevention of Significant Deterioration (PSD) permit; or (c) a state permit that establishes emission limitations (within meaning of section 302 of the CAA) for mercury. All wastewater and nonwastewater residues derived from this process must then comply with the corresponding treatment standards per waste code with consideration of any applicable subcategories (e.g., High or Low Mercury Subcategories).
RMETL	Recovery of metals or inorganics utilizing one or more of the following direct physical/removal technologies: (1) ion exchange; (2) resin or solid (i.e., zeolites) adsorption; (3) reverse osmosis; (4) chelation/solvent extraction; (5) freeze crystallization; (6) ultrafiltration and/or (7) simple precipitation (i.e., crystallization)--Note: This does not preclude the use of other physical phase separation or concentration techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.

**Note 1:** When a combination of these technologies (i.e., a treatment train) is specified as a single treatment standard, the order of application is specified in 268.42, Table 2 by the five letter technology code that must be applied first, then the designation "fb" (abbreviation for "followed by"), then the five letter technology code for the technology that must be applied next, and so on.

**Note 2:** When more than one technology (or treatment train) are specified as alternative treatment standards, the five letter technology codes (or the treatment trains) are separated by a semicolon (;) with the last technology preceded by the word "or". This indicates that any one of these BDAT technologies or treatment trains can be used for compliance with the standard.

(continued)

**Table 3-11 (continued)**

Technology code	Description of technology-based standards
RORGS	Recovery of organics utilizing one or more of the following technologies: (1) Distillation; (2) thin film evaporation; (3) steam stripping; (4) carbon adsorption; (5) critical fluid extraction; (6) liquid-liquid extraction; (7) precipitation/crystallization (including freeze crystallization); or (8) chemical phase separation techniques (i.e., addition of acids, bases, demulsifiers, or similar chemicals);--Note: this does not preclude the use of other physical phase separation techniques such as a decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RTHRM	Thermal recovery of metals or inorganics from nonwastewaters in units identified as industrial furnaces according to 40:260.10 (1), (6), (7), (11), and (12) under the definition of "industrial furnaces".
RZINC	Resmelting in high temperature metal recovery units for the purpose of recovery of zinc.
STABL	Stabilization with the following reagents (or waste reagents) or combinations of reagents: (1) Portland cement; or (2) lime/pozzolans (e.g., fly ash and cement kiln dust)--this does not preclude the addition of reagents (e.g., iron slats, silicates, and clays) designed to enhance the set/cure time and/or compressive strength, or to overall reduce the leachability of the metal or inorganic.
SSTRP	Steam stripping of organics from liquid wastes utilizing direct application of steam to the wastes operated such that liquid and vapor flow rates, as well as, temperature and pressure ranges have been optimized, monitored, and maintained. These operating parameters are dependent upon the design parameters of the unit such as, the number of separation stages and the internal column design. Thus, resulting in a condensed extract high in organics that must undergo either incineration, reuse as a fuel, or other recovery/reuse and an extract wastewater that must undergo further treatment as specified in the standard.
WETOX	Wet air oxidation performed in units such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., TOC can often be used as an indicator for the oxidation of many organic constituents that cannot be directly analyzed in wastewater residues).
WTRRX	Controlled reaction with water for highly reactive inorganic or organic chemicals with precautionary controls for protection of workers from potential violent reactions as well as precautionary controls for potential emissions of toxic/ignitable levels of gases released during the reaction.

**Note 1:** When a combination of these technologies (i.e., a treatment train) is specified as a single treatment standard, the order of application is specified in 268.42, Table 2 by the five letter technology code that must be applied first, then the designation "fb" (abbreviation for "followed by"), then the five letter technology code for the technology that must be applied next, and so on.

**Note 2:** When more than one technology (or treatment train) are specified as alternative treatment standards, the five letter technology codes (or the treatment trains) are separated by a semicolon (;) with the last technology preceded by the word "or". This indicates that any one of these BDAT technologies or treatment trains can be used for compliance with the standard.

(continued)

**Table 3-11 (continued)**

**Chart 2: Technology-Based Standards by RCRA Waste Codes**

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
D001 Ignitable liquids based on 261.21(a)(1) wastewaters	DEACT	NA
D001 Ignitable liquids based on 261.21(a)(1) Low TOC ignitable liquids subcategory Less than 10% TOC	NA	DEACT
D001 Ignitable Liquids based on 261.21(a)(1) High TOC ignitable liquids subcategory Greater than or equal to 10% TOC	NA	FSUBS; RORGS or INCIN
D001 Ignitable compressed gases based on 261.21(a)(2)	NA	DEACT***
D001 Ignitable reactives based on 261.21(a)(4)	NA	DEACT
D002 Acid subcategory based on 261.22(a)(1)	DEACT	DEACT
D002 Akaline subcategory based on 261.22(a)(1)	DEACT	DEACT
D002 Other corrosives based on 261.22(a)(2)	DEACT	DEACT
(NOTE: the following language under D003 reactive sulfides wastewater, "... but not including dilution as a substitute for adequate treatment," is suspended until 6-17-93; see FR 14319 3-17-93)		
D003 Reactive sulfides based on 261.23(a)(5) but not including dilution as a substitute for adequate treatment	DEACT	DEACT
D003 Explosives based on 261.23(a)(6--8)	DEACT	DEACT
D003 Water reactives based on 261.23(a)(2--4)	NA	DEACT
D003 Other reactives based on 261.23(a)(1)	DEACT	DEACT
D006 (CAS 7440-43-9) Cadmium containing batteries	NA	RTHRM
D008 (CAS 7439-92-1) Lead acid batteries that are identified as RCRA hazardous waste and that are not excluded from regulation (see 40:268.80)	NA	RLEAD

(continued)

Table 3-11 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
D009*** (CAS 7439-97-6) Mercury (High Mercury subcategory--greater than or equal to 260 mg/kg total mercury and organics (and are not incinerator residues))	NA	IMERC; or RMERC
D009*** (CAS 7439-97-6) Mercury (High Mercury subcategory--greater than or equal to 260 mg/kg total mercury inorganics (including incinerator residues and residues from RMERC))	NA	RMERC
D012** (CAS 72-20-8) Endrin	BIODG; or INCIN	NA
D013** (CAS 58-89-9) Lindane	CARBN; or INCIN	NA
D014** (CAS 72-43-5) Methoxychlor	WETOX; or INCIN	NA
D015** (CAS 8001-35-1) Toxaphene	BIODG; or INCIN	NA
D016** (CAS 94-75-7) 2,4-D	CHOXD; BIODG or INCIN	NA
D017** (CAS 93-72-1) 2,4,5-TP	CHOXD or INCIN	NA
F005*** (CAS 79-46-9) 2-Nitropropane	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
F005*** (CAS 110-80-5) 2-Ethoxyethanol	BIODG; or INCIN	INCIN
F024***	INCIN	INCIN
K025 Distillation bottoms from the production of nitrobenzene by the nitration of benzene	LLEXT fb SSTRP fb CARBN; or INCIN	INCIN
K026 Stripping still tails from the production of methyl ethyl pyridines	INCIN	INCIN
K027 Centrifuge and distillation residues from toluene diisocyanate production	CARBN or INCIN	FSUBS or INCIN
K039 Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate	CARBN or INCIN	FSUBS or INCIN
K044 Wastewater treatment sludges from the manufacturing and processing of explosives	DEACT	DEACT
K045 Spent carbon from the treatment of wastewater containing explosives	DEACT	DEACT

(continued)

**Table 3-11 (continued)**

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
K047 Pink/red water from TNT operations	DEACT	DEACT
K069*** Emission control dust/sludge from secondary lead smelting: Non-Calcium Sulfate Subcategory	NA	RLEAD
K106*** Wastewater treatment sludge from the mercury cell process in chlorine production: (High mercury subcategory--greater than or equal to 260 mg/kg total mercury.)	NA	RMERC
K107 Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	INCIN; or CHOXD fb CARBN; or BIODG fb CARBN	INCIN
K108 Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethyl-hydrazine (UDMH) from carboxylic acid hydrazides.	INCIN; or CHOXD fb CARBN; or BIODG fb CARBN	INCIN
K109 Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	INCIN; or CHXOD fb CARBN; or BIODG fb CARBN	INCIN
K110 Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	INCIN; or CHOXD fb CARBN; or BIODG fb CARBN	INCIN
K112 Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene	INCIN; or CHOXD fb CARBN; or BIODG fb CARBN	INCIN
K113 Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotulene	CARBN; or INCIN	FSUBS; or INCIN
K114 Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	CARBN; or INCIN	FSUBS; or INCIN
K115 Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	CARBN; or INCIN	FSUBS; or INCIN

(continued)



**Table 3-11 (continued)**

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
K116 Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine	CARBN; or INCIN	FSUBS; or INCIN
K123 Process wastewater (including supernates, filtrates, and washwaters) from the production of ethylenebis-dithiocarbamic acid and its salts	INCIN; or CHOXD fb (BIODG or CARBN)	INCIN
K124 Reactor vent scrubber water from the production of ethylenebisdithiocarbamic acid and its salts	INCIN; or CHOXD fb (BIODG or CARBN)	INCIN
K125 Filtration, evaporation, and centrifugation solids from the production of ethylenebisdithiocarbamic acid and its salts	INCIN; or CHOXD fb (BIODG or CARBN)	INCIN
K126 Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylene bisdithiocarbamic acid and its salts	INCIN; or CHOXD fb (BIODG or CARBN)	INCIN
P001 (CAS 81-81-2) Warfarin (>0.3%)	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
P002 (CAS 591-08-2) 1-Acetyl-2-thiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P003 (CAS 107-02-8) Aceolein	NA	FSUBS; or INCIN
P005 (CAS 107-18-6) Allyl alcohol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
P006 (CAS 20859-73-8) Aluminum phosphide	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
P007 (CAS 2763-96-4) 5-Aminoethyl 3-isoxazolol	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P008 (CAS 504-24-5) 4-Aminopyridine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P009 (CAS 131-74-8) Ammonium picrate	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
P014 (CAS 108-98-5) Thiophenol (Benzebe thiol)	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)

**Table 3-11 (continued)**

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
P015 (CAS 7440-41-7) Berylliumdust	RMETL; or RTHRM	RMETL; or RTHRM
P016 (CAS 542-88-1) Bis(chloromethyl)ether	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P017 (CAS 598-31-2) Bromoacetone	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P018 (CAS 357-57-3) Brucine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P022** (CAS 75-15-0) Carbon disulfide	NA	INCIN
P023 (CAS 107-20-0) Chloroacetaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P026 (CAS 5344-82-1) 1-(o-Chlorophenyl) thiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P027 (CAS 542-76-7) 3-Chloropropionitrile	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P028 (CAS 100-44-7) Benzyl chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P031 (CAS 460-19-5) Cyanogen	CHOXD; WETOX or INCIN	CHOXD; WETOX or INCIN
P033 (CAS 506-77-4) Cyanogen chloride	CHOXD; WETOX or INCIN	CHOXD; WETOX or INCIN
P034 (CAS 131-89-5) 2-Cyclohexyl-4,6-dinitrophenol	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P040 (CAS 297-97-2) O,O-Diethyl O-pyrzinyI phosphorothioate	CARBN; or INCIN	FSUBS; or INCIN
P041 (CAS 311-45-5) Diethyl-p-nitrophenyl phosphate	CARBN; or INCIN	FSUBS; or INCIN
P042 (CAS 51-43-4) Epinephrine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P043 (CAS 55-91-4) Diisopropyl fluorophosphate(DFP)	CARBN; or INCIN	FSUBS; or INCIN
P044 (CAS 60-51-5) Dimethoate	CARBN; or INCIN	FSUBS; or INCIN

(continued)

**Table 3-11 (continued)**

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
P045 (CAS 39196-18-4) Thiofanox	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P046 (CAS 122-09-8) alpha, alpha-Dimethylphenethylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P047 (CAS 534-52-1) 4,6-Dinitro-o-cresol salts	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P049 (CAS 541-53-7) 2,4-Dithioblutret	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P054 (CAS 151-56-4) Aziridine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P056** (CAS 7782-41-4) Fluorine	NA	ADGAS fb NEUTR
P057 (CAS 640-19-7) Fluoroacetamide	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P058 (CAS 62-74-8) Fluoroacetic acid, sodium salt	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P062 (CAS 757-58-4) Hexaethyltetraphosphate	CARBN; or INCIN	FSUBS; or INCIN
P064 (CAS 624-83-9) Isocyanic acid, ethyl ester	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P065*** (CAS 628-86-4) Mercury fulminate: (High Mercury Subcategory-- greater than or equal to 260 mg/kg total Mercury either incinerator residues or residues from RMERC)	NA	RMERC
P065*** (CAS 628-86-4) Mercury fulminate: (All Nonwastewaters that are not incinerator residues from RMERC; regardless of Mercury content)	NA	IMERC
P066 (CAS 16752-77-5) Methomyl	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P067 (CAS 75-55-8) 2-Methylaziridine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)

Table 3-11 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
P068 (CAS 60-34-4) Methyl hydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
P069 (CAS 75-86-5) Methylactonitrile	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P070 (CAS 116-06-3) Aldicarb	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P072 (CAS 86-88-4) 1-Naphthyl-2-thiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P075 (CAS 54-11-5) Nicotine and salts	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P076 (CAS 10102-43-9) Nitric oxide	ADGAS	ADGAS
P078 (CAS 10102-44-0) Nitrogen dioxide	ADGAS	ADGAS
P081 (CAS 55-63-0) Nitroglycerin	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
P078 (CAS 10102-44-0) Nitrogen dioxide	ADGAS	ADGAS
P081 (CAS 55-63-0) Nitroglycerin	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
P082** (CAS 62-75-9) N-Nitrosodimethylamine	NA	RMERC
P084 (CAS 4549-40-0) N-Nitrosomethylvinylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P085 (CAS 152-16-9) Octamethylpyrophosphoramidate	CARBON; or INCIN	FSUBS; or INCIN
P087 (CAS 20816-12-0) Osmium tetroxide	RMETL; or RTHRM	RMETL; or RTHRM
P088 (CAS 145-73-3) Endothall	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
P092*** (CAS 62-38-4) Phenyl mercury acetate: (High Mercury Subcategory - greater than or equal to 260 mg/kg total Mercury - either incinerator residues or residues from RMERC)	NA	REMEC

(continued)

**Table 3-11 (continued)**

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
P092*** (CAS 62-38-4) Phenyl mercury acetate: (All nonwastewaters that are not incinerator residues and are not residues from RMERC: regardless of Mercury Content)	NA	IMERC; or RMERC
P093 (CAS 103-85-5) N-Phenylthiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P095 (CAS 75-44-5) Phosgene	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P096 (CAS 7803-51-2) Phosphine	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
P102 (CAS 107-19-7) Propargyl alcohol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
P105 (CAS 26628-22-8) Sodium azide	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; or INCIN
P108 (CAS 57-24-9) Strychnine and salts	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P109 (CAS 3689-24-5) Tetraethyldithiopyrophosphate	CARBN; or INCIN	FSUBS; or INCIN
P112 (CAS 509-14-8) Tetranitromethane	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
P113** (CAS 1314-32-5) Thallic oxide	NA	RTHRM; or STABL
P115** (CAS 7446-18-6) Thallium (1) sulfate	NA	RTHRM; or STABL
P116 (CAS 79-19-6) Thiosemicarbazide	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P118 (CAS 75-70-7) Trichloromethanethiol	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P119** (CAS 7803-55-8)	NA	STABL
P120** (CAS 1314-62-1) Vanadium pentoxide	NA	STABL
P122 (CAS 1314-84-7) Zinc Phosphide (>10%)	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
U001 (CAS 75-07-0) Acetaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)

**Table 3-11 (continued)**

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U003** (CAS 75-05-8) Acetonitrile	NA	INCIN
U006 (CAS 75-36-5) Acetyl Chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U007 (CAS 79-06-1) Acrylamide	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U008 (CAS 79-10-7) Acrylic acid	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U010 (CAS 50-07-7) Mitomycin C	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U011 (CAS 61-82-5) Amitrole	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U014 (CAS 492-80-8) Auramine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U015 (CAS 115-02-6) Azaserine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U016 (CAS 225-51-4) Benz(c)acridine	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U017 (CAS 98-87-3) Benzal chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U020 (CAS 98-09-9) Benzensulfonyl chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U021 (CAS 92-87-5) Benzidine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U023 (CAS 98-07-7) Benzotrichloride	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U026 (CAS 494-03-1) Chlomaphazin	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U033 (CAS 353-50-4) Carbonyl fluoride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)

Table 3-11 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U034 (CAS 75-87-6) Trichloroacetaldehyde (Chloral)	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U035 (CAS 305-03-3) Chlorambucil	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U038** (CAS 510-15-6) Chlorobenzilate	NA	INCIN
U041 (CAS 106-89-8) 1-Chloro-2,3-epoxypropane (Epichlorohydrin)	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U042** (CAS 110-75-8) 2-Chloroethyl vinyl ether	NA	INCIN
U046 (CAS 107-39-2) Chloromethyl methyl ether	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U049 (CAS 3165-93-3) 4-Chloro-o-toluidine hydrochloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U053 (CAS 4170-30-3) Crotonaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U055 (CAS 98-82-8) Cumene	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U056 (CAS 110-82-7) Cyclohexane	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U057** (CAS 108-94-1) Cyclohexanone	NA	FSUBS; or INCIN
U058 (CAS 50-18-0) Cyclophosphamide	CARBN; or INCIN	FSUBS; or INCIN
U059 (CAS 20830-81-3) Daunomycin	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U062 (CAS 2303-16-4) Diallate	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U064 (CAS 189-55-9) 1,2,7,8-Dibenzopyrene	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS;
U073 (CAS 91-94-1) 3,3'-Dichlorobenzidine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)

**Table 3-11 (continued)**

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U074 (CAS 1476-11-5) cis-1,4-Dichloro-2-butylene trans-1,4-Dichloro-2-butylene	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U085 (CAS 1464-53-5) 1,2:3,4-Diepoxybutane	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U086 (CAS 1615-80-1) N,N-Diethylhydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U087 (CAS 3288-58-2) O,O-Diethy S-methyldithiophosphate	CARBN; or INCIN	FSUBS; or INCIN
U089 (CAS 56-53-1) Diethy stilbestrol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U090 (CAS 94-58-6) Dihydrosafrole	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U091 (CAS 119-9-4) 3,3'-Dimethoxybenzidine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U092 (CAS 124-40-3) Dimethylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U093** (CAS 621-90-9) p-Dimethylaminoazobenzene	NA	INCIN
U094 (CAS 57-97-6) 7,12-Dimethy benz(a)anthracene	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U095 (CAS 119-93-7) 3,3'-Dimethylbenzidine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U096 (CAS 80-15-9) a,a-Dimethyl benzyl hydroperoxide	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U097 (CAS 79-44-7) Dimethylcarbomyl chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U098 (CAS 57-14-7) 1,1-Dimethylhydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U099 (CAS 540-73-8) 1,2-Dimethylhydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN

(continued)



Table 3-11 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U103 (CAS 77-78-1) Dimethyl sulfate	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U109 (CAS 122-66-7) 1,2-Diphenylhydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U110 (CAS 142-84-7) Dipropylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U113 (CAS 140-88-5) Ethyl acrylate	(WETOX or CHOXD) fb CARBN; or INCIN	FUSBS; or INCIN
U114 (CAS 111-54-6) Ethylene bis-dithiocarbamic acid	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U115 (CAS 75-21-8) Ethylene oxide	(WETOX or CHOXD) fb CARBN; or INCIN	CHOXD; or INCIN
U116 (CAS 96-45-7) Ethylene thiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U119 (CAS 62-50-0) Ethyl methane sulfonate	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U122 (CAS 50-00-0) Formaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U123 (CAS 64-18-6) Formic acid	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U124 (CAS 110-00-9) Furan	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U125 (CAS 98-01-1) Furfural	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U126 (CAS 765-34-4) Glycidaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U132 (CAS 70-30-4) Hexachlorophenene	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)

Table 3-11 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U133 (CAS 302-01-2) Hydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U134** (CAS 7664-39-3) Hydrogen Flouride	NA	ADGAS fb NEUTR; or NEUTR
U135 (CAS 7783-06-4) Hydrogen Sulfide	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
U143 (CAS 303-34-4) Lasiocarpine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U147 (CAS 108-31-6) Malaic anhydride	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U148 (CAS 123-33-1) Maleic hydrazide	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U149 (CAS 109-77-3) Malononitrile	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U150 (CAS 148-82-3) Melphalan	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U151*** (CAS 7439-97-6) Mercury: (High Mercury Subcategory - greater than or equal to 260 mg/kg total Mercury)	NA	RMERC
U153 (CAS 74-93-1) Methane thiol	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U154 (CAS 67-56-1) Methanol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U156 (CAS 79-22-1) Methyl chlorocarbonate	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U160 (CAS 1338-23-4) Methyl ethyl ketone perioxide	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U163 (CAS 70-25-7) N-Methyl N'-nitro N-Nitrosoguanidine	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U164 (CAS 56-04-2) Methylthiouracil	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)

Table 3-11 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U166 (CAS 130-15-4) 1,4-Naphthoquinone	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U167 (CAS 134-32-7) 1-Naphthylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U168** (CAS 91-59-8) 2-Naphthylamine	NA	INCIN
U171 (CAS 79-46-9) 2-Nitropropane	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U173 (CAS 1116-54-7) N-Nitroso-di-n-ethanolamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U176 (CAS 759-73-9) N-Nitroso-N-ethylurea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U177 (CAS 684-93-5) N-Nitroso-N-methylurea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U178 (CAS 615-53-2) N-Nitroso-N-methylurethane	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U182 (CAS 123-63-7) Peraldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U184 (CAS 76-01-7) Pentachloroethane	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U186 (CAS 504-60-9) 1,3-Pentadiene	(WETOX or CHOXD) fb	FSUBS; or INCIN
U189 (CAS 1314-80-3) Phosphorus sulfide	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
U191 (CAS 109-06-8) 2-Picoline	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U193 (CAS 1120-71-4) 1,3-Propane sultone	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U194 (CAS 107-10-8) n-Propylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)

Table 3-11 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U197 (CAS 106-51-4) p-Benzoquinone	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U200 (CAS 50-55-5) Reserpine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U201 (CAS 108-46-3) Resorcinol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U202 **** (CAS 81-07-2) Saccharin and salts	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U206 (CAS 18883-66-4) Steptozaotocin	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U213 (CAS 109-99-9) Tetrahydrofuran	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U214** (CAS 563-68-8) Thallium (1) acetate	NA	RTHRM; or STABL
U215** (CAS 6533-73-9) Thallium (1) carbonate	NA	RTHRM; or STABL
U216** (CAS 7791-12-0) Thallium (1) chloride	NA	RTHRM; or STABL
U217** (CAS 10102-45-1) Thallium (1) nitrate	NA	RTHRM; or STABL
U218 (CAS 62-55-5) Thioacetamide	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U219 (CAS 62-56-6) Thiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U221 (CAS 25376-45-8) Toluenediamine	CARBN; or INCIN	FSUBS; or INCIN
U222 (CAS 636-21-5) o-Toluidine hydrochloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U223 (CAS 26471-62-5) Toluene diisocyanate	CARBN; or INCIN	FSUBS; or INCIN
U234 (CAS 99-35-4) sym-Trinitrobenzene	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)

Table 3-11 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U236 (CAS 72-57-1) Trypan Blue	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U237 (CAS 66-57-1) Uracil mustard	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U238 (CAS 51-79-6) Ethyl carbamate	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U240 **** (CAS 94-75-7) 2,4-Dichlorophenoxyacetic (salts and esters)	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U244 (CAS 137-26-8) Thiram	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U246 (CAS 506-68-3) Cyanogen bromide	CHOXD; WETOX; or INCIN	CHOXD; WETOX; or INCIN
U248 (CAS 81-81-2) Warfarin (.3% or less)	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U249 (CAS 1314-84-7) Zinc Phoshide (<10%)	CHOXD; CHRED; or INCIN	CHOXD; CHRED or INCIN
U328 (CAS 95-53-4) o-toluidine	INCIN; or CHOXD fb (BIODG or CARBN); or BIODG fb CARBN	INCIN; or Thermal Destruction
U353 (CAS 106-49-0) p-toluidine	INCIN; or CHOXD fb (BIODG or CARBN); or BIODG fb CARBN	INCIN; or Thermal Destruction
U359 (CAS 110-80-5) 2-ethoxy-ethanol	INCIN; or CHOXD fb (BIODG or CARBN); or BIODG fb CARBN	INCIN; or FSUBS

\*See also Table CCWE in 268.41 (see accession number 8807).  
 \*\*See also Table CCW in 268.43 (see accession number 8808).  
 \*\*\*See also Tables CCWE in 268.41 (see accession number 8807) and CCW in 268.43 (see accession number 8808).  
 \*\*\*\*CAS Number given for parent compound only.

(continued)

**Table 3-11 (continued)**

**Chart 3: Technology-based Standards for Specific Radioactive Hazardous Mixed Waste**

WASTE CODE with WASTE DESCRIPTION and/or TREATMENT CATEGORY	WASTEWATERS	NON WASTEWATERS
D002, D004, D005, D006, and D007 Radioactive high level wastes generated during the reprocessing of fuel rods subcategory	NA	HLVIT
D008 (CAS 7439-92-1) Radioactive lead solids subcategory*	NA	MACRO
D008 Radioactive high level wastes generated during the reprocessing of fuel rods subcategory	NA	HLVIT
D009 (CAS 7439-97-6) Elemental mercury contaminated with radioactive materials	NA	AMLGM
D009 (CAS 7439-97-6) Hydraulic oil contaminated with mercury; radioactive materials subcategory	NA	IMERC
D009, D010, D011 Radioactive high level wastes generated during the reprocessing of fuel rods subcategory	NA	HLVIT
U151 (CAS 7439-97-6) Mercury: Elemental mercury contaminated with radioactive materials	NA	AMLGM
<p>* These lead solids include, but are not limited to, all forms of lead shielding, and other elemental forms of lead. These lead solids do not include treatment residuals such as hydroxide sludges, other wastewater treatment residuals, or incinerator ashes that can undergo conventional pozzolanic stabilization, nor do they include organolead materials that can be incinerated and stabilized as ash.</p>		



**Table 3-12**  
**Constituent Concentrations in Wastes (CCW)**  
**40 CFR 268.43(a)**

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
D003 (CAS 57-12-5) (reactive cyanides category-- based on 261.23(a)(5))		
Cyanides (Total)	Reserved	590 (3)
Cyanides (Amenable)	0.86	30
D004* (CAS 7440-38-2)		
Arsenic	5.0	NA
D005* (CAS 7440-39-2)		
Barium	100	NA
D006* (CAS 7440-43-9)		
Cadmium	1.0	NA
D007* (CAS 7440-47-32)		
Chromium (Total)	5.0	NA
D008* (CAS 7439-92-1)		
Lead	5.0	NA
D009* (CAS 7439-97-6)		
Mercury	0.20	NA
D010* (CAS 7782-49-2)		
Selenium	1.0	NA
D011* (CAS 7440-22-4)		
Silver	5.0	NA
D012** (CAS 720-20-8)		
Endrin	NA	0.13 (1)
D013** (CAS 58-89-9)		
Lindane	NA	0.066 (1)
D014** (CAS 72-43-5)		
Methoxychlor	NA	0.18 (1)
D015** (CAS 8001-35-1)		

(continued)



**Table 3-12 (continued)**

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
Toxaphene	NA	1.3 (1)
D016** (CAS 94-75-7) 2,4-D	NA	10.0 (1)
D017** (CAS 93-76-5) 2,4,5-TP Silvex	NA	7.9 (1)
F001-F005 spent solvents*** 1,1,2-Trichloroethane (CAS 71-55-6)	0.030	7.6 (1)
Benzene (CAS 71-43-2)	0.070	3.7 (1)
F001-F005 spent solvents (Pharmaceutical industry wastewater subcategory)		
Methylene chloride (CAS 75-09-2)	0.44	NA
F006*		
Cyanides (Total) (CAS 57-12-5)	1.2	590
Cyanides (Amenable) (CAS 57-12-5)	0.86	30
Cadmium (CAS 7440-43-9)	1.6	NA
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.040	NA
Nickel (CAS 7440-02-0)	0.44	NA
F007*		
Cyanides (total) (CAS 57-12-5)	1.9	590
Cyanides (amenable) (CAS 57-12-5)	0.1	30
Chromium (total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA
F008*		
Cyanides (total) (CAS 57-12-5)	1.9	590
Cyanides (amenable) (CAS 57-12-5)	0.1	30
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7439-92-1)	0.44	NA
F009*		
Cyanides (total) (CAS 57-12-5)	1.9	590
Cyanides (amenable) (CAS 57-12-5)	0.1	30
Chromium (CAS 7440-47-32)	0.32	NA

(continued)

**Table 3-12 (continued)**

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA
<b>F010</b>		
Cyanides (total) (CAS 57-12-5)	1.9	1.5
Cyanides (amenable) (CAS 57-12-5)	0.1	NA
<b>F011*</b>		
Cyanides (total) (CAS 57-12-5)	1.9	110
Cyanides (amenable) (CAS 57-12-5)	0.1	9.1
Chromium (total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA
<b>F012*</b>		
Cyanides (total) (CAS 57-12-5)	1.9	110
Cyanides (amenable) (CAS 57-12-5)	0.1	9.1
Chromium (total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA
<b>F019*</b>		
Cyanides (total) (CAS 57-12-5)	1.2	590 (3)
Cyanides (amenable) (CAS 57-12-5)	0.86	30 (3)
Chromium (total) (CAS 7440-47-32)	0.32	NA
<b>F024**</b>		
Note: F024 organic standards must be treated via incineration (INCIN)		
2-Chloro-1,3-butadiene (CAS 126-99-6)	0.28 (1)	0.28 (1)
3-Chloropropene (CAS 107-05- )	0.28 (1)	0.28 (1)
1,1-Dichloroethane (CAS 75-34-3)	0.014 (1)	0.014 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.014 (1)	0.014 (1)
1,2-Dichloropropane (CAS 78-87-5)	0.014 (1)	0.014 (1)
cis-1,3-Dichloropropene (CAS 10061-01-5)	0.014 (1)	0.014 (1)
trans-1,3-Dichloropropene (CAS 10061-02-6) .0.014 (1)	0.014 (1)	
Bis(2-ethylhexyl)phthalate (CAS 117-81-7) . 0.036 (1)	1.8 (1)	
Hexachloroethane (CAS 67-72-1)	0.036 (1)	1.8 (1)
Chromium (total) (CAS 7440-47-32)	0.35	NA
Nickel (CAS 7440-02-0)	0.47	NA
<b>F025 (light ends subcategory)</b>		
Chloroform (CAS 67-66-3)	0.046 (2)	6.2 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.21 (2)	6.2 (1)

(continued)

**Table 3-12 (continued)**

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
1,1-Dichloroethylene (CAS 75-35-4)	0.025 (2)	6.2 (1)
Methylene chloride (CAS 75-9-2)	0.089 (2)	31 (1)
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	6.2 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054 (2)	6.2 (1)
Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
Vinyl chloride (CAS 75-01-4)	0.27 (2)	33 (1)
<b>F025 (spent filters/aids and desiccants subcategory)</b>		
Chloroform (CAS 67-66-3)	0.046 (2)	6.2 (1)
Methylene chloride (CAS 75-9-2)	0.089 (2)	31 (1)
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	6.2 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054 (2)	6.2 (1)
Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
Vinyl chloride (CAS 75-01-4)	0.27 (2)	33 (1)
Hexachlorobenzene (CAS 118-74-1)	0.055 (2)	37 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.055 (2)	28 (1)
Hexachloroethane (CAS 67-72-1)	0.055 (2)	30 (1)
<b>F039** (and D001 and D002 wastes prohibited by 268.37)</b>		
Acetone (CAS 67-64-1)	0.28 (2)	160 (1)
Acenaphthylene (CAS 208-96-8)	0.059 (2)	3.4 (1)
Acenaphthene (CAS 83-32-9)	0.059 (2)	4.0 (1)
Acetonitrile (CAS 75-05-8)	0.17 (2)	NA
Acetophenone (CAS 96-86-2)	0.010 (2)	9.7 (1)
2-Acetylaminofluorene (CAS 53-96-3)	0.059 (2)	140 (1)
Acrolein		
Acrylonitrile (CAS 107-02-8)	0.29 (2)	NA
Aldrin (CAS 107-13-1)	0.24 (2)	84 (1)
(CAS 309-00-2)	0.021 (2)	0.066 (1)
4-Aminobiphenyl (CAS 92-67-1)	0.13 (2)	NA
Aniline (CAS 62-53-3)	0.81 (2)	14 (1)
Anthracene (CAS 120-12-7)	0.059 (2)	4.0 (1)
Aramite (CAS 140-57-8)	0.36 (2)	NA
Aroclor 1016 (CAS 12674-11-2)	0.13 (2)	0.92 (1)
Aroclor 1221 (CAS 11104-28-2)	0.14 (2)	0.92 (1)
Aroclor 1232 (CAS 11141-16-5)	0.013 (2)	0.92 (1)
Aroclor 1242 (CAS 53469-21-9)	0.0172	0.92 (1)
Aroclor 1248 (CAS 12672-29-6)	0.013 (2)	0.92 (1)
Aroclor 1254 (CAS 11097-69-1)	0.014 (2)	1.8 (1)
Aroclor 1260 (CAS 11096-82-5)	0.014 (2)	1.8 (1)
alpha-BHC (CAS 319-84-6)	0.00014 (2)	0.066 (1)
beta-BHC (CAS 319-85-7)	0.00014 (2)	0.066 (1)
delta-BHC (CAS 319-86-8)	0.023 (2)	0.066 (1)

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
gamma-BHC (CAS 58-89-9)	0.0017 (2)	0.066 (1)
Benzene (CAS 71-34-2)	0.14 (2)	36 (1)
Benzo(a)anthracene (CAS 56-55-3)	0.059 (2)	8.2 (1)
Benzo(b)fluoranthene (CAS 205-99-2)	0.055 (2)	3.4 (1)
Benzo(k)fluoranthene (CAS 207-08-9)	0.059 (2)	3.4 (1)
Benzo(g,h,i)perylene (CAS 191-24-2)	0.0055 (2)	1.5 (1)
Benzo(a)pyrene (CAS 5-32-8)	0.061 (2)	8.2 (1)
Bromodichloromethane (CAS 75-27-4)	0.35 (2)	15 (1)
Bromoform (CAS 72-25-2)	0.63 (2)	15 (1)
(Tribromomethane)		
Bromomethane (CAS 74-83-9)	0.11 (2)	15 (1)
(methyl bromide)		
4-Bromophenyl phenyl ether (CAS 101-55-3)	0.055 (2)	15 (1)
n-Butyl alcohol (CAS 71-36-3)	5.6 (2)	2.6 (1)
Butyl benzyl phthalate (CAS 85-68-7)	0.017 (2)	7.9 (1)
2-sec-Butyl-4,6-dinitrophenol (CAS 88-85-7). 0.066 (2)	2.5 (1)	
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	5.6 (1)
Carbon disulfide (CAS 75-15-0)	0.014 (2)	NA
Chlordane (CAS 57-74-9)	0.0033 (2)	0.13 (1)
p-Chloroaniline (CAS 106-47-8)	0.46 (2)	16 (1)
Chlorobenzene (CAS 108-90-7)	0.057 (2)	5.7 (1)
Chlorobenzilate (CAS 510-15-6)	0.10 (2)	NA
2-Chloro-1,3-butadiene (CAS 126-99-8)	0.057 (2)	NA
Chlorodibromomethane (CAS 124-48-1)	0.057 (2)	15 (1)
Chloroethane (CAS 75-00-3)	0.27 (2)	6.0 (1)
bis(2-Chloroethoxy) methane (CAS 111-91-1)	0.036 (2)	7.2 (1)
bis(2-Chloroethyl) ether (CAS 111-44-4)	0.033 (2)	7.2 (1)
Chloroform (CAS 67-66-3)	0.046 (2)	5.6 (1)
bis(2-Chloroisopropyl) ether(CAS 39638-32-9) 0.055 (2)	7.2 (1)	
p-Chloro-m-cresol (CAS 59-50-7)	0.018 (2)	14 (1)
Chloromethane (Methyl chloride)(CAS 74-87-3).0.19 (2)	33 (1)	
2-Chloronaphthalene (CAS 91-58-7)	0.055 (2)	5.6 (1)
2-Chlorophenol (CAS 95-57-8)	0.044 (2)	5.7 (1)
3-Chloropropylene (CAS 107-05-1)	0.036 (2)	28 (1)
Chrysene (CAS 218-01-9)	0.059 (2)	8.2 (1)
o-Cresol (CAS 95-48-7)	0.11 (2)	5.6 (1)
Cresol (m- and p-isomers)	0.77 (2)	3.2 (1)
Cyclohexanone (CAS 108-94-1)	0.36 (2)	NA
1,2-Dibromo-3-chloropane (CAS 96-12-8)	0.11 (2)	15 (1)
1,2-Dibromoethane (CAS 106-93-4)	0.028 (2)	15 (1)
(Ethylene dibromide)		
Dibromomethane (CAS 74-95-3)	0.11 (2)	15 (1)
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.72 (2)	10 (1)

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
(CAS 94-75-7)		
o,p'-DDD (CAS 53-19-0)	0.023 (2)	0.087 (1)
p,p'-DDD (CAS 72-54-8)	0.023 (2)	0.087 (1)
o,p'-DDE (CAS 3424-82-6)	0.031 (2)	0.087 (1)
p,p'-DDE (CAS 72-55-9)	0.031 (2)	0.087 (1)
o,p'-DDT (CAS 780-02-6)	0.0039 (2)	0.087 (1)
p,p'-DDT (CAS 50-29-3)	0.0039 (2)	0.087 (1)
Dibenzo(a,h)anthracene (CAS 53-70-3)	0.055 (2)	8.2 (1)
Dibenzo(a,e)pyrene (CAS 192-65-4)	0.061 (2)	NA
m-Dichlorobenzene (CAS 541-73-1)	0.036 (2)	6.2 (1)
o-Dichlorobenzene (CAS 95-50-1)	0.088 (2)	6.2 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.090 (2)	6.2 (1)
Dichlorodifluoromethane (CAS 75-71-8)	0.23 (2)	7.2 (1)
1,1-Dichloroethane (CAS 75-34-3)	0.059 (2)	7.2 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.21 (2)	7.2 (1)
1,1-Dichloroethylene (CAS 75-35-4)	0.025 (2)	33 (1)
trans-1,2-Dichloroethene	0.054 (2)	33 (1)
2,4-Dichlorophenol (CAS 120-83-2)	0.044 (2)	14 (1)
2,6-Dichlorophenol (CAS 87-65-0)	0.044 (2)	14 (1)
1,2-Dichloropropane	0.85 (2)	18 (1)
cis-1,3-Dichloropropene (CAS 10061-01-5)	0.036 (2)	18 (1)
trans-1,3-Dichloropropene (CAS 10061-02-6)	0.036 (2)	18 (1)
Dieldrin (CAS 60-57-1)	0.017 (2)	0.13 (1)
Diethyl phthalate (CAS 84-66-2)	0.20 (2)	28 (1)
2,4-Dimethyl phenol (CAS 105-67-9)	0.036 (2)	14 (1)
Dimethyl phthalate (CAS 131-11-3)	0.047 (2)	28 (1)
Di-n-butyl phthalate (CAS 84-74-2)	0.057 (2)	28 (1)
1,4-Dinitrobenzene (CAS 100-25-4)	0.32 (2)	2.3 (1)
4,6-Dinitro-o-cresol (CAS 534-52-1)	0.28 (2)	160 (1)
2,4-Dinitrophenol (CAS 51-28-5)	0.12 (2)	160 (1)
2,4-Dinitrotoluene (CAS 121-14-2)	0.32 (2)	140 (1)
2,6-Dinitrotoluene (CAS 606-20-2)	0.55 (2)	28 (1)
Di-n-octyl phthalate (CAS 117-84-0)	0.017 (2)	28 (1)
Di-n-propylnitrosamine (CAS 621-64-7)	0.40 (2)	14 (1)
Diphenylamine (CAS 122-39-4)	0.52 (2)	NA
1,2-Diphenyl hydrazine (CAS 122-66-7)	0.087 (2)	NA
Diphenylnitrosamine (CAS 621-64-7)	0.40 (2)	NA
1,4-Dioxane (CAS 123-91-1)	0.12 (2)	170 (1)
Disulfoton (CAS 298-04-4)	0.017 (2)	6.2 (1)
Endosulfan I (CAS 939-98-8)	0.023 (2)	0.066 (1)
Endosulfan II (CAS 33213-6-5)	0.029 (2)	0.13 (1)
Endosulfan sulfate (CAS 1031-07-8)	0.029 (2)	0.13 (1)
Endrin (CAS 72-20-8)	0.0028 (2)	0.13 (1)

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
Endrin aldehyde (CAS 7421-93-4)	0.025 (2)	0.13 (1)
Ethyl acetate (CAS 141-78-6)	0.34 (2)	33 (1)
Ethyl cyanide (CAS 107-12-0)	0.24 (2)	360 (1)
Ethyl benzene (CAS 100-41-4)	0.057 (2)	6.0 (1)
Ethyl ether (CAS 60-29-7)	0.12 (2)	160 (1)
bis(2-Ethylhexyl) phthalate (CAS 117-81-7)	0.28 (2)	28 (1)
Ethyl methacrylate (CAS 97-63-2)	0.14 (2)	160 (1)
Ethylene oxide (CAS 75-21-8)	0.12 (2)	NA
Famphur (CAS 52-85-7)	0.017 (2)	15 (1)
Fluoranthene (CAS 206-44-0)	0.068 (2)	8.2 (1)
Fluorene (CAS 86-73-7)	0.059 (2)	4.0 (1)
Fluorotrichloromethane (CAS 75-69-4)	0.020 (2)	33 (1)
Heptachlor (CAS 76-44-8)	0.0012 (2)	0.066 (1)
Heptachlor epoxide (CAS 1024-57-3)	0.016 (2)	0.066 (1)
Hexachlorobenzene (CAS 118-74-1)	0.055 (2)	37 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.055 (2)	28 (1)
Hexachlorocyclopentadiene (CAS 77-47-4)	0.057 (2)	3.6 (1)
Hexachlorodibenzo-furans	0.000063 (2)	0.001 (1)
Hexachlorodibenzo-p-dioxins	0.000063 (2)	0.001 (1)
Hexchloroethane (CAS 67-72-1)	0.055 (2)	28 (1)
Hexachloropropene (CAS 1888-71-7)	0.035 (2)	28 (1)
Indeno(1,2,3,-c,d)pyrene (CAS 193-39-5). 0.0055 (2)	8.2 (1)	
Iodomethane (CAS 74-88-4)	0.019 (2)	65 (1)
Isobutanol (CAS 78-83-1)	5.6 (2)	170 (1)
Isodrin (CAS 465-73-6)	0.021 (2)	0.066 (1)
Isosafrole (CAS 120-58-1)	0.081 (2)	2.6 (1)
Kepon (CAS 143-50-8)	0.0011 (2)	0.13 (1)
Methacrylonitrile (CAS 126-98-7)	0.24 (2)	84 (1)
Methanol (CAS 67-56-1)	5.6 (2)	NA
Methapyrilene (CAS 91-80-5)	0.081 (2)	1.5 (1)
Methoxychlor (CAS 72-43-5)	0.25 (2)	0.18 (1)
3-Methylcholanthrene (CAS 56-49-5)	0.0055 (2)	15 (1)
4,4-Methylene-bis-(2-chloroaniline) (CAS 101-14-4)	0.50 (2)	35 (1)
Methylene chloride (CAS 75-09-2)	0.089 (2)	33 (1)
Methyl ethyl ketone (CAS 78-93-3)	0.28 (2)	36 (1)
Methyl isobutyl ketone (CAS 108-10-1)	0.14 (2)	33 (1)
Methyl methacrylate (CAS 80-62-6)	0.14 (2)	160 (1)
Methyl methansulfonate (CAS 66-27-3)	0.018 (2)	NA
Methyl parathion (CAS 298-00-0)	0.014 (2)	4.6 (1)
Naphthalene (CAS 91-20-3)	0.059 (2)	3.1 (1)
2-Naphthylamine (CAS 91-59-8)	0.52 (2)	NA
p-Nitroaniline (CAS 100-01-6)	0.028 (2)	28 (1)

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
Nitrobenzene (CAS 96-95-3)	0.068 (2)	14 (1)
5-Nitro-o-toluidine (CAS 99-55-8)	0.32 (2)	28 (1)
4-Nitrophenol (CAS 100-02-7)	0.12 (2)	29 (1)
N-Nitrosodiethylamine (CAS 55-18-5)	0.40 (2)	28 (1)
N-Nitrosodimethylamine (CAS 62-75-9)	0.40 (2)	NA
N-Nitroso-di-n-butylamine (CAS 924-16-3).0.40 (2)	17 (1)	
N-Nitrosomethylethylamine (CAS 10595-95-6)	0.40 (2)	2.3 (1)
N-Nitrosomorpholine (CAS 59-89-2)	0.40 (2)	2.3 (1)
N-Nitrosopiperidine (CAS 100-75-4)	0.013 (2)	35 (1)
N-Nitrosopyrrolidine (CAS 930-55-2)	0.013 (2)	35 (1)
Parathion (CAS 56-38-2)	0.014 (2)	4.6 (1)
Pentachlorobenzene (CAS 608-93-5)	0.055 (2)	37 (1)
Pentachlorodibenzo-furans	0.000063 (2)	0.001 (1)
Pentachlorodibenzo-p-dioxins	0.000063 (2)	0.001 (1)
Pentachloronitrobenzene (CAS 82-68-8)	0.055 (2)	4.8 (1)
Pentachlorophenol (CAS 87-86-5)	0.089 (2)	7.4 (1)
Phenacetin (CAS 62-44-2)	0.081 (2)	16 (1)
Phenanthrene (CAS 85-01-8)	0.059 (2)	3.1 (1)
Phenol (CAS 108-95-2)	0.039 (2)	6.2 (1)
Phorate (CAS 298-02-2)	0.021 (2)	4.6 (1)
Phthalic anhydride (CAS 85-44-9)	0.069 (2)	NA
Pronamide (CAS 23950-58-5)	0.093 (2)	1.5 (1)
Pyrene (CAS 129-00-0)	0.067 (2)	8.2 (1)
Pyridine (CAS 110-86-1)	0.014 (2)	16 (1)
Safrole (CAS 94-59-7)	0.081 (2)	22 (1)
Silvex (2,4,5-TP) (CAS 93-72-1)	0.72 (2)	7.9 (1)
2,4,5-T (CAS 93-76-5)	0.72 (2)	7.9 (1)
1,2,4,5,-Tetrachlorobenzene (CAS 95-94-3)	0.055 (2)	19 (1)
Tetrachlorodibenzo-furans	0.000063 (2)	0.001 (1)
Tetrachlorodibenzo-p-dioxins	0.000063 (2)	0.001 (1)
1,1,1,2-Tetrachloroethane (CAS 630-20-6) 0.057 (2)	42 (1)	
1,1,2,2-Tetrachloroethane (CAS 70-34-6). 0.057 (2)	42 (1)	
Tetrachloroethene (CAS 127-18-4)	0.056 (2)	5.6 (1)
2,3,4,6-Tetrachlorophenol (CAS 58-90-2). 0.030 (2)	37 (1)	
Toluene (CAS 108-88-3)	0.080 (2)	28 (1)
Toxaphene (CAS 8001-35-1)	0.0095 (2)	1.3 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.055 (2)	19 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.054 (2)	5.6 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054 (2)	5.6 (1)
Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
2,4,5-Trichlorophenol (CAS 95-95-4)	0.18 (2)	37 (1)

(continued)

**Table 3-12 (continued)**

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
2,4,6-Trichlorophenol (CAS 88-06-2)	0.035 (2)37 (1)	
1,2,3-Trichloropropane (CAS 96-18-4)	0.85 (2)	28 (1)
1,1,2-Trichloro-1,2,2-trifluoro-ethane (CAS 76-13-1)	0.057 (2)	28 (1)
Tris(2,3-dibromopropyl (CAS 126-72-7)	0.11 (2)	NA
Vinyl chloride (CAS 75-01-4)	0.27 (2)	33 (1)
Xylene(s)	0.32 (2)	28 (1)
Cyanides (total) (CAS 57-12-5)	1.2 (2)	1.8 (1)
Fluoride (CAS 16964-48-8)	35 (2)	NA
Sulfide (CAS 8496-25-8)	14 (2)	NA
Antimony (CAS 7440-36-0)	1.9 (2)	NA
Arsenic (CAS 7440-38-2)	1.4 (2)	NA
Barium (CAS 7440-39-3)	1.2 (2)	NA
Beryllium (CAS 7440-41-7)	0.82 (2)	NA
Cadmium (CAS 7440-43-9)	0.20 (2)	NA
Chromium (total) (CAS 7440-47-32)	0.37	NA
Copper (CAS 7440-50-8)	1.3 (2)	NA
Lead (CAS 7439-92-1)	0.28 (2)	NA
Mercury (CAS 7439-97-6)	0.15 (2)	NA
Nickel (CAS 7440-02-0)	0.55 (2)	NA
Selenium (CAS 7782-49-2)	0.82 (2)	NA
Silver (CAS 7440-22-4)	0.29 (2)	NA
Thallium (CAS 7440-28-0)	1.4 (2)	NA
Vanadium (CAS 7440-62-2)	0.042 (2)	NA
Zinc (CAS 7440-66-6)	1.0 (2)	NA
<b>K001*</b>		
Naphthalene (CAS 91-20-3)	0.031 (1)	1.5 (1)
Pentachlorophenol (CAS 87-86-5)	0.18 (1)	7.4 (1)
Penanthrene (CAS 85-01-8)	0.031 (1)	1.5 (1)
Pyrene (CAS 129-99-0)	0.028 (1)	1.5 (1)
Toluene (CAS 108-88-3)	0.028 (1)	28 (1)
Xylenes (total)	0.032 (1)	33 (1)
Lead (CAS 7439-92-1)	0.037	NA
<b>K002*, K003*, and K004*</b>		
Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
<b>K005*</b>		
Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
Cyanides(total) (CAS 57-12-5)	0.74 (2)	Reserved

(continued)



Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
<b>K006*</b>		
Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
<b>K007*</b>		
Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
Cyanides (total) (CAS 57-12-5)	0.74 (2)	
<b>K008*</b>		
Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
<b>K009</b>		
Chloroform (CAS 67-66-3)	0.1	6.0 (1)
<b>K010</b>		
Chloroform (CAS 67-66-3)	0.1	6.0 (1)
<b>K011, K013, and K014</b>		
Acetonitrile (CAS 75-05-8)	38	1.8 (1)
Acrylonitrile (CAS 107-13-1)	0.06	1.4 (1)
Acrylamide (CAS 79-06-1)	19	23 (1)
Benzene (CAS 71-34-2)	0.02	0.03 (1)
Cyanide(total) (CAS 57-12-5)	21	57
<b>K015*</b>		
Anthracene (CAS 120-12-7)	1.0	3.4 (1)
Benzal chloride (CAS 98-87-3)	0.28	6.2 (1)
Sum of Benso(b) fluoranthene (CAS 205-99-2) and Benzo(k)fluoranthene (CAS 207-08-9)	0.029	3.4 (1)
Phenanthrene (CAS 85-01-8)	0.27	3.4 (1)
Toluene (CAS 108-88-3)	0.15	6.0 (1)
Chromium (total) (CAS 7440-47-32)	0.32	NA
Nickel (CAS 7440-02-0)	0.44	NA
<b>K016</b>		
Hexachlorobenzene (CAS 118-74-1)	0.035 (1)	28 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.007 (1)	5.6 (1)
Hexachlorocyclopentadiene (CAS 77-47-4). 0.007 (1)	5.6 (1)	
Hexachloroethane (CAS 67-72-1)	0.033 (1)	28 (1)
Tetrachloroethene (CAS 127-18-4)	0.007 (1)	6.0 (1)

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
<b>K017</b>		
1,2-Dichloropropane (CAS 78-87-5)	0.85 (1,2)	18 (1)
1,2,3-Trichloropropane (CAS 96-16-4)	0.85 (1,2)	28 (1)
Bis(2-chloroethyl)ether (CAS 111-44-4)	0.033 (1,2)	7.2 (1)
<b>K018</b>		
Chloroethane (CAS 75-00-3)	0.007 (1)	6.0 (1)
Chloromethane (CAS 74-87-3)	0.007 (1)	NA
1,1-Dichloroethane (CAS 75-34-3)	0.007 (1)	6.0 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.007 (1)	6.0 (1)
Hexachlorobenzene (CAS 118-74-1)	0.033 (1)	28 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.007 (1)	5.6 (1)
Hexachloroethane (CAS 67-72-1)	NA	28 (1)
Pentachloroethane (CAS 76-01-7)	0.007 (1)	5.6 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.007 (1)	6.0 (1)
<b>K019</b>		
Bis(2-chloroethyl)ether (CAS 111-44-4). 0.007 (1)	5.6 (1)	
Chlorobenzene (CAS 108-90-7)	0.006 (1)	6.0 (1)
Chloroform (CAS 67-66-3)	0.007 (1)	6.0 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.008 (1)	NA
1,2-Dichloroethane (CAS 107-06-2)	0.007 (1)	6.0 (1)
Fluorene (CAS 86-73-7)	0.007 (1)	NA
Hexachloroethane (CAS 67-72-1)	0.033 (1)	28 (1)
Naphthalene (CAS 91-20-3)	0.007 (1)	5.6 (1)
Phenanthrene (CAS 85-01-8)	0.007 (1)	5.6 (1)
1,2,4,5-Tetrachlorobenzene (CAS 95-94-3)	0.017 (1)	NA
Tetrachloroethene (CAS 127-18-4)	0.007 (1)	6.0 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.023 (1)	19 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.007 (1)	6.0 (1)
<b>K020</b>		
1,2-Dichloroethane (CAS 107-06-2)	0.007 (1)	6.0 (1)
1,1,2,2-Tetrachloroethane (CAS 79-34-6) 0.007 (1)	5.6 (1)	
Tetrachloroethene (CAS 127-18-4)	0.007 (1)	6.0 (1)
<b>K021*</b>		
Chloroform (CAS 67-66-3)	0.046 (2)	6.2 (1)
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	6.2 (1)
Antimony (CAS 7440-36-0)	0.60 (2)	NA (1)

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
<b>K022*</b>		
Toluene (CAS 108-88-3)	0.080 (2)	0.034 (1)
Acetophenone (CAS 96-86-2)	0.010	19 (1)
Diphenylamine (CAS 22-39-4)	0.52 (2)	NA
Diphenylnitrosamine (CAS 86-30-60)	0.40 (2)	NA
Sum of Diphenylamine and Diphenylnitrosamine	NA	13 (1)
Phenol (CAS 108-95-2)	0.039	12 (1)
Chromium (total) (CAS 7440-47-32)	0.35	NA
Nickel (CAS 7440-02-0)	0.47	NA
<b>K023 and K024</b>		
Phthalic anhydride (measured as Phthalic acid) (CAS 85-44-9)	0.54 (1)	28 (1)
<b>K028*</b>		
1,1-Dichloroethane (CAS 75-34-3)	0.007 (1)	6.0 (1)
trans-1,2-Dichloroethane	0.033 (1)	6.0 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.007 (1)	5.6 (1)
Hexachloroethane (CAS 67-72-1)	0.033 (1)	28 (1)
Pentachloroethane (CAS 76-01-7)	0.033 (1)	5.6 (1)
1,1,1,2-Tetrachloroethane (CAS 630-20-6)	0.007 (1)	5.6 (1)
1,1,2,2-Tetrachloroethane (CAS 79-34-6)	0.007 (1)	5.6 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.007 (1)	6.0 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.007 (1)	6.0 (1)
Tetrachloroethylene (CAS 127-18-4)	0.007 (1)	6.0 (1)
Cadmium (CAS 7440-43-9)	6.4	NA
Chromium (total) (CAS 7440-47-32)	0.35	NA
Lead (CAS 7439-92-1)	0.037	NA
Nickel (CAS 7440-02-0)	0.47	NA
<b>K029</b>		
Chloroform (CAS 67-66-3)	0.046	6.0 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.21	6.0 (1)
1,1-Dichloroethylene (CAS 75-35-4)	0.025	6.0 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.054	6.0 (1)
Vinyl chloride (CAS 75-01-4)	0.27	6.0 (1)
<b>K030</b>		
o-Dichlorobenzene (CAS 95-50-1)	0.008 (1)	NA
p-Dichlorobenzene (CAS 106-46-7)	0.008 (1)	NA
Hexachlorobutadiene (CAS 87-68-3)	0.007 (1)	5.6 (1)
Hexachloroethane (CAS 67-72-1)	0.033 (1)	28 (1)

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
Hexachloropropene (CAS 1888-71-7)	NA	19 (1)
Pentachlorobenzene (CAS 608-93-5)	NA	28 (1)
Pentachloroethane (CAS 76-01-7)	0.007 (1)	5.6 (1)
1,2,4,5-Tetrachlorobenzene (CAS 76-01-7)0.017	14 (1)	
Tetrachloroethane (CAS 127-18-4)	0.007 (1)	6.0 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.023 (1)	19 (1)
<b>K031*</b>		
Arsenic (CAS 7440-38-2)	0.79	NA
<b>K032</b>		
Hexachloropentadiene (CAS 77-47-4)	0.057 (2)	2.4 (1)
Chlordane (CAS 57-74-9)	0.0033 (2)	0.26 (1)
Heptachlor (CAS 76-44-8)	0.012 (2)	0.066 (1)
Heptachlor epoxide (CAS 1024-57-3)	0.016 (2)	0.066 (1)
<b>K033 and K034</b>		
Hexachlorocyclopentadiene (CAS 77-47-4). 0.057 (2)	2.4 (1)	
<b>K035</b>		
Acenaphthene (CAS 83-32-9)	NA	3.4 (1)
Anthracene (CAS 120-12-7)	NA	3.4 (1)
Benz(a)anthracene (CAS 56-55-3)	0.059 (2)	3.4 (1)
Benzo(a)pyrene (CAS 5-32-8)	NA	3.4 (1)
Chrysene (CAS 218-01-9)	0.059 (2)	3.4 (1)
Dibenz(a,h)anthracene (CAS 53-70-3)	NA	3.4 (1)
Fluoranthene (CAS 206-44-0)	0.068 (2)	3.4 (1)
Fluorene (CAS 86-73-7)	NA	3.4 (1)
Indeno(1,2,3-cd)pyrene (CAS 193-39-5). NA	3.4 (1)	
Cresols (m-and p-isomers)	0.77 (2)	NA
Naphthalene (CAS 91-20-3)	0.059 (2)	3.4 (1)
o-cresol (CAS 95-48-7)	0.11 (2)	NA
Phenanthrene (CAS 85-01-8)	0.059 (2)	3.4 (1)
Phenol (CAS 108-95-2)	0.039	NA
Pyrene (CAS 129-00-0)	0.067 (2)	8-2 (1)
<b>K036</b>		
Disulfoton (CAS 298-04-4)	0.025 (2)	0.1 (1)
<b>K037</b>		
Disulfoton (CAS 298-04-4)	0.025 (2)	0.1 (1)
Toluene (CAS 108-88-3)	0.080 (2)	28 (1)
<b>K038</b>		

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
Phorate (CAS 298-02-2)	0.025 (2)	0.1 (1)
<b>K040</b>		
Phorate (CAS 298-02-2)	0.025 (2)	0.1 (1)
<b>K041</b>		
Toxaphene (CAS 8001-35-1)	0.0095 (2)	2.6 (1)
<b>K042</b>		
1,2,4,5-Tetrachlorobenzene (CAS 95-94-3)	0.055 (2)	4.4 (1)
o-Dichlorobenzene (CAS 95-50-1)	0.088 (2)	4.4 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.090 (2)	4.4 (1)
Pentachlorobenzene (CAS 608-93-5)	0.055 (2)	4.4 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.055 (2)	4.4 (1)
<b>K043</b>		
2,4-Dichlorophenol (CAS 120-83-2)	0.049 (1)	0.38 (1)
2,6-Dichlorophenol (CAS 87-65-0)	0.013 (1)	0.34 (1)
2,4,5-Trichlorophenol (CAS 95-95-4)	0.016 (1)	8.2 (1)
2,4,6-Trichlorophenol (CAS 88-06-2)	0.039 (1)	7.6 (1)
Tetrachlorophenols (total)	0.018 (1)	0.68 (1)
Pentachlorophenol (CAS 87-86-5)	0.22 (1)	1.9 (1)
Tetrachloroethene (CAS 79-01-6)	0.006 (1)	1.7 (1)
Hexachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Hexachlorodibenzo-furans	0.001 (1)	0.001 (1)
Pentachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Pentachlorodibenzo-furans	0.001 (1)	0.001 (1)
Tetrachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Tetrachlorodibenzo-furans	0.001 (1)	0.001 (1)
<b>K046*</b>		
Lead (CAS 7439-92-1)	0.037	NA
<b>K048*</b>		
Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)pyrene (CAS 50-32-8)	0.047 (1)	12 (1)
Bis(2-ethylhexyl)phthalate (CAS 117-81-7)	0.043 (1)	7.3 (1)
Chrysene (CAS 218-01-9)	0.043 (1)	15 (1)
Di-n-butyl phthalate (CAS 84-74-2)	0.06 (1)	3.6 (1)
Ethylbenzene (CAS 100-41-4)	0.011 (1)	14 (1)
Fluorene (CAS 86-73-7)	0.005 (1)	NA
Naphthalene (CAS 91-20-3)	0.033 (1)	42 (1)

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
Phenanthrene (CAS 85-01-8)	0.039 (1)	34 (1)
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Pyrene (CAS 129-00-0)	0.045 (1)	36 (1)
Toluene (CAS 108-88-3)	0.011 (1)	14 (1)
Xylene(s)	0.011 (1)	22 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037	NA
K049*		
Anthracene (CAS 120-12-7)	0.039 (1)	28 (1)
Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)pyrene (CAS 5-32-8)	0.047 (1)	12 (1)
Bis(2-ethylhexyl)phthalate (CAS 117-81-7)	0.043 (1)	7.3 (1)
Carbon disulfide (CAS 75-15-0)	0.011 (1)	NA
Chrysene (CAS 2218-01-9)	0.043 (1)	15 (1)
2,4-Dimethylphenol (CAS 105-67-9)	0.033 (1)	NA
Ethylbenzene (CAS 100-41-4)	0.011 (1)	14 (1)
Naphthalene (CAS 91-20-3)	0.033 (1)	42 (1)
Phenanthrene (CAS 85-01-8)	0.039 (1)	34 (1)
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Pyrene (CAS 129-00-0)	0.045 (1)	36 (1)
Toluene (CAS 108-88-3)	0.011 (1)	14 (1)
Xylene(s)	0.011 (1)	22 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037 (1)	NA
K050*		
Benzo(a)pyrene (CAS 50-32-8)	0.047 (1)	12
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037	NA
K051*		
Acenaphthene (CAS 208-96-8)	0.05 (1)	NA
Anthracene (CAS 120-12-7)	0.039 (1)	28 (1)
Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)anthracene (CAS 50-32-8)	0.043 (1)	20 (1)
Benzo(a)pyrene (CAS 117-81-7)	0.047 (1)	12 (1)
Bis(2-ethylhexyl)phthalate	0.043 (1)	7.3 (1)

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
<b>(CAS 75-15-0)</b>		
Chrysene (CAS 2218-01-09)		
Di-n-butyl phthalate (CAS 105-67-9)	0.06 (1)	3.6 (1)
Ethylbenzene (CAS 100-41-4)		
Fluorene (CAS 86-73-7)	0.011 (1)	14 (1)
Naphthalene (CAS 91-20-3)	0.05 (1)	
Phenanthrene (CAS 85-01-8)	0.033 (1)	42 (1)
Phenol (CAS 108-95-2)	0.039 (1)	34 (1)
Pyrene (CAS 129-00-0)	0.047 (1)	3.6 (1)
Toluene (CAS 108-88-3)	0.045 (1)	36 (1)
Xylene(s)	0.011 (1)	14 (1)
Cyanides(total) (CAS 57-12-5)	0.011 (1)	22 (1)
Chromium(total) (CAS 7440-47-32)	0.028 (1)	1.8 (1)
Lead (CAS 7439-92-1)	0.2	NA
<b>K052*</b>		
Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)pyrene (CAS 50-32-8)	0.047 (1)	12 (1)
o-Cresol (CAS 95-48-7)	0.011 (1)	6.2 (1)
p-Cresol (CAS 106-44-5)	0.011 (1)	6.2 (1)
2,4-Dimethylphenol (CAS 105-67-9)	0.033 (1)	NA
Ethylbenzene (CAS 100-41-4)	0.011 (1)	14 (1)
Naphthalene (CAS 91-20-3)	0.033 (1)	42 (1)
Phenanthrene (CAS 85-01-8)	0.039 (1)	34 (1)
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Toluene (CAS 108-88-3)	0.011 (1)	14 (1)
Xylenes	0.011 (1)	22 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037	NA
<b>K060</b>		
Benzene (CAS 71-43-2)	0.17 (1,2)	0.071 (1)
Benzo(a)pyrene (CAS 50-32-8)	0.035 (1,2)	3.6 (1)
Naphthalene (CAS 91-20-3)	0.028 (1,2)	3.4 (1)
Phenol (CAS 108-95-2)	0.042 (1,2)	3.4 (1)
Cyanides(total) (CAS 57-12-5)	1.9	1.2
<b>K061*</b>		
Cadmium (CAS 7440-43-9)	1.61	NA
Chromium(total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.51	NA
Nickel (CAS 7440-02-0)	0.44	NA

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
<b>K062*</b>		
Chromium(total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA
<b>K069***</b>		
Cadmium (CAS 7440-43-9)	1.6	NA
Lead (CAS 7439-92-1)	0.51	NA
<b>K071*</b>		
Mercury (CAS 7439-97-6)	0.030	NA
<b>K073</b>		
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	6.2 (1)
Chloroform (CAS 67-66-3)	0.046 (2)	6.2 (1)
Hexachloroethane (CAS 67-72-1)	0.055 (2)	30 (1)
Tetrachloroethene (CAS 127-18-4)	0.056 (2)	6.2 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.054 (2)	6.2 (1)
<b>K083*</b>		
Benzene (CAS 71-34-2)	0.14 (2)	6.6 (1)
Aniline (CAS 62-53-3)	0.81	14 (1)
Diphenylamine (CAS 22-39-4)	0.52 (2)	NA
Diphenylnitrosamine (CAS 86-30-6)	0.40 (2)	NA
Sum of diphenylamine and Diphenyl- nitrosamine	NA	14 (1)
Nitrobenzene (CAS 98-95-3)	0.068 (2)	14 (1)
Phenol (CAS 108-95-2)	0.039 (2)	5.6 (1)
Cyclohexanone (CAS 108-94-1)	0.36	NA
Nickel (CAS 7440-02-0)	0.47	NA
<b>K084</b>		
Arsenic (CAS 7440-38-2)	0.79	NA
<b>K085</b>		
Benzene (CAS 71-43-2)	0.14 (2)	4.4 (1)
Chlorobenzene (CAS 108-90-7)	0.057 (2)	4.4 (1)
o-Dichlorobenzene (CAS 95-50-1)	0.088 (2)	4.4 (1)
m-Dichlorobenzene (CAS 541-73-1)	0.036 (2)	4.4 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.090 (2)	4.4 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.055 (2)	4.4 (1)
1,2,4,5-Tetrachlorobenzene	0.055 (2)	4.4 (1)

(continued)



Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
(CAS 95-94-3)		
Pentachlorobenzene (CAS 608-93-5)	0.055 (2)	4.4 (1)
Hexachlorobenzene (CAS 118-74-1)	0.055 (2)	4.4 (1)
Aroclor 1016 (CAS 12674-11-2)	0.013 (2)	0.92 (1)
Aroclor 1221 (CAS 11104-28-2)	0.014 (2)	0.92 (1)
Aroclor 1232 (CAS 11141-16-5)	0.013 (2)	0.92 (1)
Aroclor 1242 (CAS 53469-21-9)	0.017 (2)	0.92 (1)
Aroclor 1248 (CAS 12672-29-6)	0.013 (2)	0.92 (1)
Aroclor 1254 (CAS 11097-69-1)	0.014 (2)	1.8 (1)
Aroclor 1260 (CAS 11096-82-5)	0.014 (2)	1.8 (1)
K086*		
Acetone (CAS 67-64-1)	0.28	160 (1)
Acetophenone (CAS 96-86-2)	0.010	9.7 (1)
Bis(2-ethylhexyl)phthalate	0.28 (2)	28 (1)
n-Butyl alcohol (CAS 71-36-3)	5.6	2.6 (1)
Butyl benzyl phthalate (CAS 85-68-7)	0.017 (2)	7.9 (1)
Cyclohexanone (CAS 108-94-1)	0.36	NA
1,2-Dichlorobenzene (CAS 95-50-1)	0.088	6.2 (1)
Diethyl phthalate (CAS 84-66-2)	0.20 (2)	28 (1)
Dimethylphthalate (CAS 131-11-3)	0.047 (2)	28 (1)
Di-n-butylphthalate (CAS 84-74-2)	0.057 (2)	28 (1)
Di-n-octylphthalate (CAS 117-84-0)	0.017 (20)	28 (1)
Ethyl acetate (CAS 141-78-6)	0.34 (2)	33 (1)
Ethylbenzene (CAS 100-41-4)	0.057 (2)	6.0
Methanol (CAS 67-56-1)	5.6 (2)	NA
Methyl isobutyl ketone (CAS 108-10-1)	0.14	33 (1)
Methyl ethyl ketone (CAS 78-93-3)	0.28	36 (1)
Methylene chloride (CAS 75-09-2)	0.089 (2)	33 (1)
Naphthalene (CAS 91-20-3)	0.059 (2)	3.1 (1)
Nitrobenzene (CAS 98-95-3)	0.068 (2)	14 (1)
Toluene (CAS 108-88-3)	0.080 (2)	28 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.054 (2)	5.6 (1)
Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
Xylenes (Total)	0.32 (2)	28 (1)
Cyanides (Total) (CAS 57-12-5)	1.91.5	
Chromium (Total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.037	NA
K087*		
Acenaphthylene (CAS 208-96-8)	0.028 (1)	3.4 (1)
Benzene (CAS 71-43-2)	0.014 (1)	0.071 (1)
Chrysene (CAS 218-01-9)	0.028 (1)	3.4 (1)
Fluoranthene (CAS 206-44-0)	0.028 (1)	3.4 (1)

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
Indeno(1,2,3-cd)pyrene (CAS 193-39-5)	0.028 (1)	3.4 (1)
Naphthalene (CAS 91-20-3)	0.028 (1)	3.4 (1)
Phenanthrene (CAS 85-01-8)	0.028 (10)	3.4 (1)
Toluene (CAS 85-01-8)	0.008 (1)	0.65 (1)
Xylenes	0.014 (1)	0.07 (1)
Lead (CAS 7439-92-1)	0.037	NA
K093 and K094		
Phthalic anhydride (CAS 85-44-9) (measured as Phthalic acid)	0.54 (1)	28 (1)
K095		
1,1,1,2-Tetrachloroethane (CAS 630-20-6)	0.057	5.6 (1)
1,1,1,2-Tetrachloroethane (CAS 79-34-6)	0.057	5.6 (1)
Tetrachloroethene (CAS 127-18-4)	0.056	6.0 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054	6.0 (1)
Trichloroethylene (CAS 79-01-6)	0.054	5.6 (1)
Hexachloroethane (CAS 67-72-1)	0.055	28 (1)
Pentachloroethane (CAS 76-01-7)	0.055	5.6 (1)
K096		
1,1,1,2-Tetrachloroethane (CAS 630-20-6)	0.057	5.6 (1)
1,1,1,2-Tetrachloroethane (CAS 79-34-6)	0.057	5.6 (1)
Tetrachloroethene (CAS 127-18-4)	0.056	6.0 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054	6.0 (1)
Trichloroethene (CAS 79-01-6)	0.054	5.6 (1)
Trichloroethylene (CAS 79-01-6)	0.054	5.6 (1)
1,3-Dichlorobenzene (CAS 541-73-1)	0.036	5.6 (1)
Pentachloroethane (CAS 76-01-7)	0.055	5.6 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.055	19 (1)
K097		
Hexachlorocyclopentadiene (CAS 77-47-4)	0.057 (2)	2.4 (1)
Chlordane (CAS 57-74-9)	0.0033 (2)	0.26 (1)
Heptachlor (CAS 76-44-8)	0.0012 (2)	0.066 (1)
Heptachlor epoxide (CAS 1024-57-3)	0.016 (2)	0.066 (1)
K098		
Toxaphene (CAS 8001-35-1)	0.0095 (2)	2.6 (1)
K099		
2,4-Dichlorophenoxyacetic acid (CAS 94-75-7)	1.0 (1)	1.0 (1)

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
Hexachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Hexachlorodibenzofurans	0.001 (1)	0.001 (1)
Pentachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Pentachlorodibenzofurans	0.001 (1)	0.001 (1)
Tetrachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Tetrachlorodibenzofurans	0.001 (1)	0.001 (1)
<b>K100*</b>		
Cadmium (CAS 7440-43-9)	1.6	NA
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.51	NA
<b>K101</b>		
o-Nitroaniline	0.27 (1)	14 (1)
Arsenic (CAS 7440-38-2)	0.79	NA
Cadmium (CAS 7440-43-9)	0.24	NA
Lead (CAS 7439-92-1)	0.17	NA
Mercury (CAS 7439-97-6)	0.082	NA
<b>K102*</b>		
o-Nitrophenol	0.028 (1)	13 (1)
Arsenic (CAS 7440-38-2)	0.79	NA
Cadmium (CAS 7440-43-9)	0.24	NA
Lead (CAS 7439-92-1)	0.17	NA
Mercury (CAS 7439-97-6)	0.082	NA
<b>K103</b>		
Aniline (CAS 62-53-3)	4.5	5.6 (1)
Benzene (CAS 71-34-2)	0.15	6.0 (1)
2,4-Dinitrophenol (CAS 51-28-5)	0.61	5.6 (1)
Nitrobenzene (CAS 98-95-3)	0.073	5.6 (1)
Phenol (CAS 108-95-2)	1.4	5.6 (1)
<b>K104</b>		
Aniline (CAS 62-53-3)	4.5	5.6 (1)
Benzene (CAS 71-43-2)	0.15	6.0 (1)
2,4-Dinitrophenol (CAS 51-28-5)	0.61	5.6 (1)
Nitrobenzene (CAS 98-95-3)	0.073	5.6 (1)
Phenol (CAS 108-95-2)	1.4	5.6 (1)
Cyanides (Total) (CAS 57-12-5)	2.7	1.8 (1)
<b>K105</b>		
Benzene (CAS 71-43-2)	0.14	4.4 (1)

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
Chlorobenzene (CAS 108-90-7)	0.057	4.4 (1)
o-Dichlorobenzene (CAS 95-50-1)	0.088	4.4 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.090	4.4 (1)
2,4,5-Trichlorophenol (CAS 95-95-4)	0.18	4.4 (1)
2,4,6-Trichlorophenol (CAS 88-06-2)	0.035	4.4 (1)
2-Chlorophenol (CAS 95-57-8)	0.044	4.4 (1)
Phenol (CAS 108-95-2)	0.039	4.4 (1)
K106***		
Mercury (CAS 7439-97-6)	0.030	NA
K115*		
Nickel (CAS 7440-02-0)	0.47	NA
P004 (Aldrin)		
Aldrin (CAS 309-00-2)	0.21 (2)	0.066 (1)
P010* (Arsenic acid)		
Arsenic (CAS 7440-38-2)	0.79	NA
P011* (Arsenic pentoxide)		
Arsenic (CAS 7440-38-2)	0.79	NA
P012* (Arsenic trioxide)		
Arsenic (CAS 7440-38-2)	0.79	NA
P013* (Barium cyanide)		
Cyanides (Total)	1.9	110
Cyanides (Amenable)	0.1	9.1
P020 (Dinoseb)		
2-sec-Butyl-4,6-dinitrophenol (CAS 88-85-7)	0.066	2.5 (1)
P021 (Calcium cyanide)		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.1	9.1
P022** (Carbon disulfide)		
Carbon disulfide (CAS 75-15-0)	0.014	NA
P024 (p-Chloroaniline)		
p-Chloroaniline (CAS 106-47-8)	0.46	16 (1)

(continued)

**Table 3-12 (continued)**

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
<b>P029 (Copper cyanide)</b>		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.1	9.1
<b>P030 (Cyanides (soluble salts and complexes))</b>		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amendable) (CAS 57-12-5)	0.1	9.1
<b>P036* (Dichlorophenylarsine)</b>		
Arsenic (CAS 7440-38-2)	0.79	NA
<b>P037</b>		
Dieldrin (CAS 60-57-1)	0.017 (2)	0.13 (1)
<b>P038* (Diethylarsine)</b>		
Arsenic (CAS 7440-38-2)	0.79	NA
<b>P039</b>		
Disulfoton (CAS 298-04-4)	0.017	0.1 (1)
<b>P047</b>		
4,6-Dinitro-o-cresol (CAS 534-52-1)	0.28	160 (1)
<b>P048</b>		
2,4-Dinitrophenol (CAS 51-28-5)	0.12 (2)	160 (1)
<b>P050</b>		
Endosulfan I (CAS 939-98-8)	0.023 (2)	0.066 (1)
Endosulfan II (CAS 33213-6-5)	0.029 (2)	0.13 (1)
Endosulfan sulfate (CAS 1031-07-8)	0.029 (2)	0.13 (1)
<b>P051</b>		
Endrin (CAS 72-20-8)	0.0028 (2)	0.13 (1)
Endrin aldehyde (CAS 7421-93-4)	0.025 (2)	0.13 (1)
<b>P056**</b>		
Fluoride (CAAS 16964-48-8)	35	NA
<b>P059</b>		
Heptachlor (CAS 76-44-8)	0.0012 (2)	0.066 (1)
Heptachlor epoxide (CAS 1024-57-3)	0.016 (2)	0.066 (1)

(continued)

**Table 3-12 (continued)**

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
P060 Isodrin (CAS 465-73-6)	0.021 (2)	0.066 (1)
P063 (Hydrogen cyanide) Cyanides (Total) (CAS 57-12-5) Cyanides (Amenable) (CAS 57-12-5)	1.9 0.10	110 9.1
P065*** (Mercury fulminate) Mercury (CAS 7439-97-6)	0.030	NA
P071 Methyl parathion (CAS 298-00-0)	0.025	0.1 (1)
P073* (Nickel carbonyl) Nickel (CAS 7440-02-0)	0.32	NA
P074* (Nickel cyanide) Cyanides (Total) (CAS 57-12-5) Cyanides (Amenable) (Cas 57-12-5) Nickel (CAS 7440-02-0)	1.9 0.10 0.44	110 9.1 NA
P077 p-Nitroaniline (CAS 100-01-6)	0.028 (2)	28 (1)
P082** N-Nitrosodimethylamine (CAS 62-75-9)	0.40 (2)	NA
P089 Parathion (CAS 56-38-2)	0.025	0.1 (1)
P092*** (Phenylmercury acetate) Mercury (CAS 7439-97-6)	0.030	NA
P094 Phorate (CAS 298-02-2)	0.025	0.1 (1)
P097 Famphur (CAS 52-85-7)	0.025	0.1 (1)
P098 (Potassium cyanide) Cyanides (Total) (CAS 57-12-5) Cyanides (Amenable) (CAS 57-12-5)	1.9 0.10	110 9.1

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
<b>P099* (Potassium silver cyanide)</b>		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.1	9.1
Silver (CAS 7440-22-4)	0.29	NA
<b>P101</b>		
Ethyl cyanide (Propanenitrite) (CAS 107-12-0)	0.24 (2)	360 (1)
<b>P103* (Selenourea)</b>		
Selenium (CAS 7782-49-2)	1.0 (2)	NA
<b>P104* (Silver cyanide)</b>		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amendable) (CAS 57-12-5)	0.10	9.1
Silver (CAS 7440-22-4)	0.29	NA
<b>P106 (Sodium cyanide)</b>		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	9.1
<b>P110*** (Tetraethyl lead)</b>		
Lead (CAS 7439-92-1)	0.040	NA
<b>P113** (Thallic oxide)</b>		
Thallium (CAS 7440-28-0)	0.14 (2)	NA
<b>P114* (Thallium selenite)</b>		
Selenium (CAS 7782-49-2)	1.0	NA
<b>P115** (Thallium(1)sulfate)</b>		
Thallium (CAS 7440-28-0)	0.14 (2)	NA
<b>P119** (Ammonia vanadate)</b>		
Vanadium (CAS 7440-62-2)	28 (2)	NA
<b>P120** (Vanadium pentoxide)</b>		
Vanadium (CAS 7440-62-2)	28 (2)	NA
<b>P121 (Zinc cyanide)</b>		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	9.1

(continued)

**Table 3-12 (continued)**

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
P123 Toxaphene (CAS 8001-35-1)	0.0095 (2)	1.3 (1)
U002 Acetone (CAS 67-64-1)	0.28	160 (1)
U003** Acetonitrile (CAS 75-05-8)	0.17	0.17
U004 Acetophenone (CAS 98-86-2)	0.010 (1)	9.7 (1)
U005 2-Acetylaminofluorene (CAS 53-96-3)	0.059 (2)	140 (1)
U009 Acrylonitrile (CAS 177-13-1)	0.24 (2)	84 (1)
U012 Aniline (CAS 62-53-3)	0.81	14 (1)
U018 Benz(a)anthracene (CAS 56-55-3)	0.059 (2)	8.2 (1)
U019 Benzene (CAS 71-34-2)	0.14 (2)	36 (1)
U022 Benzo(a)pyrene (CAS 50-32-8)	0.061 (2)	8.2 (1)
U024 Bis(2-chloroethoxy)methane (CAS 111-91-1). 0.036	7.2 (1)	
U025 Bis(2-chloroethyl)ether (CAS 111-44-4)	0.033	7.2 (1)
U027 Bis(2-chloroisopropyl)ether (CAS 39638-32-9)	0.055 (2)	7.2 (1)
U028 Bis(2-ethylhexyl)phthalate (CAS 117-81-7)	0.54 (1)	28 (1)

(continued)



**Table 3-12 (continued)**

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
U029 Bromomethane (Methyl bromide) (CAS 74-83-9)	0.11 (1)	15 (1)
U030 4-Bromophenyl phenyl ether (CAS 101-55-3)	0.055 (1)	15 (1)
U031 n-Butyl alcohol (CAS 71-36-3)	5.6	2.6
U032* (Calcium chromate) Chromium (Total) (CAS 7440-47-32)	0.32	NA
U036 Chlordane (alpha and gamma)(CAS 57-74-9)	0.033 (2)	0.13 (1)
U037 Chlorobenzene (CAS 108-90-7)	0.057 (2)	5.7 (1)
U038** Chlorobenzilate (CAS 510-15-6)	0.10 (2)	NA
U039 p-Chloro-m-cresol (CAS 59-50-7)	0.018 (2)	14 (1)
U042** 2-Chloroethylvinyl (CAS 110-75-8)	0.057	NA
U043 Vinyl chloride (CAS 75-01-4)	0.27 (2)	33 (1)
U044 Chloroform (CAS 67-66-3)	0.046 (2)	5.6 (1)
U045 Chloromethane (Methyl chloride) (CAS 74-87-3). 0.19 (2)	33 (1)	
U047 2-Chloronaphthalene (CAS 91-58-7)	0.055 (2)	5.6 (1)
U048 2-Chlorophenol (CAS 95-57-8)	0.044 (2)	5.7 (1)
U050		

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
Chrysene (CAS 218-01-9)	0.059 (2)	8.2 (1)
U051* (Creosote)		
Naphthalene (CAS 91-20-3)	0.031	1.5 (1)
Pentachlorophenol (CAS 87-86-5)	0.18	7.4 (1)
Phenanthrene (CAS 85-01-8)	0.031	1.5 (1)
Pyrene (CAS 129-00-0)	0.028	1.5 (1)
Toluene (CAS 108-88-3)	0.028	28 (1)
Xylenes (Total)	0.032	33 (1)
Lead (CAS 7439-92-1)	0.037	NA
U052 (Cresols--Cresylic acid)		
o-Cresol (CAS 95-48-7)	0.11 (2)	5.6 (1)
Cresols (m- and p- isomers)	0.77 (2)	3.2 (1)
U057**		
Cyclohexanone (CAS 108-94-1)	0.36	NA
U060 (DDD)		
o,p'-DDD (CAS 53-19-0)	0.023	0.087 (1)
o,p'-DDD (CAS 72-54-8)	0.023	0.087 (1)
U061 (DDT)		
o,p'-DDT (CAS 780-02-6)	0.0039 (2)	0.087 (1)
p,p'-DDT (CAS 50-29-3)	0.0039 (2)	0.087 (1)
o,p'-DDD (CAS 53-19-0)	0.023 (2)	0.087 (1)
p,p'-DDD (CAS 72-54-8)	0.023 (2)	0.087 (1)
o,p'-DDE (CAS 3424-82-6)	0.031 (2)	0.087 (1)
p,p'-DDE (CAS 72-55-9)	0.031 (2)	0.087 (1)
U063		
Dibenzo(a,h)anthracene (CAS 53-70-3)	0.055 (2)	8.2 (1)
U066		
1,2-Dibromo-3-chloropropane (CAS 96-12-8)	0.11 (2)	15 (1)
U067		
1,2-Dibromo ethane (Ethylene dibromide) (CAS 106-93-4)	0.028 (2)	15 (1)
U068		
Dibromomethane (CAS 74-95-3)	0.11 (2)	15 (1)

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
U069 Di-n-butyl phthalate (CAS 84-74-2)	0.54 (1)	28 (1)
U070 o-Dichlorobenzene (CAS 95-50-1)	0.088 (2)	6.2 (1)
U071 m-Dichlorobenzene (CAS 541-73-1)	0.036	6.2 (1)
U072 p-Dichlorobenzene (CAS 104-46-7)	0.090 (2)	6.2 (2)
U075 Dichlorodifluoromethane (CAS 75-71-8)	0.23 (2)	7.2 (1)
U076 1,1-Dichloroethane (CAS 75-34-3)	0.059 (2)	7.2 (1)
U077 1,2-Dichloroethane (CAS 107-06-2)	0.21 (2)	7.2 (1)
U078 1,1-Dichloroethylene (CAS 75-35-4)	0.025 (2)	33 (1)
U079 (1,2-Dichloroethylene) trans-1,2-Dichloroethylene (CAS 156-60-5)	0.054 (2)	33 (1)
U080 Methylene chloride (CAS 75-09-2)	0.089 (2)	33 (1)
U081 2,4-Dichlorophenol (CAS 120-83-2)	0.044 (2)	14 (1)
U082 2,6-Dichlorophenol (CAS 87-65-0)	0.044 (2)	14 (1)
U083 1,2-Dichloropropane (CAS 78-87-5)	0.85 (2)	18 (1)
U084 (1,3-Dichloropropene) cis-1,3-Dichloropropylene (CAS 10061-01-5)	0.036 (2)	18 (1)
trans-1,3-Dichloropropylene (CAS 10061-02-6)	0.036 (2)	18 (1)

(continued)

**Table 3-12 (continued)**

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
U088 Diethyl phthalate (CAS 84-66-2)	0.54 (2)	28 (1)
U093** p-Dimethylaminoazobenzene (CAS 60-11-7)	0.13 (2)	NA
U101 2,4-Dimethylphenol (CAS 105-67-9)	0.036 (2)	14 (1)
U102 Dimethyl phthalate (CAS 131-11-3)	0.54 (1)	28 (1)
U105 2,4-Dinitrotoluene (CAS 121-14-2)	0.32 (2)	140 (1)
U106 2,6-Dinitrotoluene (CAS 606-20-2)	0.55 (2)	28 (1)
U107 Di-n-octyl phthalate (CAS 117-84-0)	0.54 (1)	28 (1)
U108 1,4-Dioxane (CAS 123-91-1)	0.12 (2)	170 (1)
U111 Di-n-propylnitrosamine (CAS 621-64-7)	0.40 (20)	14 (1)
U112 Ethyl acetate (CAS 141-78-6)	0.34 (2)	33 (1)
U117 Ethyl ether (CAS 60-29-7)	0.12 (2)	160 (1)
U118 Ethyl methacrylate (CAS 97-63-2)	0.14 (2)	160 (1)
U120 Fluoranthene (CAS 206-44-0)	0.068 (2)	8.2 (1)
U121 trichloromonofluoromethane (CAS 75-69-4)	0.020 (2)	33 (1)
U127		

(continued)

Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Waste (mg/l)	Concentrations	
		Wastewater	Non-wastewaters (mg/kg) Notes
Hexachlorobutadiene (CAS 118-74-1)	0.05		37 (1)
U128 Hexachlorobutadiene (CAS 87-68-3)	0.055 (2)		28 (1)
U129 (Lindane)			
alpha-BHC (CAS 319-84-6)	0.00014 (2)		0.66 (1)
beta-BHC (CAS 319-85-7)	0.00014 (2)		0.66 (1)
Delta-BHC (CAS 319-86-8)	0.023 (2)		0.66 (1)
gamma-BHC (Lindane) (CAS 58-89-9)	0.0017 (2)		0.66 (1)
U130 Hexachlorocyclopentadiene (CAS 77-47-7)	0.057 (2)		3.6 (1)
U131 Hexachloroethane (CAS 67-72-1)	0.055 (2)		28 (1)
U134** (Hydrogen fluoride)			
Fluoride (CAS 16964-48-8)	35		NA
U136* (Cacodylic acid)			
Arsenic (CAS 7440-38-2)	0.79		NA
U137* Indeno(1,2,3-c,d)pyrene (CAS 193-39-5)	0.0053 (2)		6.2 (1)
U138 Iodomethane (CAS 74-88-4)	0.19 (2)		65 (1)
U140 Isobutyl alcohol (CAS 78-83-1)	5.6		170 (1)
U141 Isosafrole (CAS 120-58-1)	0.081		2.6 (1)
U142 Kepone (CAS 143-50-8)	0.0011		0.13 (1)
U144* (Lead acetate)			
Lead (CAS 7439-92-1)	0.040		NA
U145* (Lead phosphate)			
Lead (CAS 7439-92-1)	0.040		NA

(continued)

**Table 3-12 (continued)**

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
U146* (Lead subacetate) Lead (CAS 7439-92-1)	0.040	NA
U151*** Mercury (CAS 7439-97-6)	0.030	NA
U152 Methacrylonitrile (CAS 126-98-7)	0.24 (2)	84 (1)
U154 Methanol (CAS 67-56-1)	5.6	NA
U155 Methapyrilene (CAS 91-80-5)	0.081	1.5 (1)
U157 3-Methylcholanthrene (CAS 56-49-5)	0.0055 (2)	15 (1)
U158 4,4'-Methylenebis(2-chloroaniline) (CAS 101-14-4)	0.50 (2)	35 (1)
U159 Methyl ethyl ketone (CAS 78-93-3)	0.28	36 (1)
U161 Methyl isobutyl ketone (CAS 108-10-1)	0.14	33 (1)
U162 Methyl methacrylate (CAS 60-62-6)	0.14	160 (1)
U165 Naphthalene (CAS 91-20-3)	0.059 (2)	3.1 (1)
U168** 2-Naphthylamine (CAS 91-59-8)	0.52 (2)	NA
U169 Nitrobenzene (CAS 98-95-3)	0.068 (2)	14
U170 4-Nitrophenol (CAS 100-02-7)	0.12 (2)	29 (1)

(continued)

**Table 3-12 (continued)**

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
U172 N-Nirosodi-n-butylamine (CAS 924-16-3)	0.040 (2)	17 (1)
U174 N-Nitrosodiethylamine (CAS 55-18-5)	0.40 (2)	28 (1)
U179 N-Nitrosopiperidine (CAS 100-75-4)	0.013 (2)	35 (1)
U180 N-Nitropyrrolidine (CAS 930-55-2)	0.013 (2)	35 (1)
U181 5-Nitro-o-toluidine (CAS 99-55-8)	0.32 (2)	28 (1)
U183 Pentachlorobenzene (CAS 608-93-5)	0.055 (2)	37 (1)
U185 Pentachloronitrobenzene (CAS 82-68-8)	0.055 (2)	4.8 (1)
U187 Phenacetin (CAS 62-44-2)	0.081	16 (1)
U188 Phenol (CAS 108-95-2)	0.039	6.2 (1)
U190 Phthalic anhydride (CAS 85-44-9) (measured as Phthalic acid)	0.54 (1)	28 (1)
U192 Pronamide (CAS 23950-58-5)	0.093	1.5 (1)
U196 Pyridine (CAS 110-86-1)	0.014 (2)	16 (1)
U203 Safrole (CAS 94-59-7)	0.081	22 (1)
U204* (Selenium dioxide) Selenium (CAS 7782-49-2)	1.0	NA

(continued)

**Table 3-12 (continued)**

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
U205* (Selenium sulfide) Selenium (CAS 7782-49-2)	1.0	NA
U207 1,2,4,5-Tetrachlorobenzene (CAS 95-94-3)	0.055 (2)	19
U208 1,1,1,2-Tetrachloroethane (CAS 630-20-6)	0.057	42
U209 1,1,2,2-Tetrachloroethane (CAS 79-34-5)	0.057 (2)	42 (1)
U210 Tetrachloroethylene (CAS 127-18-4)	0.056 (2)	5.6 (1)
U211 Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	5.6 (1)
U214** (Thallium(I)acetate) Thallium (CAS 7440-28-0)	0.14 (2)	NA
U215** (Thallium(I)carbonate) Thallium (CAS 7440-28-0)	0.14 (2)	NA
U216** (Thallium(I)chloride) Thallium (CAS 7440-28-0)	0.14 (2)	NA
U217** (Thallium(I)nitrate) Thallium (CAS 7440-28-0)	0.14 (2)	NA
U220 Toluene (CAS 108-88-3)	0.080 (2)	28 (1)
U225 Tribromomethane (Bromoform) (CAS 75-25-2)	0.63 (2)	15 (1)
U226 1,1,1-Trichloroethane (CAS 71-55-6)	0.054 (2)	5.6 (1)
U227 1,1,2-Trichloroethane (CAS 79-00-5)	0.054 (2)	5.6 (1)

(continued)



Table 3-12 (continued)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-wastewaters (mg/kg) Notes
U228 Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
U235 tris-(2,3-Dibromopropyl) phosphate	0.025	0.10 (1)
U239 Xylenes	0.32 (2)	28 (1)
U240 2,4-Dichlorophenoxyacetic acid (CAS 94-75-7)	0.72	10 (1)
U243 Hexachloropropene (CAS 1888-71-7)	0.035 (2)	28
U247 Methoxychlor (CAS 72-43-5)	0.25 (2)	0.18 (1)
U247 Methoxychlor (CAS 72-43-5)	0.25 (2)	0.18 (1)
<p>*See also Table CCWE in 268.41  **See also Table 2 in 268.42  ***See also Table CCWE in 268.41 and Table 2 in 268.42</p>		
<p>(1) Treatment standards for this organic constituent were established based upon incineration in units operated in accordance with the technical requirements of 40:264 Subpart O or Part 265 Subpart O, or based upon combustion in fuel substitution units operating in accordance with applicable technical requirements. A facility may certify compliance with these treatment standards according to provisions in 40:268.7.</p>		
<p>(2) Based on analysis of composite samples.</p>		
<p>(3) As analyzed using SW-846 Method 9010 or 9012; sample size 10 gram; distillation time: one hour and fifteen minutes.</p>		

**Table 3-13**

**Maximum Concentrations of Constituents for Groundwater Protection  
(40 CFR 264.94, Table 1)**

<b>Constituent</b>	<b>Maximum Concentration mg<sup>3</sup></b>
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Selenium	0.01
Silver	0.05
Endrin	0.0002
Lindane	0.004
Methoxychlor	0.01
2,4,5-TP	0.01
Toxaphene	0.005
2,4-D	0.1



<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>U.S. ECAMP</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA   C   RMA	<b>REVIEWER COMMENTS:</b>		

**Section 4**

**NATURAL AND CULTURAL RESOURCES MANAGEMENT**

## SECTION 4

### NATURAL AND CULTURAL RESOURCES MANAGEMENT

#### A. Applicability

This section applies to any Air Force installation with natural, cultural, and historic resources. Plans and programs for protecting, managing, and enhancing natural resources such as soil, water, plants, and wildlife, and cultural resources, which include historic and prehistoric properties, are included in this section.

#### B. Federal Regulations

##### *Natural Resources*

- *The National Environmental Policy Act (NEPA)*. The purpose of this Act, 42 U.S. Code (USC) 4321-4370c, as last amended in November 1990, was to declare a national policy which will encourage productive and enjoyable harmony between man and his environment. Additionally, it provides for the promotion of efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man (42 USC 4321). Under NEPA, the continuing policy of the Federal government is to use all practicable means and measures in a manner calculated to foster and promote the general welfare, and to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (42 USC 4331(a)). It is the continuing responsibility of the Federal government is to use practicable means and resources to the end that the Nation may preserve important historic, cultural, and natural aspects of our national heritage (42 USC 4331(b)(4)).
- *The Endangered Species Act (ESA)* of 1973. The purpose of this Act, (16 USC 1531-1547, et al, last amended in October, 1988), is to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions for protection of endangered species (16 USC 1531(b)). Under ESA, the policy of Congress is that all Federal departments and agencies must seek to conserve endangered species and threatened species and must use their authorities in furtherance of the purposes of this Act. Further, Federal agencies must cooperate with state and local agencies to resolve water resource issues in concert with conservation of endangered species (16 USC 1531(c)).
- *Sikes Act of 1960*. This Act, (16 USC 670a-670o, last amended in November 1989), authorizes the Secretary of Defense to carry out a program of planning, development, maintenance and coordination of wildlife, fish and game conservation and rehabilitation in military reservations in accordance with a cooperative plan mutually agreed upon by the Secretary of Defense, the Secretary of the

Interior (SOI) and the appropriate state agency designated by the state in which the reservation is located (16 USC 670a(a)). This Act also requires the Secretary of each military department to:

1. manage the natural resources of each military reservation within the United States that is under his jurisdiction:
    - a. so as to provide sustained multipurpose uses of those resources
    - b. to provide the public access that is necessary or appropriate for those uses, to the extent that those uses and that access are not inconsistent with the military mission of the reservation (16 USC 670a-1(a))
  2. ensure, to the extent feasible, that the services necessary for the development, implementation, and enforcement of fish and wildlife management on each military reservation within the United States under his jurisdiction are provided by the Department of Defense (DOD) personnel who have professional training in those services (16 USC 670a-1(b)).
- *Wild and Scenic Rivers Act of 1986.* This Act, (16 USC 1271-1287, last amended in May 1991), outlines the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, must be preserved in free-flowing condition, and that they and their immediate environments must be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and fulfill other vital national conservation purposes (16 USC 1271). The purpose of this Act is to implement the declared policy of Congress by instituting a national wild and scenic rivers system, by designing the initial components of that system, and by prescribing the methods by which and standards to which additional components may be added to the system from time to time (16 USC 1272).
  - *Farmland Protection Policy Act of 1981.* The purpose of this Act, (7 USC 4201-4209, last amended in December 1991), is to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure that Federal programs are administered in a manner that, to the extent practicable, will be compatible with state, unit of local government, and private programs and policies to protect farmland (7 USC 4201(b)).
  - *The Fish and Wildlife Coordination Act of 1946.* This Act, last amended in July 1965, 16 USC 666c, is the Federal legislation which coordinates programs and activities regarding the conservation and rehabilitation of fish and wildlife in the United States. Unless provided for otherwise, whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license, such department or agency first must consult with the U.S. Fish and Wildlife Service (FWS), Department of the Interior (DOI), and with the head of the agency exercising administration over the wildlife resources of the particular state where the impoundment, diversion, or other control facility is to be constructed, with a view to the conservation of wildlife resources by preventing loss of and damage to such resources as well as providing for the development and improvement thereof in connection with such water-resource development (16 USC 662(a)).
  - *The Migratory Bird Treaty Act of 1918.* This Act, last amended in December 1989, 16 USC 703-711, is a Federal law which enforces international conventions for the protection of migratory birds

and game animals to which the United States is a party. Unless permitted by regulations, it is unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter offer to purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or in part, of any such bird or any part, nest, or egg thereof, included in the terms of the conventions for the protection and conservation of migratory birds and game mammals between the United States and the USSR, the United States and Mexico, and the United States and Japan (16 USC 703). It is also unlawful to ship, transport, or carry, by any means whatever, from one state, Territory, or district to or through another state, Territory, or district, or to or through a foreign country, any bird, or any part, nest, or egg thereof, captured, killed, taken, shipped, transported, or carried at any time contrary to the laws of the state, Territory, or district in which it was captured, killed, or taken, or from which it was shipped, transported, or carried (16 USC 705).

- Executive Order (EO) 11514. This EO, issued on 5 March 1970 and amended by EO 11991 issued on 24 May 1977, is a Presidential order which implements NEPA. Under this EO, *Protection and Enhancement of Environmental Quality*, the Federal Government must provide leadership in protecting and enhancing the quality of the nation's environment to sustain and enrich human life. Federal agencies must initiate measures needed to direct their policies, plans and programs so as to meet national environmental goals.
- EO 11987. This EO, *Exotic Organisms*, requires executive agencies to restrict the introduction of exotic species into natural ecosystems which they own or lease and encourage the states to prevent such introductions.
- EO 11988. This EO, *Floodplain Management*, 24 May 1977 as amended by EO 12148, 20 July 1979, implements NEPA, the *National Flood Insurance Act of 1968*, and the *Flood Disaster Protection Act of 1973*. Each agency must provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.

Each agency must evaluate the potential effects of any actions it may take in a floodplain; to ensure that its planning programs and budget requests reflect consideration of flood hazards and floodplain management; and to prescribe procedures to implement the policies and requirements of this Order. Each agency must take floodplain management into account when formulating or evaluating any water and land use plans, and must require land and water resources use appropriate to the degree of hazard involved. Agencies must include adequate provision for the evaluation and consideration of flood hazards in the regulations and operating procedures for the license, permits, loan or grants-in-aid programs that they administer (Section 2(c)).

Agencies responsible for Federal real property and facilities must take the following additional actions:

1. The regulations and procedures established under Section 2(d) of this Order require, at a minimum, the construction of Federal structures and facilities to be consistent with standards, criteria, and the intent of those issued under the National Flood Insurance Program. They may deviate only to the extent that the standards of the Flood Insurance Program are demonstrably inappropriate for a given type of structure or facility.



2. If, after compliance with the requirements of this Order, new construction of structures or facilities are to be located in a floodplain, accepted flood-proofing and other flood protection measures must be applied to new construction or rehabilitation. To achieve flood protection, agencies must, wherever practicable, elevate structures above the base flood level rather than filling in land (Section 3(a)(b)).
- EO 11989. This EO, *Use Of Off-Road Vehicles (ORVs) on The Public Lands*, specifies that ORVs may not be used without special use and location designation.
  - EO 11990. This EO, *The Protection of Wetlands*, 24 May 1977 as amended by EO 12608, 9 September 1987, implements the NEPA. Under this EO each Federal agency must provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Each agency, to the extent permitted by law, must avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds:
    1. that there is no practical alternative to such construction, and
    2. that the proposed action includes all practical measures to minimize harm to wetlands which may result from such use. In making this finding the head of the agency may take into account economic, environmental and other pertinent factors (Section 2(a)).

Each agency must also provide opportunity for early public review of any plans or proposals for new construction in wetlands (Section 2(b)).

- *The Convention on Wetlands of International Importance Especially as Waterfowl Habitat*. This Convention was created on 2 February 1971, in Ramsar, amended by *Paris Protocol of 12 March 1982*, and entered into force for the United States on 18 December 1986. Each country must promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands and provide adequately for their wardening (Article 4, para 1). The contracting countries must promote the training of personnel competent in the fields of wetland research, management, and wardening (Article 4, para 4). Those countries which are Contracting Parties to the convention agreed:
  1. wetlands constitute a resource of great economic, cultural, scientific and recreational value, the loss of which would be irreparable
  2. the progressive encroachment on and loss of wetlands now and in the future should be stemmed
  3. waterfowl in their seasonal migration should be regarded as an international resource
  4. conservation of wetlands and their flora and fauna can be ensured by combining far-sighted national policies with coordinated international action.
- EO 12088. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for ensuring that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

- ***The Coastal Zone Management Act of 1972.*** This Act, last amended in November 1990, 16 USC 1451-1464, is the Federal legislation which governs the preservation and management of coastal waters in the nation. In relation to coastal zones, the national policy is:
  1. to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations
  2. to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and esthetic values as well as the needs for compatible economic development
  3. to encourage the preparation of special area management plans which provide for increased specificity in protecting significant natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, including those areas likely to be affected by land subsidence, sea level rise, or fluctuating water levels of the Great Lakes, and improved predictability in governmental decision making
  4. to encourage the participation and cooperation of the public, state and local governments, and interstate and other regional agencies, as well as of the Federal agencies having programs affecting the coastal zone, in carrying out the purposes of this Act
  5. to encourage coordination and cooperation with and among the appropriate Federal, state, and local agencies, and international organizations where appropriate, in collection, analysis, synthesis, and dissemination of coastal management information, research results, and technical assistance, to support state and Federal regulation of land use practices affecting the coastal land ocean resources of the United States
  6. to respond to changing circumstances affecting the coastal environment and coastal resource management by encouraging states to consider such issues as ocean uses potentially affecting the coastal zone (16 USC 145).
  
- ***The Federal Noxious Weed Act of 1970.*** This Act, last amended in September 1988, 7 USC 2803 and 2809, states that no person is permitted to move any noxious weed identified in a regulation into or through the United States or interstate, unless such movement is:
  1. from Canada, or authorized under general or specific permit from the Secretary [of Agriculture]
  2. made in accordance with such conditions as the Secretary may prescribe in a permit and in regulations to prevent the dissemination into the United States, or interstate, of such noxious weed (42 USC 2803).
  
- **Public Law (PL) 86-337.** This Law (10 USC 2671) requires that all hunting, fishing, and trapping on Air Force installations be in accordance with the fish and game laws of the state in which it is located, and that appropriate state licenses for these activities on the installations be obtained.
  
- **PL 86-717** requires that projects be developed and maintained to encourage, promote, and assure adequate and dependable future resources, including supplies of forest products. The forest lands will be administered to increase the value of project lands for recreation and wildlife, and to promote ecological conditions by following accepted conservation practices.
  
- ***Clean Water Act (CWA).*** Section 404 of this Act (33 USC 1344) requires that all discharges of dredged and fill material in the waters of the United States, including wetlands, must meet the

requirements of USEPA's 404(b)(1) guidelines (40 CFR 230) and obtain water quality certification from the state (33 USC 1341) unless exempted by Congress through implementation of Section 404(r).

### *Cultural and Historic Resources*

- *Antiquities Act of 1906.* Within this Act, 16 USC 431-433, the President of the United States is authorized to declare historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Federal government to be national monuments (16 USC 431). Permits for the examination of ruins, the excavation of archaeological sites, and the gathering of objects of antiquity upon the lands under their respective jurisdictions may be granted by the Secretaries of the Interior, Agriculture, and Army to institutions which they may deem properly qualified to conduct such examination, excavation, or gathering, subject to such rules and regulations as they may prescribe (16 USC 432).
- *Historic Sites Act of 1935.* This Act, PL 74-292 (16 USC 470-470w-6), authorizes the designation of national historic sites and landmarks, authorizes interagency efforts to preserve historic resources, and establishes a maximum fine of \$500 for violations of the Act.
- *National Historic Preservation Act of 1966.* This Act, 16 USC 470-470w-6, last amended in August 1989, addresses the issue of preserving our national history. The Congress declares that the historical and cultural foundations of the Nation should be preserved as a living part of our community life and development; and that the preservation of this irreplaceable heritage is in the public interest so that its vital legacy of cultural, educational, aesthetic, inspirational, economic, and energy benefits will be maintained and enriched for future generations of Americans (16 USC 470(b)(2)(4)). The policy of the Federal Government is to (16 USC 470-1):
  1. use measures, including financial and technical assistance, to foster conditions under which our modern society and our prehistoric and historic resources can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations
  2. provide leadership in the preservation of the prehistoric and historic resources of the United States. and of the international community of nations
  3. administer Federally owned, administered, or controlled prehistoric and historic resources in a spirit of stewardship for the inspiration and benefit of present and future generations
  4. contribute to the preservation of non-Federally owned prehistoric and historic resources and give maximum encouragement to organizations and individuals undertaking preservation by private means
  5. encourage the public and private preservation and utilization of all usable elements of the Nation's historic built environment
  6. assist state and local governments and the National Trust for Historic Preservation in the United States to expand and accelerate their historic preservation programs and activities.
- *The National Environmental Policy Act (NEPA).* This purpose of this Act, 42 USC 4321-4370c, as last amended in November 1990 was to declare a national policy which will encourage productive and enjoyable harmony between man and his environment. Additionally, it provides for the promotion of efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man (42 USC 4321). It is the continuing responsibility of the Federal government is to use practicable means and resources to the end that the Nation may preserve important historic, cultural, and natural aspects of our national heritage (42 USC 4331(b)(4)).

- EO 11593. This EO, *Protection and Enhancement of the Cultural Environment*, 13 May 1971 directs Federal agencies to: provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the Nation; ensure the preservation of historic resources; locate, inventory, and nominate to the National Register all properties under their control that meet the criteria for nomination; and ensure that historic resources are not inadvertently damaged, destroyed, or transferred before the completion of inventories and evaluation for the National Register.
- *Archeological and Historic Preservation Act of 1974*. This Act, PL 93-291 (amends PL 86-523); (16 USC 469-469c), directs Federal agencies to notify the SOI when they find that any Federal construction project or Federally licensed activity or program may cause irreparable loss or destruction of significant scientific, prehistoric, historical, or archeological data. It also provides criteria for funding historical and archeological protection for such projects.
- *Public Buildings Cooperative Use Act of 1976*. This Act, 40 USC 490, 601 note, et seq., was last amended in November 1988. Under this Act, the Administrator of General Services must, among other duties, acquire and use space in suitable buildings of historic, architectural, or cultural significance, unless use of such space would not prove feasible and prudent compared with available alternatives (40 USC 601a(a)(1)).
- *American Indian Religious Freedom Act of 1978*. This Act, PL 95-341 (42 USC 1996), states the policy of the United States to protect and preserve for American Indians their inherent rights of freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and native Hawaiians. These rights include, but are not limited to, access to sites, use and possession of sacred objects, and the freedom to worship through ceremony and traditional rites.
- *Archaeological Resources Protection Act of 1979*. This Act, 16 USC 470aa-470mm, was last amended in October 1988. The purpose of this Act is to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites which are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources and data which were obtained before 1 October 1979 (16 USC 470aa(b)).
- *Native American Graves Protection and Repatriation Act of October 1990*. This Act, 25 USC 3001-3013, permits the intentional removal from or excavation of Native American cultural items from Federal or tribal lands for purposes of discovery, study, or removal of such items only if:
  1. such items are excavated or removed pursuant to a permit issued which must be consistent with this Act
  2. such items are excavated or removed after consultation with or, in the case of tribal lands, consent of the appropriate (if any) Indian tribe or Native Hawaiian organization
  3. the ownership and right of control of the disposition of such items must be as provided in subsections (a) and (b) of this section
  4. proof of consultation or consent is shown (25 USC 3002(c)).

Each Federal agency and museum which has possession or control over holdings or collections of Native American human remains and associated funerary objects must compile an inventory of such items and, to the extent possible based on information processed by such museum or Federal agency, identify the geographical and cultural affiliation of such item (25 USC 3003(a)). Each Federal agency or museum which has possession or control over holdings or objects of Native American unassociated funerary objects, sacred objects, or objects of cultural patrimony must provide a

written summary of such objects based on available information held by such agency or museum. The summary must describe the scope of the collection, kinds of objects included, reference to geographical location, means and period of acquisition and cultural affiliation, where readily ascertainable.

- *Abandoned Shipwreck Act of 1987.* This Act, PL 100-298, defines and clarifies access and ownership rights and directs the Director of the National Park Service to prepare guidelines, in consultation with appropriate public and private section interests, to administer and manage underwater resources.

### **C. State/Local Regulations**

At the state level, the State Historic Preservation Officer (SHPO) provides assistance in determining cultural significance and eligibility for the National Register, but may also nominate properties, irrespective of ownership. The SHPO must be consulted during all cultural resources planning.

States may also issue regulations designating state historical sites.

States develop lists for their local endangered species in addition to the Federal lists.

States develop regulations and management practices (MPs) for the protection of surface waters, coastal zones, wetlands, and the prevention of nonpoint source pollution.

States also establish regulations governing hunting and fishing activities. These regulations must be followed on Air Force installations.

### **D. Department of Defense (DOD) Regulations**

- DOD Directive 4700.4, *Natural Resources Management Program.* This directive prescribes DOD policies and established an integrated program for multiple-use management of the renewable natural resources on DOD lands. It directs installations to protect, conserve, and manage the watersheds and natural landscapes, the soil, the forest, timber growth, fish and wildlife, and endangered species as vital elements of the Air Force mission. It further stipulates that the natural resources will be used and cared for in the combination best serving the present and future needs of the United States and its people.

### **E. U.S. Air Force Regulations (AFRs)**

- AFR 19-9, *Interagency and Intergovernment Coordination of Land, Facility, and Environmental Plans, Programs, and Projects.* This AFR assigns responsibilities for the implementation of the Air Force policy for coastal zone management, coastal barrier resources protection, floodplain management, and wetland protection. It gives the guidelines for the decision making process when analyzing potential adverse effects of Air Force projects in floodplains and wetlands. This AFR is scheduled to be replaced with Air Force Instruction (AFI) 32-7006.
- AFR 126-1, *Conservation and Management of Natural Resources.* This AFR gives policies, precedents, and functional responsibilities for managing and conserving soil, water, forest, fish, wildlife,

and outdoor recreation resources on Air Force lands. It establishes the requirements to manage these resources under the principles of multiple-use and sustained yield, consistent with the military mission.

- AFR 126-7, *Historic Preservation*. This AFR provides Air Force policies, procedures, and responsibilities for protecting and managing cultural resources.
- AFR 127-15, *The Bird Aircraft Strike Hazard (BASH) Reduction Program*. This AFR gives policies and guidance for implementing an effective BASH program and designated agencies that are responsible for carrying out the program and evaluating its effectiveness.
- Air Force Instruction (AFI) 32-7064, *Integrated Natural Resources Management*. This AFI, dated 1 December 1993, identifies compliance requirements for integrated natural resources management.
- AFI 32-7065, *Cultural Resources Management*. This AFI, dated 1 December 1993, provide guidance for protecting and managing cultural resources. It outlines the requirements for the Cultural Resources Management Plan (CRMP), training, and the nomination process. See Table 4-1 for a flowchart of the Section 106 process within the Air Force.

## **F. Key Compliance Requirements**

### ***Natural Resources***

- **Management Plans** - Air Force installations that have land and water areas that possess, or are capable of possessing natural resources will develop a program for restoring, improving, developing, and conserving natural resources. They will develop management plans for land (soil and water), grazing and croplands, forest, fish and wildlife, and outdoor recreation where there are resources to manage.
- **Land Management** - A protective vegetative cover or other measure should be provided to control dust and erosion damage. Known inactive hazardous waste sites should be identified. Additionally, floodplains and wetlands should be identified and protected. The Air Force is not allowed to discharge dredge or fill material into the waters of the United States without a permit (MPs and 33 CFR 313.3(a)).
- **Endangered/Threatened Species** - Installations with Federally designated endangered and threatened species are required to carry out programs for their conservation. A survey will be done to determine if the installations has any such species, and measures taken to maintain them. All installations must review proposed actions and activities to ensure that they are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat (40 CFR 1500; 50 CFR 402.01(a), 402.10, and 402.12).
- **Cooperative Agreements** - Installations will maintain liaison with agencies through cooperative agreements. These agreements assist in developing and implementing well-coordinated, multiple-use natural resource programs. One example is the Memorandum of Understanding (MOU) between the Air Force and several private conservation organizations to develop the Watchable Wildlife Program.

- **Wetlands and Floodplains** - Air Force installations must identify all floodplains and wetlands in the installations land management plan and ensure the plan provides for the protecting and managing of these areas.
- **Coastal Zones** - While coastal zones are regulated at the state level, the Air Force has entered into an agreement with the Coastal America National Implementation Team to coordinate and cooperate in the restoration and protection of coastal zones. This agreement has resulted in guidance being distributed to appropriate installations for implementation.

#### *Cultural Resources*

- **Historical Properties** - All Federal Agencies are required to establish a program to locate, inventory, and nominate to the SOI all properties under the installation's control that qualify for inclusion on the National Register of Historic Places. Historic properties held in fee by the Federal government, and under the jurisdiction of the Air Force are required to be protected and managed and have damage mitigated. These requirements also apply to property held in less than fee by the Federal government, whenever Air Force activities have an adverse impact on the property. Installations are required to take account the effects of a new undertaking on property in the National Register, before beginning an undertaking. The installations is required to consult SHPO during identification, location, and evaluation of historic properties and in assessing the effect of an undertaking on historic property (36 CFR 60.9(7)(f), 60.13, 800.1, 800.4, and 800.5; 32 CFR 229.4(a) and 229.5(b)).
- **Archeological Requirements** - When unrecorded historic property is discovered during construction or other undertakings, work is required to halt until the situation is properly evaluated. Archeological resources on either public or Indian lands cannot be excavated, removed, damaged, or otherwise altered without permit (32 CFR 229.4(a) and 229.5(b)).
- **Native American Graves and Artifacts** - Federal law protects Native American graves and artifacts. Air Force installations are required to take measures to identify and protect them, and cooperate with Native American groups in returning them to their rightful owners (PL 101-601, Section 3d, Section 5, and Section 6).
- **Collection Management and Curation** - Archeological and historic collections owned or controlled by the Air Force are required to be assessed and evaluated. Installations responsible for long-term management and preservation of collections are covered by regulations dealing with curation, record keeping, long-term curatorial services, repository security, curatorial staff qualifications, use of collections, and conduct of inspections and inventories of the collections. Collection management centers are also required to write annual reports updating the status of their collections (36 CFR 79).

#### **F. Responsibility for Compliance**

- **Base Civil Engineering (BCE)/Environmental Management.** The BCE is responsible for funding, supervising, controlling, and managing the installations natural resources and historic preservation program.

- **Natural Resources Manager.** The Natural Resources Manager is responsible for preparing management plans and cooperative agreements, budgets, and the annual natural resources report. The natural resources manager also implements and controls all activities in furtherance of natural resources management. On installations without a full-time Natural Resources Manager, these duties would normally be assigned to the environmental coordinator or community planner.
- **Base Historic Preservation Officer.** The Base Historic Preservation Officer is responsible for implementing the historic preservation program, and locates, inventories, and evaluates installation cultural resources. This is usually an additional duty assignment within BCE.
- **Air Force Civil Engineering Support Agency (AFCESA).** AFCESA provides technical assistance on grounds maintenance, bird/aircraft strike hazard reduction, and integrated pest management.

### **G. Key Compliance Definitions**

- **Action** - all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to (50 CFR 402.02):
  1. actions intended to conserve listed species or their habitat
  2. the promulgation of regulations
  3. the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid
  4. actions directly or indirectly causing modifications to the land, water, or air.
- **Action Area** - all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02).
- **Adverse Effect** - changes that may diminish a historic property's integrity in terms of location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to (AFI 32-7065, Attachment 4):
  1. physical destruction, damage, or alteration of all or a part of the property
  2. isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's gratification for the National Register
  3. introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting
  4. neglect of a property resulting in its deterioration or destruction
  5. transfer, lease, or sale of the property.
- **Advisory Council on Historic Preservation (ACHP)** - the Council established by Title II of the *National Historic Preservation Act* (NHPA) to advise the President and Congress, to encourage private and public interest in cultural preservation, and to comment on Federal agency action under Section 106 of the NHPA (36 CFR 65.3).
- **Agricultural Outleasing** - the use of DOD lands under a lease to an agency organization, or person for the purpose of growing crops or grazing animals (AFI 32-7064, Attachment 6).
- **Archeological Resource** - any material remains of prehistoric or historic human life or activities. Such resources include, but are not limited to: pottery, basketry, bottles, weapons, weapon project-



iles, tools, structures or portions of structures, pit houses, rock paintings, rock carvings, intaglios, graves, human skeletal materials, or any portion or piece of any of the foregoing items (16 USC 470bb).

- **ARPA Permit - Archeological Resources Protection Act.** A legal authorization required by ARPA to conduct an archeological survey or investigation that involves surface collecting or subsurface testing on Federal land. Issued by HQUSAF/CEV for Air Force controlled land (AFR 126-7, Attachment 2).
- **Assessment of Effect** - A process to determine whether an undertaking may affect in any way the qualities of a property that make it eligible for the National Register. The assessment is made by the installations commander in consultation with the SHPO (AFI 32-7065, Attachment 4).
- **Associated Funerary Objects** - objects that, as a part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later, and both the human remains and associated funerary objects are presently in the possession or control of a Federal agency or museum, except for other items exclusively made for burial purposes or to contain human remains shall be considered as associated funerary objects (PL 101-601, Section 2).
- **Associated Records** - original records, or copies thereof, that are prepared or assembled and document efforts to locate, evaluate, record, study, preserve, or recover a prehistoric or historic resource (36 CFR 79.4).
- **Building** - a structure created to shelter any form of human activity, such as a house, barn, church, hotel, or similar structure. *Building* may refer to a historically related complex such as a courthouse and jail, or a house and barn (36 CFR 60.3).
- **Burial Site** - any natural or prepared physical location, whether originally below, on, or above the surface of the earth, into which as a part of the death rite or ceremony of a culture, individual human remains are deposited (PL 101-601, Section 2).
- **Candidate Species** - any species being considered by the SOI for listing as an threatened or endangered species (50 CFR 404.02).
- **Category 1 Installation** - installations with suitable habitat for conserving and managing fish and wildlife (including protecting habitat used by endangered, threatened and nongame species (AFR 126-1, para 5-7).
- **Collection** - materials remains that are excavated or removed during a survey, excavation or other study of a prehistoric or historic resource, and associated records that are prepared or assembled in connection with the survey, excavation or other study (36 CFR 79.4).
- **Commercial Forest Land** - land under management, capable of producing at least 20 ft<sup>3</sup> of merchantable timber per acre a year. It must be accessible and programmed for silvicultural prescriptions. The smallest area for this classification is 5 acres. Roadside, streamside, and shelterbelt strips of timber must have or be capable of producing a crown width of at least 120 ft<sup>3</sup> to be classified as a commercial forest (AFI 32-7064, Attachment 6).

- *Conservation* - wise management and use of natural resources to provide the best public benefits for present and future generations (AFR126-1, para 1-3).
- *Consultation* - a process initiated by the installation commander wherein the Commander confers with the SHPO to seek ways to reduce or avoid adverse effects on historic properties. The Advisory Council and certain interested persons may participate as consulting parties (AFI 32-7064, Attachment 2).
- *Critical Habitat* - specific areas within the geographic area commonly occupied by a species which contain features essential to the conservation of the species and which may require special management considerations or protection. Specific areas outside the currently occupied range of a threatened or endangered species may be determined by the SOI as areas essential for the conservation of the species (50 CFR 424.02).
- *Cropland* - land primarily suited for producing farm crops, including grain, hay, and truck crops (AFI 32-7064, Attachment 6).
- *Cultural Affiliation* - a relationship of shared group identity which can be reasonably traced historically or prehistorically between a present day Indian tribe or Native Hawaiian organization and an identifiable earlier group (PL 101-601, Section 2).
- *Cultural Items* - associated and unassociated funerary objects, sacred objects, and cultural patrimony (PL 101-106, Section 2(3)(a-d)).
- *Cultural Patrimony* - an object having ongoing historical, traditional, or cultural importance central to the Native American group or culture itself, rather than property owned by an individual Native American, and which, therefore, cannot be alienated, appropriated, or conveyed by any individual regardless of whether or not the individual is a member of the Indian tribe or Native Hawaiian organization (PL 101-601, Section 2).
- *Curatorial Services* - managing and preserving a collection according to professional museum and archival practices (36 CFR 79.4).
- *Destruction or Adverse Modification* - means a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical (50 CFR 402.02).
- *Determination of Eligibility* - a decision by the Department of the Interior that a district, site, building, structure, or object meets the National Register criteria for evaluation although the property is not formally listed in the National Register (36 CFR 60.3).
- *District* - a geographically definable area, urban or rural, that possesses a significant concentration, linkage or continuity of sites, structures, buildings, or objects united by past events or aesthetically by plan or physical development. A district may also comprise individual elements separated geographically but linked by association or history (36 CFR 60.3).

- *Effect* - direct effects are caused by the undertaking and occur at the place and time of the undertaking. Indirect effects are those caused by the undertaking that are later in time or further removed in distance, but are still reasonably foreseeable (50 CFR 1508.8).
- *Endangered Property* - a historic property that is, or is about to be, subjected to a major impact that will destroy or seriously damage the qualities of significance that make it eligible for National Historic Landmark or National Register of Historic Places designation (36 CFR 65.3).
- *Endangered Species* - any species which is in danger of extinction throughout all or a significant portion of its range (other than a species of the Class Insect determined to constitute a pest). Federally listed endangered species are officially designated by the Department of Interior (50 CFR 81.1).
- *Federal Agency Official* - any officer, employer, or agent officially representing the secretary of the department or the head of any other agency or instrumentality of the United States having primary management authority over a collection that is subject to 36 CFR 79 (36 CFR 79.4).
- *Federal Lands* - any land other than tribal lands which are controlled or owned by the United States, including lands selected by but not yet conveyed to Alaska Native Corporations and groups pursuant to the *Alaska Native Claims Settlement Act of 1971* (PL 101-601, Section 2).
- *Federal Preservation Officer* - the person who is responsible for coordinating the agency's activities under the NHPA and EO 11593, including nominating properties under the agency's ownership or control to the National Register (36 CFR 60.3).
- *Floodplain* - the 100 yr floodplain is the lowland area adjoining inland and coastal waters, including flood prone areas of offshore islands, that would be mandated by the base 100 yr flood. The critical actions (or 500 yr) floodplain is the area that would be mandated by a 500 yr flood (AFR 19-9, Attachment 1).
- *Forest Land* - land on which forest trees of various sizes comprise at least 10 percent of the area. This category include open land that is capable of supporting trees, though not currently developed for forest uses, but planned for forest regeneration and management (AFI 32-7064, Attachment 6).
- *Game* - any species of fish or wildlife for which seasons and bag or creel limits have been prescribed and which are taken under state of Federal laws and regulations (AFI 32-7064, Attachment 6).
- *Grazing Land* - land with vegetative cover that consists of grasses, forbs, and shrubs valuable as forage (AFI 32-7064, Attachment 6).
- *Historic Preservation* - identification, evaluation, documentation, curation, acquisition, protection, rehabilitation, restoration, management, stabilization, maintenance, recording, and reconstruction of cultural resources, and any combination of the foregoing (16 USC 470w(8)).
- *Historic Property or Resource* - any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register. such term includes artifacts, records, and remains which are related to such a district, site, building, structure, or object (16 USC 470W).
- *Improved Grounds* - grounds on which intensive maintenance activities are annually planned and performed. These are developed areas of an installation that have lawns and landscape planning that

require intensive maintenance. These usually include the cantonment, parade grounds, drill fields, athletic areas, golf courses (including roughs), cemeteries, housing areas, etc. (AFI 32-7064, Attachment 6).

- **Indian Lands** - all lands under the jurisdiction or control of an Indian tribe (36 CFR 800.2).
- **Indian Tribe or Tribe** - an Indian Tribe, band, nation, or other organized group or community including a Native village, Regional corporation or Village Corporation as those terms are defined in section 3 of the *Alaska Native Claims Settlement Act* (42 USC 1602), which is recognized as eligible for the special programs and services provided by the United State to Indians because of their status as Indians (NHPA, Section 301(4)).
- **Inventory** - an itemized list of human remains and funerary objects along with their geographical and cultural affiliations (PL 101-601, Section 5 (a) and (e)).
- **Jeopardize the Continued Existence of** - to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02).
- **Landmark** - a National Historic Landmark is a district, site, building, structure or object, in public or private ownership, judged by the SOI to possess national significance in American history, archeology, architecture, engineering, and culture, and is so designated by the Secretary (36 CFR 65.3).
- **Management Practices (MP)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- **Material Remains** - artifacts, objects, specimens, and other physical evidence that are excavated or removed in connection with efforts to locate, evaluate, document, study, preserve or recover a prehistoric or historic resource. Classes of material remains that may be in a collection include, but are not limited to (36 CFR 79.4):
  1. components of structures and features (such as houses, mills, piers, fortifications, earthworks, and mounds)
  2. intact or fragmentary artifacts of human manufacture
  3. intact or fragmentary natural objects used by humans (such as rock crystals, feathers and pigments)
  4. by-products, waste products, or debris resulting from manufacture or use of manmade or natural materials
  5. organic materials (such as vegetable and animal remains)
  6. human remains
  7. components of petroglyphs, pictographs, intaglios, or other works of artistic or symbolic representation
  8. components of shipwrecks
  9. environmental and chronometric specimens
  10. paleontological specimens that are found in direct physical relationship with a prehistoric or historic resource.

- **Museum** - any institution or state or local government agency (including any institution of higher learning) that receives Federal funds and has possession of, or control over, Native American cultural items. Such term does not include the Smithsonian Institution or any other Federal Agency (PL 101-601, Section 2).
- **National Historic Landmarks Program** - the program that identifies, designates, recognizes, lists, and monitors National Historic Landmarks, conducted by the Secretary through the National Park Service (36 CFR 65.3).
- **National Park Service (NPS)** - the bureau of the Department of the Interior to which the SOI has delegated the authority and responsibility for administering the National Register program (36 CFR 60.3(h)).
- **National Register of Historic Places (National Register)** - the listing of districts, sites, buildings, structures, and objects of national, state, or local significance in American history, architecture, archeology, or culture that is maintained by the SOI (Keeper of the Register) (36 CFR 65.3).
- **Native American** - or, or relating to, a tribe, people, or culture that is indigenous to the United States (PL 101-106, Section 2).
- **Native Hawaiian** - any individual who is a descendent of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the State of Hawaii (PL 101-106, Section 2).
- **Natural Resources Management** - action taken to manipulate, alter, and keep natural resources in harmony with each other to meet present and future needs (AFR 126-1, para 1-3).
- **Nominate** - to complete and submit National Register of Historic Places form proposing that a resource be included in the National register. Nominations can be made for individual resources, multiple resources, or thematic groups (36 CFR 60.4).
- **Outdoor Recreation** - recreation that relates directly to and occurs in natural, outdoor environments (AFI 32-7064, Attachment 6).
- **Preservation** - identification, evaluation, recordation, documentation, curation, acquisition, protection management, rehabilitation, restoration, stabilization, maintenance and reconstruction of any constituents of the foregoing activities (16 USC 470W).
- **Property** - a site, building, object, structure, or a collection of the above that forms a district (36 CFR 65.3).
- **Public Lands** - lands owned and administered by the United States including the national park system, national wildlife refuge system, and national forest system. Additional public lands are those whose fee title is held by the United States, the Outer Continental Shelf, and lands under the jurisdiction of the Smithsonian Institution (PL 96-95, Section 3(3)).
- **Qualified Museum Professional** - a person who possesses knowledge, experience, and demonstrable competence in museum methods and techniques appropriate to the nature and content of the collection under the persons management and care and commensurate with the person's duties and responsibilities (36 CFR 79.4).

- **Religious Remains** - materials remains that the Federal Agency Official has determined are of traditional, religious, or sacred importance to an Indian tribe or other group because of customary use in religious rituals or spiritual activities. This determination is made in consultation with appropriate Indian tribes or other groups (36 CFR 79.4).
- **Repository** - a facility such as a museum, archeological center, laboratory or storage facility managed by a university, college, museum, other educational or scientific institution, a Federal, state, or local Government agency or Indian tribe that can provide professional, systematic, and accountable curatorial services on a long-term basis (36 CFR 79.4).
- **Restoration** - the act or process of accurately recovering the form and details of property and its setting as it appeared at a particular period of time by means of the removal of later work or by the replacement of missing earlier work (36 CFR 68.2).
- **Sacred Objects** - specific ceremonial objects which are needed by traditional Native American religious leaders for the practice of their traditional Native American religions by their present day adherents (PL 101-601, Section 2).
- **Section 106 Consultation** - a compliance procedure in which an agency requests the comments of the SHPO and/or the ACHP when an undertaking may affect a property on, or eligible for, the National Register (36 CFR 800.3 through 800.9).
- **Semi-Improved Grounds** - grounds where periodic maintenance is performed primarily for operational and aesthetic reasons (such as erosion and dust control, bird control, and visual clear zones). These usually include grounds adjacent to runways, taxiways, and aprons; runway clear zones; lateral safety zones; rifle and pistol ranges; picnic areas; ammunition storage areas; antenna facilities; golf course roughs etc. (AFI 32-7064, Attachment 6).
- **Significance** - those attributes or characteristics of a property that qualify it for the National Register according to the National Register criteria (AFI 32-7065, Attachment 4).
- **State Historic Preservation Officer (SHPO)** - the official, who is responsible for administering the NHPA within the state of jurisdiction, or a designated representative authorized to act for the SHPO (36 CFR 60.3).
- **Sustained Yield** - management of renewable natural resources to provide an annual or periodic yield and perpetuation of the managed resource (AFR 126-1, para 1-3).
- **Threatened Species** - any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Federally listed threatened species are officially designated by the Department of Interior (50 CFR 81.21).
- **Tribal Official** - the chief executive officer or any officer employee or agent officially representing the Indian tribe (36 CFR 79.4).
- **Unassociated Funerary Objects** - objects that, as a part of the death rites or ceremony of a culture are reasonably believed to have been placed with individual human remains either at the time of death or later, where the remains are not in the possession or control of the Federal agency or museum and the objects can be identified by a preponderance of the evidence as related to specific

individuals or families or to known human remains or, by a preponderance of the evidence, as having been removed from a specific burial site of an individual culturally affiliated with a particular Indian tribe (PL 101-106, Section 2).

- *Undertaking* - a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including (NHPA 301(7)):
  1. those carried out by or on behalf of the agency
  2. those carried out with Federal financial assistance
  3. those requiring a Federal permit, license or approval
  4. those subject to state or local regulation administered pursuant to a delegation of approval by a Federal Agency.
  
- *Unimproved Grounds* - all grounds not classified as improved or semi-improved and usually not mowed more than once per year. These include weapons ranges, forest lands; cropland and grazing lands; lakes, ponds, and wetlands; areas in airfield beyond the safety zones (AFI 32-7064, Attachment 6).

# NATURAL AND CULTURAL RESOURCES MANAGEMENT

## GUIDANCE FOR CHECKLIST USERS

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	<b>REFER TO CHECKLIST ITEMS:</b>	<b>CONTACT THESE PERSONS OR GROUPS: (a)</b>	<b>REFER TO PAGE NUMBER:</b>
All Installations	NCR.1 through NCR.6	(1)(2)	4-23
Personnel and Training	NCR.7 through NCR.10	(1)(2)	4-25
Natural Resources			
General	NCR.11 through NCR.15	(1)(2)	4-27
Land Management	NCR.16 through NCR.20	(1)	4-30
Floodplains and Wetlands	NCR.21 through NCR.23	(1)	4-32
Forest Management	NCR.24 through NCR.27	(1)	4-33
Fish and Wildlife Management	NCR.28 through NCR.32	(1)	4-34
Endangered/Migratory Species	NCR.33 through NCR.35	(1)	4-36
Outdoor Recreation Resources	NCR.36 through NCR.39	(1)	4-37
Agricultural Outleasing	NCR.40	(1)	4-38
Cultural Resources			
General	NCR.41 through NCR.44	(1)(2)	4-39
Identification/Protection	NCR.45 through NCR.50	(2)	4-40
Religious/Heritage Access	NCR.51	(2)	4-43
Native American Graves Protection	NCR.52	(2)	4-43
Collection Management and Curation	NCR.53 through NCR.61	(2)	4-45

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**(a) CONTACT/LOCATION CODE:**

(1) Natural Resources Manager (or Environmental Coordinator)

(2) Historic Preservation Officer (or Environmental Coordinator)





## **NATURAL AND CULTURAL RESOURCES MANAGEMENT**

### **Records to Review During an ECAMP Assessment**

- For construction activities: documentation of finding of no adverse effect, finding of adverse effect, or Memorandum of Agreement (MOA) with the SHPO or requests for comment when there is no agreement on historic properties
- Cultural Resources Inventory/Survey
- Land Use Plan
- Land Management Plan
- Environmental Assessments
- Environmental Impact Documentation
- Grounds Maintenance Contracts
- Historic Preservation Plan
- Inventory of Historic Properties
- Master Plan
- Fish and Wildlife Plan
- Fish and Wildlife Cooperative Agreements
- Outdoor Recreation Plan
- Outdoor Recreation Cooperative Agreement
- Cropland and Grazing Plan
- Forest Management Plan
- Grounds Maintenance Contracts
- Agricultural and Grazing Lease Contracts
- Reports of MAJCOM and HQ USAF Staff Assistance Visits

### **Physical Features to Inspect During an ECAMP Assessment**

- Sites of historic, archeological, or Native American interest (designation, protection, and interpretation)
- Buildings and structures of potential historical significance (National, state, or local)
- Construction sites (erosion control, runoff, sedimentation, and landscaping)
- Facilities constructed in the past 2 yr (erosion and landscaping)
- Wildlife containment areas (condition and management)
- Equipment that could damage wildlife, its habitat or land and water resources (use and control)
- Military training areas (condition)
- Ordnance storage and disposal areas (condition)
- Grounds Maintenance areas (beautification and condition)
- Forest Management areas (condition and management)
- Agricultural and Grazing lease areas (condition and management)
- Stormwater drainage areas and improvements (condition)
- Erosion sites (condition and erosion)

### **People to Interview During an ECAMP Assessment**

- Natural Resources Manager
- Historic Preservation Officer
- Environmental Coordinator



**COMPLIANCE CATEGORY:  
NATURAL AND CULTURAL RESOURCES MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL INSTALLATIONS</b></p> <p><b>NCR.1.</b> Actions or changes since previous evaluation of natural and cultural resources management should be examined (MP).</p> <p><b>NCR.2.</b> Copies of all relevant Federal, state, and local regulations on natural and cultural resources are required to be maintained at the installation (AFR 19-1, para 11f).</p> <p><b>NCR.3.</b> Copies of all relevant DOD and U.S. Air Force directives and guidance documents on natural and cultural resources should be maintained at the installation (MP).</p>	<p>Determine if noncompliance issues have been resolved by obtaining a copy of the prior assessment report. (1)(2)</p> <p>Determine whether copies of the following Natural Resource regulations are maintained and kept current at the installation and are ready: (1)(2)</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Compliance With Pollution Standards.</i></li> <li>- 50 CFR 402, <i>Interagency Cooperation-Endangered Species Act 1973, as amended.</i></li> </ul> <p>Determine whether copies of the following cultural resource regulations are maintained and kept current at the installation: (2)</p> <ul style="list-style-type: none"> <li>- 32 CFR 229, <i>Archeological Resources Protection Act of 1979; Final Uniform Regulations.</i></li> <li>- 36 CFR 79, <i>Curation of Federally Owned and Administered Archeological Collections.</i></li> <li>- 36 CFR 800, <i>Protection of Historic and Cultural Properties.</i></li> </ul> <p>Verify that the Base Staff Judge Advocate reviews Federal, state, and local regulations that may affect ongoing and proposed activities and keeps the Environmental Protection Committee (EPC) informed as needed. (1)(2)</p> <p>Determine whether copies of the following natural resource documents are maintained and kept current at the installation and are ready: (1)(2)</p> <ul style="list-style-type: none"> <li>- DOD Directive 4700.4, <i>Natural Resources Management Program.</i></li> <li>- AFR 19-1, <i>Pollution Abatement and Environmental Quality.</i></li> <li>- AFR 19-9, <i>Interagency and Intergovernmental Coordination of Land, Facility and Environmental Plans, Programs, and Projects.</i></li> <li>- AFR 126-1, <i>Conservation and Management of Natural Resources.</i></li> <li>- AFR 127-15, <i>The Bird Strike Reduction Program.</i></li> <li>- AFI 32-7064, <i>Integrated Natural Resources Management.</i></li> </ul>

(1) Natural Resources Manager (or Environmental Coordinator) (2) Historic Preservation Officer (or Environmental Coordinator)



**COMPLIANCE CATEGORY:  
NATURAL AND CULTURAL RESOURCES MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>NCR.6.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if any new regulations concerning natural/cultural resources have been issued since the finalization of the manual. (1)(2)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)(2)</p>
<p><b>PERSONNEL AND TRAINING</b></p> <p><b>NCR.7.</b> Personnel are required to be designated and trained for natural resources responsibilities (AFR 126-1, para 1-6).</p>	<p>Determine if authorized natural resources positions are filled and the personnel are assigned natural resources and duties. (1)</p> <p>Verify that professionally trained personnel are used to manage natural resources programs and must obtain professional help in at least one of the following ways: (1)</p> <ul style="list-style-type: none"> <li>- professionally trained staff</li> <li>- contract consultants</li> <li>- outside agencies.</li> </ul> <p>Determine if personnel assigned natural resources duties are adequately trained. Continuous training must be provided, such as attendance at annual workshops. (1)</p>
<p><b>NCR.8.</b> Air Force personnel are required to be trained about natural resources as appropriate to their responsibilities (AFI 32-7064, para 14.1 through 14.5).</p>	<p>Verify that basic information on natural resources is incorporated into newcomer orientation briefings. (2)</p> <p>(NOTE: Training materials are available from AFCEE and AFIT.)</p> <p>Verify that Natural Resources Managers have attended the <i>DOD Management of Cultural and Natural Resources: Air Force Training Module</i> course at least every 3 yr. (2)</p>

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**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>NATURAL RESOURCES</b></p> <p><b>General</b></p> <p><b>NCR.11.</b> The installation is required to have a current and approved integrated natural resources plan consistent with policy on conservation and management of natural resources (AFR 126-1, para 1-5).</p> <p><b>NCR.12.</b> Individual plans are acceptable, but they must be coordinated, and a consolidated plan should be written upon expiration of individual plans (MP).</p> <p><b>NCR.13.</b> The installation is required to have a Installation Natural Resources Management Plan (INRMP) based on the ecosystems found at the installation (AFI 72-7064, para 2.1 and 2.2).</p>	<p>A current and approved natural resources plan is required by Air Force policy to coordinate all aspects of natural resources management. The plan must include, depending on the resources available (as determined by formal consultation with the Soil Conservation Service (SCS), FWS, and NPS): (1)</p> <ul style="list-style-type: none"> <li>- land management if the installation has 20 or more acres of improved and semi-improved grounds or 50 acres or more of unimproved grounds</li> <li>- grazing and croplands</li> <li>- forest management if the installation has 50 acres or more</li> <li>- fish and wildlife management</li> <li>- outdoor recreation.</li> </ul> <p>Verify that the plan is reviewed yearly and updated as necessary. (1)</p> <p>Verify that as individual plans expire a consolidated plan is being written. (1)</p> <p>Determine if the installation contacted the following, as applicable, to determine if sufficient habitat warrants a INRMP: (1)</p> <ul style="list-style-type: none"> <li>- state forestry office</li> <li>- state game/natural resources department</li> <li>- FWS</li> <li>- the SCS.</li> </ul> <p>Verify that the INRMP is reviewed annually. (1)</p> <p>Verify that the INRMP is prepared and revised with input from an interdisciplinary team. (1)</p> <p>Verify that as a part of the INRMP, Short Term Operational Component Plans are developed for 2-yr periods in conjunction with the budget process. (1)</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<b>NCR.13. (continued)</b>	<p>Verify that information from the INRMP is incorporated into the Base Comprehensive Plan. (1)</p> <p>Verify that new INRMPs and substantive revisions are developed at least every 5 yr and coordinated with the appropriate officials. (1)</p> <p>(NOTE: Attachment 1 of AFI 32-7064 contains detailed guidelines for the contents of the INRMP which include:</p> <ul style="list-style-type: none"> <li>- purpose of the plan</li> <li>- management philosophy</li> <li>- authority</li> <li>- how the plan is used</li> <li>- approvals and revisions</li> <li>- definition of terms</li> <li>- environmental documentation</li> <li>- installation location and mission</li> <li>- mission impacts on the local environment</li> <li>- a description of the general physical environment</li> <li>- general biotic information</li> <li>- management issues and concerns</li> <li>- management goals and objectives</li> <li>- identification, classification, and mapping of installation natural resources management units</li> <li>- operational component plans for: <ul style="list-style-type: none"> <li>- threatened and endangered species (protection and mitigation, population enhancement, FWS consultation process)</li> <li>- wetlands</li> <li>- watershed protection</li> <li>- floodplains/floodway regulations</li> <li>- fish and wildlife management (may be necessary for non-game species as well as game species)</li> <li>- habitat management</li> <li>- grounds maintenance</li> <li>- commercial forestry</li> <li>- outdoor recreation</li> <li>- agricultural outleasing.)</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>NCR.14.</b> Installations are required to establish a natural resources management database to track program progress and maintain current maps showing locations of natural resources (AFI 32-7064, para 2.4).</p> <p><b>NCR.15.</b> Installations with a flying mission are required to have a written Bird Strike Hazard Reduction Plan (AFR 127-15, para 3f(1)).</p>	<p>Verify that the installation has established and is maintains a natural resources management database using the Planning Module of WIMS-ES. (2)</p> <p>Verify that current maps with a scale of 1 in. = 400 ft are maintained with the locations of all current natural resources assets. (2)</p> <p>Verify that maps are reviewed and updated annually. (2)</p> <p>Verify that natural resources map data is digitized using a Geographical Information System (GIS) database compatible with that used for base comprehensive planning. (2)</p> <p>Verify that each installation with a flying mission has a written Bird Strike Hazard Reduction Plan. (1)</p>

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**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>NCR.18.</b> Installations must improve natural beauty and provide for landscaping that is traditional in nature, simple and informal in design, compatible with surroundings, and complimentary to the natural setting of the area (AFR 126-1, para 2-6).</p>	<p>Verify that the guidelines include the following: (1)</p> <ul style="list-style-type: none"> <li>- minimizes mowed areas</li> <li>- emphasizes locally adapted, low maintenance species</li> <li>- minimizes irrigation</li> <li>- emphasizes simple, functional, natural designs.</li> </ul>
<p><b>NCR.19.</b> Landscape development, design, and maintenance must be done according to specific parameters (AFI 32-7064, para 11.1.1 and 11.8.1).</p>	<p>Verify that landscape development on improved grounds is informal in design and will make maximum use of native and locally adapted plant materials. (1)</p> <p>Verify that, wherever possible, improved grounds are converted to semi-improved or unimproved grounds and semi-improved grounds are converted to unimproved grounds. (1)</p> <p>Verify that maximum use is made of nonturf ground covers, wildflower plantings, and other means of landscape beautification requiring lower maintenance than lawns. (1)</p> <p>Verify that irrigation is limited to improved grounds and outleased areas for agricultural purposes and is minimized through the use of native landscaping species and application of mulches around plantings. (1)</p>
<p><b>NCR.20.</b> Noxious weeds must not be moved through the United States unless the movement is allowed by a permit (7 CFR 360.100 through 360.300).</p>	<p>Verify that the installation is not moving noxious without a permit. (1)</p> <p>(NOTE: A list of noxious weeds is in Table 4-2.)</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>Floodplains and Wetlands</b></p> <p><b>NCR.21.</b> Floodplains and wetlands must be identified, classified, mapped, and protected. (AFR 19-9, para 5-6g).</p> <p><b>NCR.22.</b> The INRMP at an installation with jurisdictional wetlands will include long-term monitoring of trends (AFI 32-7064, para 3.3.1).</p> <p><b>NCR.23.</b> Department of the Army permits are required for the discharge of dredged or fill material into waters of the United States (33 CFR 323.3(a)(b)).</p>	<p>Determine if floodplains and wetlands are identified and guidelines are given for their protection and management in the Land Management Plan in compliance with national and state regulations. (1)</p> <p>Determine if proper Corps of Engineers (COE) and state permits are obtained for activities occurring in wetlands. (1)</p> <p>Determine if public notice and state and local review are accomplished for activities in floodplains. (1)</p> <p>Verify that the INRMP includes long-term monitoring of trends in habitat values and plans for reiteration and enhancement of wetlands. (1)</p> <p>Determine if the installation has wetlands. (1)</p> <p>Verify that any activities involving dredging and filling wetlands are permitted by the Army Corps of Engineers. (1)</p> <p>(NOTE: Dredging and filling is interpreted broadly, but does not include any pollutant discharged into the water primarily to dispose of waste, as that activity is regulated under section 402 of the <i>Clean Water Act</i> (CWA).)</p> <p>(NOTE: Fill material means any material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a waterbody. The term does not include any pollutant discharged into the water primarily to dispose of waste, as that activity is regulated under section 402 of the CWA.)</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>Forest Management</b></p> <p><b>NCR.24.</b> Installations with 50 acres or more of commercial forest land are required to develop a technical forest management plan that provides for the sustained yield of timber and related natural resource values (AFR 126-1, para 4-5).</p> <p><b>NCR.25.</b> An installation's Forest Management Program is required to meet specific parameters (AFR 126-1, para 4-4, 4-12, and 4-18).</p> <p><b>NCR.26.</b> All sales of forest products are required to comply with the forest management component of the INRMP and be done according to specific practices (AFI 32-7064, para 8.3).</p>	<p>If the installation has 50 acres of commercial forest land available for land management, obtain a copy of the forest management plan and determine if: (1)</p> <ul style="list-style-type: none"> <li>- the inventories in the plan are updated every 10 yr</li> <li>- the forest management plan is current and has been approved by MAJCOM within the previous 5 yr.</li> </ul> <p>Verify that the Forest Management Programs meets the following: (1)</p> <ul style="list-style-type: none"> <li>- spot checks are made at least once per week during active operations; at least one systematic inspection is made of each sale over \$2000; and the findings are documented and filed with the sales contracts</li> <li>- all forest lands suitable and available for forest management are identified</li> <li>- AF Form 2693 (Forest Management Budget) is prepared</li> <li>- forestry funds are only used for approved forestry work</li> <li>- all income from forest product sales is properly accounted for and deposited.</li> </ul> <p>Determine if the installation has a commercial forest. (1)</p> <p>Verify that the practices being used in forest management are done as outlined in the forest management component of the INRMP. (1)</p> <p>Verify that the forest mandant component is a 2-yr plan. (1)</p> <p>Verify that a professional forester or trained personnel perform the following activities: (1)</p> <ul style="list-style-type: none"> <li>- marking of areas for harvesting</li> <li>- estimate timber volume for sale purposes</li> <li>- make periodic inspections of ongoing timer harvesting activities.</li> </ul> <p>Verify that inspections are documented and reported to the contracting office. (1)</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>NCR.27.</b> Specific practices are required to be used to protect forests and manage fire hazards (AFI 32-7064, para 8.7).</p> <p><b>Fish and Wildlife Management</b></p> <p><b>NCR.28.</b> Installations with fish and wildlife habitat are required to develop cooperative fish and wildlife management plans to improve habitat (AFR 126-1, para 5-2, 5-4, and 5-8 through 5-10).</p>	<p>Verify that forests are protected by using planned silvicultural practices. (1)</p> <p>(NOTE: Other practices may be used if both the risk and hazard of damage are great.)</p> <p>Verify that the installation has a plan for prescribed burns that has been developed by a professional forester and approved and coordinated by the installation fire department and civilian authorities, adjoining landowners, the state forestry commission, county air quality management offices, and the local air pollution control board. (1)</p> <p>Determine if the installation has been surveyed in cooperation with the FWS and state wildlife management agency to identify the presence of fish and wildlife habitat. (1)</p> <p>If the installation has fish and wildlife habitat, a Category I Installation, obtain a copy of the Installation Fish and Wildlife Management Plan and determine if: (1)</p> <ul style="list-style-type: none"> <li>- the cooperative agreement has been signed by the FWS and state wildlife management agency</li> <li>- the fish and wildlife plan is current and has been approved by MAJCOM within the previous 5 yr</li> <li>- wildlife habitat for specific species has been identified</li> <li>- habitat improvement projects have been identified</li> <li>- permits for hunting, fishing, and trapping are issued on an impartial basis. Club membership cannot be a prerequisite</li> <li>- fees for hunting, fishing, and trapping are collected and properly accounted for and deposited</li> <li>- all users are charged the same fee except for youths and senior citizens</li> <li>- AF Form 2639 (Fish and Wildlife budget) is submitted</li> <li>- funds are only used for approved fish and wildlife projects</li> <li>- hunting, fishing, and trapping are controlled in accordance with Federal and state laws and regulations.</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>NCR.29.</b> The installation is required to have specific habitat information for determining habitat suitability (AFI 32-7064, para 6.3).</p> <p><b>NCR.30.</b> The installation is required to follow specific reporting and documentation procedures depending on if they are a Category I or Category II installation (AFI 32-7064, para 6.2).</p> <p><b>NCR.31.</b> Personnel that carry out the services for the development, implementation, and enforcement of fish and wildlife management programs on annotations in the United States are required to be professionals trained (<i>The Sikes Act</i>, 16 USC 67 a-1(b)).</p>	<p>Verify that the installation has a current habitat inventory, description of habitat types, including structure and composition of the vegetation, if present. (1)</p> <p>Verify that the inventory is updated at least every 5 y or sooner if conditions warrant. (1)</p> <p>Verify that the installation has consulted with the USFWS and the state Fish and Wildlife Agency in order to obtain either a Category I or Category II classification. (1)</p> <p>(NOTE: Category I installation have suitable habitat for conserving and managing fish and wildlife. Category II installation are unsuitable for conserving and managing fish and wildlife because of mission restrictions or resource limitations, or installations of limited size that so not have unimproved grounds.)</p> <p>Verify that Category II installations: send a request through the parent MAJCOM to AFCEE/ES with documentation of FWS and state fish and wildlife agency documentation of their visits and opinions attached. (1)</p> <p>Verify that Category I installations develop a 2-yr Fish and Wildlife management Operational Component Plan. (1)</p> <p>Verify that professionally trained personnel are used to implement the fish and wildlife management program. (1)</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>NCR.32.</b> Air Force personnel which enforce wildlife laws are required to be trained by the FWS (AFI 32-7064, para 6.7.1).</p> <p><b>Endangered/ Migratory Species</b></p> <p><b>NCR.33.</b> Installations are required to prepare and maintain a current inventory of endangered species and habitats (AFI 32-7064, para 7.2.1).</p> <p><b>NCR.34.</b> All installations with Federally designated endangered species must carry out programs for their conservation (50 CFR 402.01(a)).</p> <p><b>NCR.35.</b> Individuals may not take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter any migratory bird, or the parts, nests, or eggs without a permit (50 CFR 21.11 through 21.50).</p>	<p>Determine if installation personnel enforce wildlife laws. (1)</p> <p>Verify that personnel are trained by the FWS. (1)</p> <p>Verify that a survey has been conducted and is regularly updated as arranged with the FWS and state fish and wildlife agencies. (1)</p> <p>Verify that data from the most recent survey is included in the INRMP and is made available to the Nature Conservancy for inclusion in the Biological and Conservation Data System. (1)</p> <p>Obtain a copy of the fish and wildlife management plan and documentation and determine if: (1)</p> <ul style="list-style-type: none"> <li>- all endangered species' habitats have been identified with the aid of the FWS and state agency</li> <li>- a program to protect critical habitat and to conserve the species has been developed</li> <li>- consultation with FWS for projects taking place near threatened or endangered species has been accomplished, and agreed-upon measures have been carried out.</li> </ul> <p>Determine if the installation is on a migratory bird path. (1)</p> <p>Verify that prior to killing birds for any reason, it is determined if they are migratory birds. (1)</p> <p>Verify that if actions are taken with migratory bird, the installation has a permit to do so. (1)</p> <p>(NOTE: Exemptions from the permit requirement are available for the following:</p> <ul style="list-style-type: none"> <li>- captive-reared and properly marked mallards duck</li> <li>- captive-reared and properly marked migratory waterfowl.)</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>Outdoor Recreation Resources</b></p> <p><b>NCR.36.</b> Installations with recreation resources will develop outdoor recreation plans (AFR 126-1, paras 6-4, 6-6, 6-11, and 6-12).</p> <p><b>NCR.37.</b> Installations must make the use and enjoyment of natural resources available to the public and DOD employees on an impartial basis unless there is a specific determination that a military mission prevents such access for safety or security reasons or that the resources will not support such usage (DOD Directive 4700.4, para D7 and AFR 126-1, para 1-10).</p>	<p>Determine if the installation has been surveyed in cooperation with the NPS and state recreation agency. (1)</p> <p>Verify that, if the survey indicates recreation resources are present, copies of the outdoor recreation plan and cooperative agreement are obtained and determine if: (1)</p> <ul style="list-style-type: none"> <li>- the plan is current and has been approved by MAJCOM within the previous 5 yr</li> <li>- the agreement has been signed by the NPS and state agency</li> <li>- land is designated according to its suitability and availability for outdoor recreation</li> <li>- the carrying capacity (maximum allowable, nondestructive level of recreation areas) and procedures for monitoring use and conditions are given</li> <li>- if ORV use is permitted, an ORV plan that protects natural and cultural resources has been developed and approved, and the installation has an ORV regulation</li> <li>- outdoor recreation projects are included on AF Form 2639</li> <li>- funds for outdoor recreation are only used on approved projects</li> <li>- the plan is reviewed annually by the BCE.</li> </ul> <p>Determine if the installation has made provisions for impartial access for DOD employees or the public for hunting, fishing, and other outdoor recreation. If not, determine whether the required specific determinations have been incorporated into the fish and wildlife or outdoor recreation cooperative agreements or plans. (1)</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>NCR.38.</b> Installations with the potential for outdoor recreation are required to perform specific tasks (AFI 32-7064, para 10.2).</p>	<p>Verify that the installation has consulted with the NPS and state recreation officials to determine the potential for outdoor recreation. (1)</p> <p>(NOTE: Land designated for outdoor recreation will be classified in one of the following:</p> <ul style="list-style-type: none"> <li>- Class I areas which are suitable for intensive recreational activities such as camping, winter sports, and water sports</li> <li>- Class II areas which are capable of supporting dispersed recreational activities such as hunting, fishing, bird watching, driving, and walking for pleasure, sightseeing, jogging, climbing, and riding</li> <li>- Class III areas which contain valuable archeological, botanical, ecological, geological, historic, zoological, scenic, or similar features which require protection.)</li> </ul> <p>Verify that if the installation has potential for outdoor recreation, it has developed a Outdoor Recreation Operation Component to the INRMP. (1)</p>
<p><b>NCR.39.</b> The use of ORVs is restricted (AFI 32-7064, para 10.6).</p>	<p>Verify that the use of ORVs, including dirt bikes and all terrain vehicles, is restricted to areas that will sustain use without damaging natural or cultural resources. (1)</p>
<p><b>Agricultural Outleasing</b></p> <p><b>NCR.40.</b> Installations that permit agricultural crop production or live-stock grazing on installation lands under agreements specified in agricultural outleases, service contracts, or special licenses are requirements to meet specific standards (AFI 32-7064, para 9.1 through 9.10).</p>	<p>Verify that cropland and grazing suitability have been determined in consultation with the state or local offices if the U.S. Department of Agriculture (USDA), the SCS, state university agricultural extension service, or other technically qualified governmental agencies. (1)</p> <p>Verify that if agricultural outleasing is done, it is addressed in the INRMP. (1)</p> <p>Verify that outleased lands are monitored to ensure compliance with the agricultural outleasing component of the INRMP and with local land use regulations. (1)</p> <p>Verify that grazing is not permitted in areas where soils are subject to excessive compaction or where forage plants are not developed sufficiently to support grazing. (1)</p> <p>Verify that grazing is not permitted in hardwood forests. (1)</p> <p>Verify that lessees obtain approval for all prescribed burns. (1)</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>CULTURAL RESOURCES</b></p> <p><b>General</b></p> <p><b>NCR.41.</b> Installations are required to maintain a historic preservation plan which is reviewed and approved by the MAJ-COM every 5 yr (AFR 126-7, para 13).</p> <p><b>NCR.42.</b> Installations with cultural resources are required to have a CRMP (AFI 32-7065, para 2.2).</p>	<p>Determine if the installation has a historic preservation plan. (2)</p> <p>Verify that the plan has been reviewed in the last 5 yr and: (2)</p> <ul style="list-style-type: none"> <li>- identifies the likelihood, based on scientific studies, of the presence of significant archeological and historic properties</li> <li>- contains an inventory and evaluation of all known archeological and historic properties</li> <li>- describes strategies for compliance</li> <li>- is developed in conjunction with local, state, and other appropriate Federal historic preservation programs.</li> </ul> <p>(NOTE: This plan may be a part of a more comprehensive planning document.)</p> <p>Determine if noncompliance issues have been resolved by obtaining a copy of the prior assessment report. (1)(2)</p> <p>Determine if the installation has any cultural resources. (2)</p> <p>Verify that the installation has a CRMP that contains the following: (2)</p> <ul style="list-style-type: none"> <li>- assignment of responsibilities for recognizing and maintaining cultural resources</li> <li>- an inventory and evaluation of all known cultural resources</li> <li>- identification of the likelihood of the presence of other significant unknown cultural resources</li> <li>- a description of installation strategies for maintaining cultural resources and for achieving compliance</li> <li>- standard operating procedures and action plans that include budget, staffing, and scheduling of activities</li> <li>- coordination with the installations mission and identification of the impacts on cultural resources of ongoing mission functions and the resolutions to those impacts.</li> </ul> <p>Verify that the CRMP conforms to local, state, and Federal preservation programs. (2)</p>

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<p><b>NCR.42. (continued)</b></p>	<p>Verify that the installation consulted the SHPO during the development of the CRMP. (2)</p> <p>Verify that the CRMP is updated annually, integrated into the Base Comprehensive Plan (BCP) and approved by the MAJCOM every 5 yr. (2)</p>
<p><b>NCR.43.</b> Installations with no known cultural resources are required to have a contingency CRMP (AFI 32-7065, para 2.2.5).</p>	<p>Verify that the contingency CRMP describes: (2)</p> <ul style="list-style-type: none"> <li>- what cultural surveys were performed</li> <li>- contingency plans for undiscovered archeological resources</li> <li>- structures whose historic significance will become clearer through future evaluations.</li> </ul>
<p><b>NCR.44.</b> Installations are required to establish a cultural resources management and inventory database to track program progress and maintain current maps showing locating of cultural resources (AFI 32-7065, para 8.1 and 8.2).</p>	<p>Verify that the installation has established and is maintaining a cultural resources management and inventory database using the Planning Module of WIMS-ES.(2)</p> <p>Verify that current maps with a scale of 1 in. = 400 ft are maintained with the locations of all current cultural resources assets. (2)</p> <p>Verify that maps are reviewed and updated annually. (2)</p>
<p><b>Identification/ Protection</b></p>	
<p><b>NCR.45.</b> No archeological resource on land owned or controlled by the Air Force can be appropriated, excavated, injured, or disturbed without an Air Force permit issued by AFCEE or an equivalent statement of work (32 CFR 229.4(a), 229.5(b), 229.8, and 229.18).</p>	<p>Verify that permission has been received prior to the appropriation, excavation, injury, or destruction of a prehistoric ruin or monument or any object of antiquity. (2)</p> <p>(NOTE: A permit is not required in the following circumstances:</p> <ul style="list-style-type: none"> <li>- for activities being conducted on public lands under other permits, leases, licenses, or entitlements for use when those activities are exclusively for activities other than excavation and/or removal of archaeological resources even if those activities might disturb the archaeological resources</li> <li>- for the collection for private purposes any rock, coin, bullet, or mineral which is not an archaeological resource if the collection of the item does not result in the disturbance of an archaeological resource</li> <li>- excavations done by an Indian tribe or member of an Indian tribe on the lands of that tribe.)</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>NCR.48.</b> Prior to the start of a new undertaking, installations are required to take into account the effects of the undertaking on properties included in or eligible for the National Register of Historic Places (36 CFR 800.1).</p> <p><b>NCR.49.</b> The installation is required to consult with the SHPO during the identification, location, and evaluation of historic properties and in assessing the effect of any undertaking on historic property (36 CFR 800.4 and 800.5).</p> <p><b>NCR.50.</b> Installations are required to protect cultural resources through specific activities (AFI 32-7065, para 2.5.1).</p>	<p>Verify that prior to the start of a new undertaking, the impact of that undertaking on property included in or eligible for the National Register of Historic places has been investigated through the Section 106 process of consultation and documentation. (2)</p> <p>Confirm that the installation determines the area of potential effect for every undertaking. (2)</p> <p>Determine whether a MOA has been drafted and review a copy for compliance. (2)</p> <p>Verify that the MOA was reviewed by the ACHP. (2)</p> <p>Inquire if the SHPO has been consulted during all cultural resources planning including: (2)</p> <ul style="list-style-type: none"> <li>- identification of cultural properties</li> <li>- research design</li> <li>- applying criteria of National Register</li> <li>- requesting a determination of eligibility from the Keeper (Chief of Registration) of the National Register when an agency and a SHPO disagree on eligibility</li> <li>- interaction with ACHP</li> <li>- determination-of-effect in a single property compliance procedure.</li> </ul> <p>Verify that the installation: (2)</p> <ul style="list-style-type: none"> <li>- avoids adverse effects from Air Force undertakings</li> <li>- maintains and prevent deterioration of structures</li> <li>- illustrates, photographs, or otherwise establishes a historical record in accordance with DOI standards for structures that must be significantly altered or destroyed</li> <li>- recovers data of archeological significance</li> <li>- limit public access to prevent destruction or other harm to historic properties and sites</li> <li>- limits publication of the location of archeological sites</li> <li>- implement education and public awareness programs.</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>RELIGIOUS/ HERITAGE ACCESS</b></p> <p><b>NCR.51.</b> Federal facilities cannot substantially burden a person's exercise of religion (<i>Religious Freedom Restoration Act</i> of 1993, Section 3).</p> <p><b>NATIVE AMERICAN GRAVES PROTECTION</b></p> <p><b>NCR.52.</b> Native American graves and cultural items are protected under Federal law. installations are required to take measures to identify them, protect them, and cooperate with Native American groups in returning them to their rightful owners (<i>Native American Graves Protection and Repatriation Act</i> of 1990 [PL 101-601]; Section 3(d), Section 5, and Section 6).</p>	<p>Determine if the installation has on its property a site which is an integral part of a religious ceremony. Examples might include a burial ground or holy site. (2)</p> <p>Verify that access to and use of these sites is allowed unless denial of access/use furthers a compelling government interest and is the least restrictive means of furthering a government interest. (2)</p> <p>Verify that if Native American human remains, funerary objects, or other cultural items are discovered at the installation, that the Secretary of the Air Force is notified through command channels, and the appropriate Indian tribe, Native Hawaiian organization, or Alaskan Native Corporation or group is notified. (2)</p> <p>Verify that if the discovery is the result of an activity such as construction, mining, logging, or agriculture, the activity is suspended until consultation is completed and a reasonable effort is made to protect the item discovered. (2)</p> <p>(NOTE: The activity may resume 30 calendar days after receipt of certification that notification was received by the office of the Secretary of the Air Force.)</p> <p>Determine whether or not the installation museum has possession or control over holdings or collections of Native American human remains and associated funerary objects. If so, confirm that an inventory of such items is being prepared, and that it:</p> <p>(2)</p> <ul style="list-style-type: none"> <li>- includes information on the geographical origin and cultural information of the items</li> <li>- is completed in consultation with tribal government and Native Hawaiian organization officials and traditional religious leaders</li> <li>- is scheduled for completion no later than 16 November 1995.</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>NCR.52. (continued)</b></p>	<p>Verify that the installation museum supplies, upon request by an Indian tribe or Native Hawaiian organization, additional available documentation in the form of a summary of existing museum records, including inventories and catalogues, for the limited purpose of determining the geographical origin, cultural affiliation, and basic facts surrounding acquisition and accession of Native American or Native Hawaiian human remains and associated funerary objects. (2)</p> <p>Verify that if a determination of cultural affiliation of any particular Native American human remains or associated funerary objects is made, that the affected Native American group is notified within 6 mo of the completion of the inventory and a copy of the notice is sent to the Secretary of the Interior. Each notice shall contain information which: (2)</p> <ul style="list-style-type: none"> <li>- identifies each Native American human remains or associated funerary objects and the circumstances surrounding its acquisition</li> <li>- lists the human remains or associated funerary objects that are clearly identifiable as to tribal origin</li> <li>- lists the Native American human remains and associated funerary objects that are not clearly identifiable as to cultural affiliation, but which are likely to be affiliated with that Indian tribe or Native Hawaiian organization.</li> </ul> <p>Determine whether or not the installation museum has possession or control over unassociated funerary objects, sacred objects, or objects of cultural patrimony. If so, confirm that a written summary of such objects is prepared which contains: (2)</p> <ul style="list-style-type: none"> <li>- a description of the scope of the collection</li> <li>- kinds of objects included in the collection</li> <li>- reference to geographical origin of the objects</li> <li>- description of the means and time period of acquisition</li> <li>- cultural affiliation of the object.</li> </ul> <p>Verify that completion of the summary is scheduled for no later than 16 November 1993, and is followed by consultation with tribal officials and traditional religious leaders. (2)</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>COLLECTION MANAGEMENT AND CURATION</b></p> <p><b>NCR.53.</b> Installations that have responsibility for the long-term management and preservation of pre-existing (placed prior to 12 October 1990) collections are subject to certain regulations regarding curation (36 CFR 79.5(a)).</p> <p><b>NCR.54.</b> Installations that have responsibilities for the long-term management and preservation of new (placed after 12 October 1990) archeological collections are subject to certain regulations regarding curation (36 CFR 79.5(b)).</p>	<p>Determine whether the installation has responsibility of the long-term management and preservation of pre-existing archeological collections. (2)</p> <p>Verify that the Historic Preservation Officer identifies repositories holding preexisting collections and reviews and evaluates the curatorial services being provided. (2)</p> <p>Verify that if the curatorial services being provided are not adequate, that appropriate actions to eliminate inadequacies are being taken. (2)</p> <p>Verify that new archeological collections are deposited in a repository only after the following criteria have been met: (2)</p> <ul style="list-style-type: none"> <li>- the repository has the capability to provide adequate long-term curatorial services</li> <li>- the repository's facilities, written curatorial policies and operating procedures are consistent with 36 CFR 79</li> <li>- the repository has certified, in writing, that the collection will be cared for, maintained and made accessible in accordance with 36 CFR 79</li> <li>- when the collection is from Indian lands, written consent to the disposition has been obtained from the Indian landowner and the Indian tribe having jurisdiction over the lands</li> <li>- the initial processing of the material remains (including appropriate cleaning, sorting, labeling, cataloging, stabilizing and packaging) has been completed, and associated records have been prepared and organized in accordance with the repository's processing and documentation procedures.</li> </ul>

(1) Natural Resources Manager (or Environmental Coordinator) (2) Historic Preservation Officer (or Environmental Coordinator)

**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>NCR.55.</b> Installations that have responsibilities for the long-term management and preservation of either pre-existing or new archeological collections are subject to certain regulations regarding record-keeping (36 CFR 79.5(c)).</p>	<p>Determine whether the installation has responsibility of the long-term management and preservation of pre-existing or new archeological collections. (2)</p> <p>Verify that the following administrative records on the disposition of each collection includes: (2)</p> <ul style="list-style-type: none"> <li>- the name and location of the repository where the collection is deposited</li> <li>- a copy of the contract, memorandum, agreement or other appropriate written instrument, and any subsequent amendments, between the installation, the repository and any other party for curatorial services</li> <li>- a catalog list of the contents of the collection that is deposited in the repository</li> <li>- a list of any other Federal personal property that is furnished to the repository as part of the contract, memorandum, or agreement</li> <li>- copies of reports documenting inspection, inventories and investigations of loss, damage, or destruction that are conducted</li> <li>- any subsequent permanent transfer of the collection to another repository.</li> </ul>
<p><b>NCR.56.</b> Installations that have responsibilities for the long-term management and preservation of pre-existing and new archeological collections are subject to regulations requiring certain long-term curatorial services (36 CFR 79.9(a) and 79.9(b)(1)).</p>	<p>Determine whether the installation has responsibility for the long-term management and preservation of pre-existing or new archeological collections. (2)</p> <p>Verify that the repository provides the following as adequate long-term care: (2)</p> <ul style="list-style-type: none"> <li>- accession, labeling, cataloging, storage, maintenance, inventory and conservation of the particular collection on a long-term basis using professional museum and archival practices</li> <li>- maintenance of complete and accurate records of the collection, including: <ul style="list-style-type: none"> <li>- records on acquisition</li> <li>- catalogs and artifact inventory lists</li> <li>- descriptive information, including field notes, site forms and reports</li> <li>- photographs, negative, and slides</li> <li>- locational information, including maps</li> <li>- approved loans and other uses</li> <li>- inventory and inspection records, including any environmental monitoring records</li> <li>- records on lost, deteriorated, damaged or destroyed government property.</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>NCR.57.</b> Installations that have responsibilities for the long-term management and preservation of pre-existing and new archeological collections are subject to certain regulations regarding repository security (36 CFR 79.9(b)(2), 79.9(b)(3), and 79.9(b)(6)).</p>	<p>Determine whether the installation has responsibility for the long-term management and preservation of pre-existing or new archeological collections. (2)</p> <p>Verify that the repository has dedicated equipment and space to properly store, study and conserve the collection. (2)</p> <p>Verify that the collection is under physically secure conditions within storage, laboratory, study and any exhibition areas, and the physical plant meets the following criteria: (2)</p> <ul style="list-style-type: none"> <li>- local electrical, fire, building, health, and safety codes are met</li> <li>- has an appropriate and operational fire detection and suppression system</li> <li>- has appropriate and operational intrusion detection and deterrent system</li> <li>- has an adequate emergency management plan establishing procedures for responding to fires, floods, natural disasters, civil unrest, acts of violence, structural failures, and failures of mechanical systems within the physical plant</li> <li>- provides for fragile or valuable items with additional security, and limits and controls access to keys, the collection, and the physical plant</li> <li>- carries out inspections of the physical plant for possible security weaknesses and environmental control problems, and corrects inadequacies.</li> </ul> <p>Verify that storage of site forms, field notes, artifacts inventory lists, computer disks and tapes, catalog forms and a copy of the final report is done in manner that protects them from theft and fire by one of the following: (2)</p> <ul style="list-style-type: none"> <li>- storing a duplicate set of records in a separate location</li> <li>- ensuring records are maintained and accessible through another party.</li> </ul>
<p><b>NCR.58.</b> Installations that have responsibilities for the long-term management and preservation of pre-existing and new archeological collections are subject to certain regulations regarding curatorial staff qualifications (36 CFR 79.9(b)(4)).</p>	<p>Determine whether the installation has responsibility for the long-term management and preservation of pre-existing or new archeological collections. (2)</p> <p>Verify that staff and consultants who are responsible for management and preservation of pre-existing or new archeological preserving the collection are qualified museum professionals. (2)</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>NCR.59.</b> Installations that have responsibilities for the long-term management and preservation of pre-existing and new archeological collections are subject to certain regulations regarding curatorial procedures (36 CFR 79.9(b)(5)).</p>	<p>Determine whether the installation has responsibility for the long-term management and preservation of pre-existing or new archeological collections. (2)</p> <p>Verify that handling, storage, cleaning, conservation, and exhibition of the collection is performed in a manner that is: (2)</p> <ul style="list-style-type: none"> <li>- appropriate to the nature of the material remains and associated records</li> <li>- protects the collections from breakage and possible deterioration from adverse temperature and relative humidity, visible light, ultraviolet radiation, dust, soot, gases, mold, fungus, insects, rodents and general neglect</li> <li>- preserves data that may be studied in future laboratory analyses.</li> </ul>
<p><b>NCR.60.</b> Installations that have responsibilities for the long-term management and preservation of pre-existing and new archeological collections are subject to certain regulations regarding the use of the collections (36 CFR 79.10).</p>	<p>Determine whether the installation has responsibility for the long-term management and preservation of pre-existing or new archeological collections. (2)</p> <p>Verify that the collection is available for scientific, educational and religious uses, subject to such terms and conditions as are necessary to protect and preserve the condition, research potential, religious or sacred importance, and uniqueness of the collection. (2)</p>
<p><b>NCR.61.</b> Installations that have responsibilities for the long-term management and preservation of pre-existing and new archeological collections are subject to certain regulations regarding the conduct of inspections and inventories of those collections (36 CFR 79.9(b)(7), 79.9(b)(8), and 79.11(b) through 79.11(d)).</p>	<p>Determine whether the installation has responsibility for the long-term management and preservation of pre-existing or new archeological collections. (2)</p> <p>Verify that inspections and inventories of the collection are conducted periodically. (2)</p> <p>Verify that inspection of the collection for possible deterioration and damage is conducted. (2)</p> <p>Verify that the inventories include the material remains and associated records, and any other U.S. Government-owned personal property in the possession of the repository. (2)</p> <p>Verify that qualified museum professionals conduct the inspections and inventories. (2)</p>

(1) Natural Resources Manager (or Environmental Coordinator) (2) Historic Preservation Officer (or Environmental Coordinator)

**COMPLIANCE CATEGORY:  
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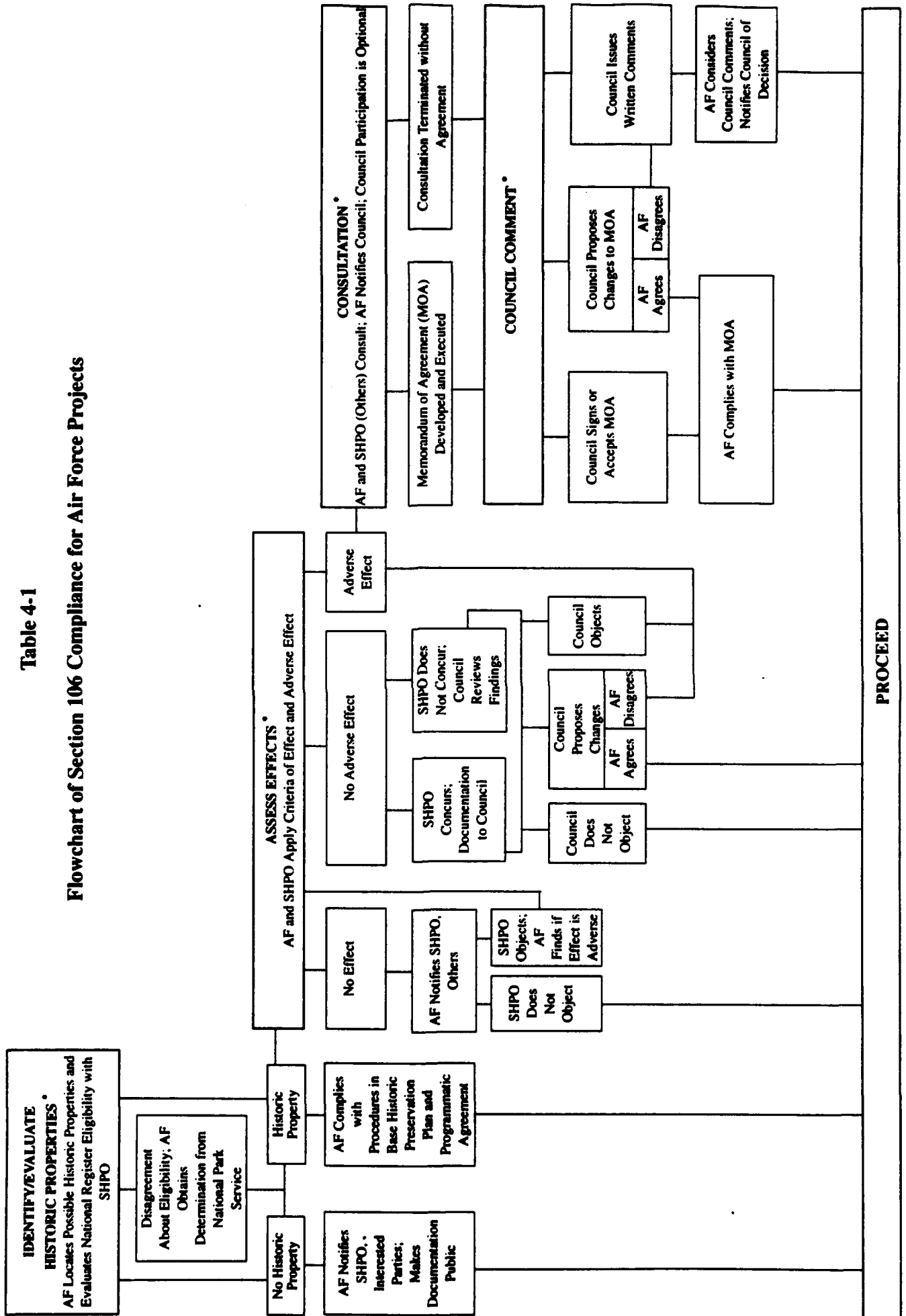
<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS:</b>
<p><b>NCR.61. (continued)</b></p>	<p>Verify that following each inspection and inventory, the personnel responsible for the inspection and inventory prepares and provides the Historical Preservation Officer with a written report of the results, including the status of the collection, treatments completed and recommendations for additional treatments. (2)</p> <p>(NOTE: For collections from Indian lands, the Indian landowner and the Tribal Official and the Indian tribe that has jurisdiction over the lands is provided with a copy of the notification also.)</p> <p>Verify that within 5 days of the discovery of any loss or theft of, deterioration and damage to, or destruction of the collection (or a part thereof) or any other U.S. Government-owned property, the personnel responsible for the curation of the collection prepare and provide the Historic Preservation Officer with written notification of the circumstances surrounding the loss. (2)</p> <p>Verify that the collection is available for inspection by the Historic Preservation officer, the Indian landowner and Tribal Official (when the collection is from Indian lands), the Indian tribal elder, religious leaders, and other officials representing the Indian tribe or other group for which the remains have religious or sacred importance. (2)</p>

(1) Natural Resources Manager (or Environmental Coordinator) (2) Historic Preservation Officer (or Environmental Coordinator)



Table 4-1

Flowchart of Section 106 Compliance for Air Force Projects







**Table 4-2**

**Noxious Weeds  
(7 CFR 360.200)**

**1. Aquatic weeds:**

*Azolla pinnata* R. Brown mosquito fern, water velvet  
*Eichornia azurea* (Swartz) Kunth anchored waterhyacinth, rooted waterhyacinth  
*Hydrilla verticillata* (Linnaeus f.) Royle hydrilla  
*Hygrophila polysperma* T. Anderson Miramar weed  
*Ipomoea aquatica* Forsskal water-spinach, swamp morning-glory  
*Lagarosiphon major* (Ridley) Moss  
*Linnophila sessiliflora* (Vahl) Blume ambulia  
*Monochoria hastata* (Linnaeus) Solms-Laubach  
*Monochoria vaginalis* (Burman f.) C.Presl  
*Sagittaria sagittifolia* Linnaeus arrowhead  
*Salvinia auriculata* Aublet giant salvinia  
*Salvinia biloba* Raddi giant salvinia  
*Salvinia herzogii* de la Sota giant salvinia  
*Salvinia molesta* D.S. Mitchell giant salvinia  
*Sparganium erectum* Linnaeus exotic burrweed  
*Stratiotes aloides* Linnaeus water-aloe

**2. Parasitic weeds:**

*Aeginetia* spp.

*Alectra* spp.

*Cuscuta* spp. (dodders),

other than the following species:

*Cuscuta americana* Linnaeus  
*Cuscuta applanata* Engelmann  
*Cuscuta approximata* Babington  
*Cuscuta attenuata* Waterfall  
*Cuscuta boldinghii* Urban  
*Cuscuta brachycalyx* (Yuncker) Yuncker  
*Cuscuta californica* Hooker & Arnot  
*Cuscuta campestris* Yuncker  
*Cuscuta cassytoides* Nees ex Engelmann  
*Cuscuta ceanothii* Behr  
*Cuscuta cephalanthii* Engelmann  
*Cuscuta compacta* Jussieu  
*Cuscuta corylii* Engelmann  
*Cuscuta cuspidata* Engelmann  
*Cuscuta decipiens* Yuncker  
*Cuscuta dentatasquamata* Yuncker  
*Cuscuta denticulata* Engelmann  
*Cuscuta epilinium* Weihe  
*Cuscuta epithymum* (Linnaeus) Linnaeus  
*Cuscuta erosa* Yuncker  
*Cuscuta europaea* Linnaeus  
*Cuscuta exalta* Engelmann  
*Cuscuta fasciculata* Yuncker

(continued)

**Table 4-2 (continued)**

*Cuscuta glabrior* (Engelmann) Yuncker  
*Cuscuta globulosa* Bentham  
*Cuscuta glomerata* Choisy  
*Cuscuta gronovii* Willdenow  
*Cuscuta harperi* Small  
*Cuscuta howelliana* Rubtzoff  
*Cuscuta indecora* Choisy  
*Cuscuta jepsonii* Yuncker  
*Cuscuta leptantha* Engelmann  
*Cuscuta mitriformis* Engelmann  
*Cuscuta nevadensis* I.M. Johnston  
*Cuscuta obtusiflora* Humboldt, Bonpland, & Kunth  
*Cuscuta occidentalis* Millspaugh ex Mill & Nuttall  
*Cuscuta odontolepis* Engelmann  
*Cuscuta pentagona* Engelmann  
*Cuscuta planiflora* Tenore  
*Cuscuta plattensis* A. Nelson  
*Cuscuta polygonorum* Engelmann  
*Cuscuta rostrata* Shuttleworth ex Engelmann  
*Cuscuta runyonii* Yuncker  
*Cuscuta salina* Engelmann  
*Cuscuta sandwichiana* Choisy  
*Cuscuta squamata* Engelmann  
*Cuscuta suaveolens* Springe  
*Cuscuta suksdorfi* Yuncker  
*Cuscuta tuberculata* Brandegee  
*Cuscuta umbellata* Humboldt, Bonpland, & Kunth  
*Cuscuta umbrosa* Beyrich ex Hooker  
*Cuscuta vetchii* Brandegee  
*Cuscuta warneri* Yuncker

*Orobanch* spp. (broomrapes),  
other than the following species:

*Orobanche bulbosa* (Gray) G. Beck  
*Orobanche californica* Schlechtendal & Chamisso  
*Orobanche cooperi* (Gray) Heller  
*Orobanche corymbosa* (Rydberg) Ferris  
*Orobanche dugessi* (S. Watson) Munz  
*Orobanche fasciculata* Nuttall  
*Orobanche ludoviciana* Nuttall  
*Orobanche multicaulis* Brandegee  
*Orobanche parishii* (Jepson) Heckard  
*Orobanche pinorum* Geyer ex Hooker  
*Orobanche uniflora* Linnaeus  
*Orobanche valida* Jepson  
*Orobanche vallicola* (Jepson) Heckard

*Striga* spp. (witchweeds)

### **3. Terrestrial weeds:**

*Ageratina adenophora* (Sprengel) King & Robinson crofton weed  
*Alternanthera sessilis* (Linnaeus) R. Brown ex de Candolle sessile joyweed  
*Asphodelus fistulosus* Linnaeus onionweed  
*Avena sterilis* Linnaeus  
including *Avena ludoviciana* Durieu animated oat, wild oat  
*Borreria alata* (Aublet) de Candolle

(continued)

**Table 4-2 (continued)**

*Carthamus oxyacantha* M.Bieberstein wild safflower  
*Chrysopogon aciculatus* (Retzius) Trinius pilipiliula  
*Commelina benghalensis* Linnaeus Benghal dayflower  
*Crupina vulgaris* Cassini common crupina  
*Digitaria scalarum* (Schweinfurth) Chiovenda African couchgrass, fingergrass  
*Digitaria velutina* (Forsskal) Palisot de Beauvois velvet fingergrass, annual conchgrass  
*Drymaria arenarioides* Humboldt & Bonpland ex Roemer & Schultes lightning weed  
*Emex australis* Steinhel three-cornered jack  
*Emex spinosa* (Linnaeus) Campdera devil's thorn  
*Euphorbia prunifolia* Jacquin painted euphorbia  
*Galega officinalis* Linnaeus goatsrue  
*Heracleum mantegazzianum* Sommier & Levier giant hogweed  
*Imperata brasiliensis* Trinius Brazilian satintail  
*Imperata cylindrica* (Linnaeus) Ræuschel cogongras  
*Ipomoea triloba* Linnaeus little bell, aiea morning-glory  
*Ischaemum rugosum* Salisbury murainogras  
*Leptochloa chinensis* (Linnaeus) Nees Asian sprangletop  
*Lycium ferocissimum* Miers African boxthorn  
*Melastoma malabathricum* Linnaeus  
*Mikania cordata* (Burman f.) B.L.Robinson mile-a-minute  
*Mikania micrantha* Humboldt, Bonpland, & Kunth  
*Mimosa invisa* Martius giant sensitive plant  
*Mimosa pigra* Linnaeus var. *pigra* catclaw mimosa  
*Nassella trichotoma* (Nees) Hackel ex Arechavaleta serrated tussock  
*Opuntia aurantiaca* Lindley jointed prickly pear  
*Oryza longistaminata* A.Chevalier & Roehrich red rice  
*Oryza punctata* Kotschy ex Steudel red rice  
*Oryza rufipogon* Griffith red rice  
*Paspalum scrobiculatum* Linnaeus Kod millet  
*Pennisetum clandestinum* Hochstetter ex Chiovenda kikuyugras  
*Pennisetum macrourum* Trinius African feathergrass  
*Pennisetum pedicellatum* Trinius kyasumagrass  
*Pennisetum polystachion* (Linnaeus) Schultes missiongrass, thin napiergrass  
*Prosopis alata* R.A.Philippi  
*Prosopis argentina* Burkart  
*Prosopis articulata* S.Watson  
*Prosopis burkartii* Munoz  
*Prosopis caldenia* Burkart  
*Prosopis calingastana* Burkart  
*Prosopis campestris* Griseback  
*Prosopis castellanosi* Burkart  
*Prosopis denudans* Bentham  
*Prosopis elata* (Burkart) Burkart  
*Prosopis farcta* (Solander ex Russel) Macbride  
*Prosopis ferox* Grisebach  
*Prosopis fiebrigii* Harms  
*Prosopis hassleri* Harms  
*Prosopis humilis* Gilles ex Hooker & Arnott  
*Prosopis kuntzei* Harms  
*Prosopis pallida* (Humboldt, Bonpland ex Willdenow) Humboldt, Bonpland, & Kunth  
*Prosopis palmeri* S.Watson  
*Prosopis reptans* Bentham var. *reptans*  
*Prosopis rojasiana* Burkart  
*Prosopis ruizlealii* Burkart

(continued)

**Table 4-2 (continued)**

*Prosopis ruscifolia* Grisebach  
*Prosopis sericantha* Gillies ex Hooker & Arnott  
*Prosopis strombulifera* (Lamarck) Benth  
*Prosopis torquata* (Cavanilles ex Lagasca y Segurà) de Candolle  
*Rottboellia exaltata* Linnaeus f. itchgrass, raoulgrass  
*Rubus fruticosus* Linnaeus (complex) wild blackberry  
*Rubus moluccanus* Linnaeus wild raspberry  
*Saccharum spontaneum* Linnaeus wild sugarcane  
*Salsola vermiculata* Linnaeus wormleaf salsola  
*Setaria pallide-fusca* (Schumacher) Stapf & Hubbard cattail grass  
*Solanum torvum* Swartz turkeyberry  
*Tridax procumbens* Linnaeus coat buttons  
*Urochloa panicoides* Beauvois liverseed grass

<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT U.S. ECAMP</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA C RMA	<b>REVIEWER COMMENTS:</b>		

**Section 5**

**ENVIRONMENTAL NOISE MANAGEMENT**

## SECTION 5

### ENVIRONMENTAL NOISE MANAGEMENT

#### A. Applicability

This volume applies to all Air Force installations that have aircraft operations, including airfields, ranges, military operating areas (MOA), military training routes (MTRs), or other aircraft and small-arms-training-noise-generating activities which could impact the environment. This volume presents review action items that respond to mechanisms for planning operations with consideration for noise. Noise effects are addressed by the Base Comprehensive Plan (BCP), the Air Installation Compatible Use Zone Program (AICUZ) Program, and state and local noise zoning and land use controls.

#### B. Federal Legislation

- *The Noise Control Act of 1972*. This Act, Public Law (PL) 92-574 (42 U.S. Code (USC) 4901-4918), as amended:
  1. establishes a means for effective coordination of Federal research and activities in noise control
  2. authorizes the establishment of Federal noise emission standards for products distributed in commerce
  3. provides information to the public respecting the noise emission and noise reduction characteristics of such products.

The following categories of products which produce noise are covered by this Act:

1. construction equipment
2. transportation equipment (including recreational vehicles and related equipment)
3. any motor or engine (including any equipment of which an engine or motor is an integral part)
4. electrical or electronic equipment.

The following articles are not covered by the Act (42 USC 4902(3)):

1. any aircraft, aircraft engine, propeller, or appliance
2. any military weapons or equipment designed for combat use
3. any rockets or equipment designed for research, experimental, or developmental work to be performed by the National Aeronautics and Space Administration
4. any other machinery or equipment designed for use in experimental work done by or for the Federal Government.

The manufacturer of a product is required to give notice to the prospective user about the level of the noise the product emits, or its effectiveness in reducing noise (42 USC 4907(b)). Such notice may not be removed from the product or its container (42 USC 4909(4)). The manufacturer is prohibited to remove or render ineffective any device or element of design incorporated into the product to control noise (42 USC 4909(2)).



- *Aviation Safety and Noise Abatement Act of 1979*. This Act, PL 96-193 (49 USC Appendix 2103, 2104), as amended, relates to airport noise. Any airport operator may submit to the Secretary of Transportation a noise exposure map. Such map shall set forth the noncompatible uses in each area of the map, a description of the projected aircraft operations at such airport, and the ways in which such operations will affect such map (49 USC 2103). Any airport operator who has submitted a noise exposure map and the related information may submit to the Secretary of Transportation a noise compatibility program. This program shall include measures which the operator has taken or proposes for the reduction of existing noncompatible uses and the prevention of the introduction of noncompatible uses within the area covered by the noise exposure map submitted (49 USC Appendix 2104).

### **C. State/Local Regulations**

State, regional, and local governmental agencies may develop zoning and planning ordinances which have the potential to effect Air Force Installations and their operations. As a general rule, states tend to treat environmental noise as a source specific pollutant whose emissions will be controlled by the locally effected community.

### **D. Department of Defense (DOD) Regulation**

- None that have not been implemented/superseded by Air Force Regulations (AFRs).

### **E. U.S. Air Force Regulations (AFRs)**

- Air Force Manual (AFM) 19-10, *Planning in the Noise Environment*. This manual gives procedures to aid in the development of acceptable noise environments for facilities on military installations, consistent with AICUZ Program.
- AFR 50-46, *Weapons Ranges*. This regulation provides instructions for the planning, acquisition, construction, operation, and maintenance of training ranges. This AFR is scheduled to be replaced with AFI 13-212.
- AFR 55-34, *Reducing Flight Disturbances*. This regulation establishes practices to decrease disturbances from flight operations. It provides guidelines for planning operations with consideration for noise.
- Air Force Instruction (AFI) 32-7063, *Air Installation Compatible Use Zone Program*. This AFI applies to all Air Force installation with active runways located in the United States and its territories, including government owned, contractor operated facilities. An installation may be exempted from complying with the AFI by the Major Command/Civil Engineering (MAJCOMM/CE).
- Air Force Policy Letter, *New Land Use Compatibility Policy for Shopping Malls and Shopping Centers for the AICUZ Program*. This letter, dated 9 July 1993, mandates the consideration of shopping malls and centers in the AICUZ land use compatibility analysis.

## **F. Key Compliance Requirements**

- **AICUZ Noise Maps** - Noise-zone contour maps are included in AICUZ studies or amendments that are completed. HQ USAF/CEVP approval is required before maps are publicly released.
- **Range Plan** - Each installation operating an air-to-ground test or training range develops a range plan that comprehensively addresses all factors influencing the Air Force's operation of a range.

## **G. Responsibility for Compliance**

- **Base Civil Engineering (BCE) / Environmental Management.** The Environmental Planning Function within the BCE is responsible for carrying out the AICUZ program.
- **Airspace Manager.** The Airspace Manager within the Office of the Deputy Commander for Operations is responsible for managing special use airspace and MTRs.
- **Public Affairs Office (PAO).** The PAO is responsible for making all public releases of information about Air Force activities
- **Range Management Agency.** The Range Management Agency is responsible for activities at an air-to-ground range, including planning for the range.

## **H. Key Compliance Definitions**

- ***Air Installation Compatible Use Zone (AICUZ) Program*** - AFI 32-7063 and AFR 55-34 require that up-to-date AICUZ studies be maintained at bases with flying operations. The AICUZ program is designed to protect Air Force installation operational capability from the effects of incompatible land use and assist local, area-wide, state, and Federal officials in protecting and promoting the public health, safety, and welfare by providing information on aircraft accident potential and noise.
- ***Airspace Management*** - AFR 55-34 requires planning of flight operations to minimize adverse public relations. Air Force operations must be planned to avoid noise-sensitive areas (AFR 55-34, para 3).
- ***Management Practice (MP)*** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- ***Range Planning*** - AFR 50-46 require planning for air operations and land use on air-to-ground test and training ranges for safety, prevention of encroachment, optimal use, and avoidance of conflicts. Each plan must include all reasonable, economical, and practical measures to control aircraft noise. Plans must be updated at least every 2 yr, or sooner if required.



# ENVIRONMENTAL NOISE MANAGEMENT

## GUIDANCE FOR CHECKLIST USERS

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	<b>REFER TO CHECKLIST ITEMS:</b>	<b>CONTACT THESE PERSONS OR GROUPS:(a)</b>	<b>REFER TO PAGE NUMBER:</b>
All Installations	N.1 through N.5	(1)	5-9
AICUZ	N.6 through N.9	(1)(2)	5-10
Noise Awareness	N.10 through N.13	(1)(2)(3)(4)	5-13
Ranges	N.14 and N.15	(1)(4)	5-14

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**(a) CONTACT/LOCATION CODE**

- (1) Environmental Community Planning
- (2) Deputy for Operations (Airspace Manager)
- (3) Public Affairs Office (PAO)
- (4) Range Operating Agency



## **ENVIRONMENTAL NOISE MANAGEMENT**

### **Records to Review During an ECAMP Assessment**

- Installation Master Plan Document
- Compliance log from local community

### **Physical Features to Inspect During an ECAMP Assessment**

- Power generating or other source
- Emergency generators
- Document Test track

### **People to Interview During an ECAMP Assessment**

- Base Civil Engineering (Environmental Planning)
- Deputy for Operations (Air Space Manager)
- Public Affairs Office
- Range Operating Agency



**COMPLIANCE CATEGORY:  
ENVIRONMENTAL NOISE MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL INSTALLATIONS</b></p> <p><b>N.1.</b> Actions or changes since previous review of noise programs should be reviewed (MP).</p> <p><b>N.2.</b> Copies of all relevant Federal, state, and local regulations on environmental noise are required to be maintained at the installation (AFR 19-1, para 11f).</p> <p><b>N.3.</b> Copies of all relevant DOD and Air Force Directives, and guidance documents on environmental noise should be maintained at the installation (MP).</p> <p><b>N.4.</b> Installations are required to comply with state and local noise management regulations and compliance agreements negotiated with the Federal, state, and local governments (EO 12088, Section 1-1).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report. (1)</p> <p>Determine if the following documents are available at the installation: (1)</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Compliance With Pollution Standards</i>.</li> <li>- appropriate state and local regulations.</li> </ul> <p>Verify that the Base Staff Judge Advocate reviews Federal, state, and local regulations that may affect ongoing and proposed activities and keeps the Environmental Protection Committee (EPC) informed as needed. (1)</p> <p>Determine if the following documents are available at the installation: (1)</p> <ul style="list-style-type: none"> <li>- AFI 32-7063, <i>Air Installation Compatible Use Zone Program</i>.</li> <li>- AFR 19-1, <i>Pollution Abatement and Environmental Quality</i>.</li> <li>- AFR 50-46, <i>Weapons Ranges</i>.</li> <li>- AFR 55-34, <i>Reducing Flight Disturbances</i>.</li> <li>- AFM 19-10, <i>Planning in the Noise Environment</i>.</li> <li>- Air Force Policy Letter 9 July 1993, <i>New Land Use Compatibility Policy for Shopping Malls and Shoping Centers for the AICUZ Program</i>.</li> <li>- AICUZ Handbook.</li> </ul> <p>Verify that the installation is complying with state and local noise management regulations. (1)</p> <p>(NOTE: Issues which are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- vehicle noise</li> <li>- noise from installation facilities that goes across the property line.)</li> </ul> <p>Verify that the actions detailed in the compliance agreements are being taken according to the schedule established in the agreement. (1)</p>

(1) Environmental Planning (BCE) (2) Deputy for Operations (Airspace Manager) (3) Public Affairs Officer (4) Range Operating Agency



**COMPLIANCE CATEGORY:  
ENVIRONMENTAL NOISE MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>N.5.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p><b>AICUZ</b></p> <p><b>N.6.</b> Each installation and auxiliary airfield with an active runway is required to prepare and maintain an AICUZ study (AFI 32-7063, para 4.1 and AF Policy Letter 9 July 1993).</p>	<p>Determine if any new regulations concerning noise emissions have been issued since the finalization of the manual. (1)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)</p> <p>(NOTE: Under AFI 32-7063 the MAJCOMM/CE is assigned responsibility for the AICUZ program. But para 1.3.4.2. stipulates that the MAJCOMM/CE may delegate the responsibilities outlined in AFI 32-7063 to the installation. Therefore, prior to assessing this portion of the checklist, determine if the installation has been assigned responsibility for fulfilling these responsibilities and conduct the assessment accordingly.)</p> <p>(NOTE: After technical review, the MAJCOMM/CE can approve exemptions where the AICUZ study does not extend beyond installation boundaries or where there are less than 10 jet or 25 propeller-driven aircraft operations on a runway on an average busy day.)</p> <p>Verify that volume I of the AICUZ study contains the following: (1)(2)</p> <ul style="list-style-type: none"> <li>- signed and dated transmittal letter</li> <li>- introductions to AICU, purpose, need, process, and procedure</li> <li>- installation description (mission, economic impact, and flying activity</li> <li>- brief description of the basis of the land use compatibility/incompatibility:             <ul style="list-style-type: none"> <li>- accident potential</li> <li>- noise</li> <li>- height restrictions</li> <li>- any additional local considerations</li> </ul> </li> <li>- recommendations/guidelines for determining compatible land uses (land use compatibility tables and text)</li> <li>- land use analysis             <ul style="list-style-type: none"> <li>- existing land use</li> <li>- zoning and any other ongoing implementation action</li> <li>- future land use</li> <li>- incompatible development</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>N.6. (continued)</b></p>	<ul style="list-style-type: none"> <li>- maps with appropriate narrative               <ul style="list-style-type: none"> <li>- vicinity map</li> <li>- flight tracks map</li> <li>- separate accident potential zones map (optional)</li> <li>- separate noise control map (optional)</li> <li>- composite AICUZ map (combined noise contour and accident potential zone map)</li> <li>- existing offbase land use overlaid on the composite AICUZ map</li> <li>- existing offbase zoning overlaid on the composite AICUZ map</li> <li>- future offbase land use overlaid on the composite AICUZ map</li> </ul> </li> <li>- implementation and maintenance responsibilities</li> <li>- installation points of contact.</li> </ul> <p>Verify that local shopping malls and strip malls have been considered in the land use compatibility portion of the study. (1)</p> <p>Verify that volume II of the AICUZ study contains the following: (1)</p> <ul style="list-style-type: none"> <li>- AICUZ concept, program, methodology and policies</li> <li>- accident potential zones</li> <li>- description of the noise environment</li> <li>- height and obstruction criteria</li> <li>- noise level reduction guidelines</li> <li>- sample population density guidelines.</li> </ul> <p>Verify that volume III of the AICUZ study contains the following: (1)</p> <ul style="list-style-type: none"> <li>- AICUZ implementation and maintenance plan (internal use only)</li> <li>- citizens brochure (optional).</li> </ul> <p>(NOTE: The AICUZ Handbook, Volume III, contains formats for AICUZ studies as well as AICUZ page insert amendments.)</p>

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**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>N.7.</b> The installation is required to review AICUZ aircraft operational and maintenance data at least every 2 yr or as a part of the Environmental Impact Analysis Process (EIAP), and update as necessary (AFI 32-7063, para 1.3.5.1, 1.3.5.3, and 1.3.5.4).</p>	<p>Determine the date of last AICUZ review or update. (1)</p> <p>Verify that if the noise exposure for aircraft operations results in a change of Day-Night Average Sound Level (DNL) 2 dB or more as compared to the noise contour map in the last publicly released AICUZ study for any noise sensitive area, updating actions are started. (1)</p> <p>Verify that the following data is kept up-to-date: (1)</p> <ul style="list-style-type: none"> <li>- aircraft operational data</li> <li>- maintenance data relative to flight line engine runups</li> <li>- maintenance data from engine test cells.</li> </ul> <p>(NOTE: Actions such as major operational or maintenance modifications, mission realignments, or mission basings affect the aircraft operational and maintenance data.)</p>
<p><b>N.8.</b> The AICUZ study is required to be updated as determined by the MAJCOMM/CE (AFI 32-7063, para 4.2).</p>	<p>Determine if the AICUZ study reflects the current aircraft inventory by operations, number, and type, and if it reflects the currently used flight tracks. (1)(2)</p> <p>Determine if the installation has been directed to update the study by the MAJCOMM/CE. (1)</p> <p>Verify that if required, the AICUZ study has been updated. (1)</p> <p>Verify that the updated AICUZ include an installation commander-signed and dated transmittal letter to the governments and citizens of the local community describing the changes. (1)</p> <p>Verify that the MAJCOMM has approved each AICUZ update before it is released to the public. (1)</p>
<p><b>N.9.</b> Due to litigation requirements, AICUZ data files are required to be retained indefinitely (AFI 32-7063, para 1.3.5.2).</p>	<p>Verify that AICUZ documentation files are retained indefinitely by reviewing historical files. (1)</p>

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**COMPLIANCE CATEGORY:  
ENVIRONMENTAL NOISE MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>NOISE AWARENESS</b></p> <p><b>N.10.</b> Aircraft noise disturbances are required to be minimized through the application of the planning checklist in AFR 55-34 Attachment I (AFR 55-34, para 3h).</p> <p><b>N.11.</b> A program is required at each applicable base to distribute information on military training routes, special use airspace, and supersonic areas, or routes (AFR 55-34, para 3g).</p> <p><b>N.12.</b> Pilots are required to be kept informed on measures to reduce noise disturbance (AFR 55-34, para 7).</p> <p><b>N.13.</b> Each installation commander will establish procedures for researching aircraft noise or sonic boom complaints (AFR 55-34, para 3g(6)).</p>	<p>Determine how the installation addresses the following issues to minimize noise disturbances: (1)(2)(4)</p> <ul style="list-style-type: none"> <li>- traffic patterns</li> <li>- take-off techniques</li> <li>- landing techniques</li> <li>- run-up pads</li> <li>- engine test stands</li> <li>- base quiet hours</li> <li>- CHAFF dispensing</li> <li>- route or operations development.</li> </ul> <p>Verify that a explanatory letter has been developed outlining the purpose, routes, areas, altitudes, intensity, day and time of use of the areas or routes, and locations of existing operating areas or routes in the vicinity. (1)(2)</p> <p>Verify that PAO distributes the information in the explanatory letter to community news media and local officials. (3)</p> <p>Verify that copies of the explanatory letter have been sent to airport managers at airports within 33 km of military training routes, military operating areas and restricted areas and within 65 km of supersonic operations. (1)(2)</p> <p>Verify that local noise abatement instructions are provided for pilots regarding approaches and departures by reviewing the pilot information file. (2).</p> <p>Verify that a complaint procedure has been established and review a copy of procedures. (1)(3)</p> <p>(NOTE: Review the Sonic Boom log.)</p>

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**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>RANGES</b></p> <p><b>N.14.</b> A range plan that addresses noise problems is required for all air-to-ground training and test ranges (AFR 50-46, para 2-17).</p> <p><b>N.15.</b> The range plan is required to be updated at a minimum of every 2 yr, or as necessary (AFR 50-46, para 2-17).</p>	<p>Determine if a range plan exists and review a copy of the range plan. (1)(4)</p> <p>Verify that planning involved all range users and affected agencies including legal and public affairs offices.(1)(4)</p> <p>Determine date of last revision. (4)</p>

(1) Environmental Planning (BCE) (2) Deputy for Operations (Airspace Manager) (3) Public Affairs Officer (4) Range Operating Agency

<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>ENVIRONMENTAL NOISE MANAGEMENT</b> <b>U.S. ECAMP</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA C RMA	<b>REVIEWER COMMENTS:</b>		

**Section 6**

**PESTICIDE MANAGEMENT**

## SECTION 6

### PESTICIDE MANAGEMENT

#### A. Applicability

This section applies to Air Force installations which use, store or handle pesticides. Pesticides are regulated on the Federal level (U.S. Environmental Protection Agency (USEPA)) and the state level.

#### B. Federal Legislation

- *The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)*. This Act, as last amended in December 1991, 7 U.S. Code (USC) 136-136y, deals with the sale, distribution, transportation, storage, and use of pesticides. It requires the registration of new pesticides and, when pesticides are reregistered, requires that they will not present any unreasonable risks to human health or the environment if used according to label directions.
- Executive Order (EO) 12088. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities it funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

#### C. State/Local Requirements

State pesticide regulatory programs are to be at least as stringent as FIFRA. State and local programs typically contain regulations which are tailored to an industry or activity which is prevalent or particularly sensitive in a state. State and local pesticide regulations in many cases provide more stringent standards or specifically identify a requirement which may be qualitatively regulated under the Federal program. State and local pesticide programs generally include regulations which address the following topics:

1. restrictions or requirements for the sale, distribution, or use of selected pesticides
2. disposal requirements for excess pesticides and pesticide wastes such as pesticide containers
3. restrictions on the control of specific animal or insect species
4. specifications for bulk pesticide storage tanks, storage facilities
5. operational requirements for selected application methods
6. recordkeeping and applicator certification requirements.



#### **D. Department of Defense (DOD) Regulations**

- DOD Directive 4150.7. This sets forth the policy, responsibilities, and procedures for pest management programs. This directive establishes the DOD policy of maintaining safe, efficient, and environmentally sound integrated pest management programs to prevent or control pests that may adversely affect health or damage structures, material, or property. The DOD Plan for the Certification of Pesticides Applicators stipulates the certification of U.S. Air Force military and civilian pest managers.
- Technical Information Memoranda (TIM). DOD Directive 4150.7 is supplemented by TIM that provide specific criteria and procedures for the operation of a pest management program. The TIMs are guidance only and nonregulatory. The following TIMs are appropriate to have on hand:
  - TIM 14 - *Protective Equipment for Pest Control Personnel* (undergoing revision).
  - TIM 15 - *Pesticide Spill Prevention and Management*.
  - TIM 16 - *Pesticide Fires: Prevention, Control and Cleanup*.
  - TIM 17 - *Pest Control Facilities*.
  - TIM 18 - *Installation Pest Management On-Site Reviews*.
  - TIM 21 - *Pesticide Disposal Guide for Pest Control Shops*.
- ASD or Manager, Installation, and Logistics Letter. ASD or Manager, Installation, and Logistics Letter, *DOD Building Construction and Use of Termiticides*, 14 June 1984, prohibits the use of termiticides in buildings with subslab or intra-slab heating, ventilation, or air conditioning ducts.
- DOD Regulation 4145.19, Chapter 5, Section 4 of this regulation provides overall guidance for storage and handling of various hazardous commodities at Air Force installations. It functions as implementing guidance of the DOD for the *Occupational Safety and Health Act* (OSHA) 29 CFR 1910 regulations noted above.
- DOD Manual 4160.21, *Defense Reutilization and Marketing Manual*, establishes special processing requirements for the disposal of pesticides.

#### **E. U.S. Air Force Regulations (AFRs)**

- Air Force Regulation (AFR) 19-21, *Pest Management Programs*. This regulation provides the functional requisites for the operation of pest management programs at Air Force installations. The standards, procedures, and requirements identified in this directive provide a large portion of the criteria for the assessment of compliance. AFR 19-21 and DOD Directive 4150.7 require a professional pest management person (PPMP) to do an onsite consultant review of each installation annually or biannually. The ECAMP assessment does not preclude this PPMP consultant visit.
- AFR 91-22, *Aerial Dispersal of Pesticides*. This AFR details the policies and responsibilities for aerial application of pesticides.

#### **F. Key Compliance Requirements**

- Pesticide Application - People applying restricted use pesticides must be certified to apply restricted use pesticides. Contractors used for pest management must have current state certification for the types of applications to be performed. The application of pesticides must not jeopardize the existence of threatened or endangered species (40 CFR 171.9 and 50 CFR 402).

- **Pesticide Storage, Mixing, and Preparation Facilities** - Pesticide storage, mixing, and preparation activities must provide facilities and procedures to ensure safety of personnel.
- **Highly Toxic Pesticide Storage and Use** - Storage facilities for pesticides and excess pesticides classed as highly toxic or moderately toxic that are labeled DANGER, POISON, or with the skull and crossbones symbol, should meet specific structural, operational, and storage requirements. These include pesticides being kept in a dry separate room with fire protection which is not near food or feed, and in containers in good condition with plainly visible labels. There should be decontamination facilities and the local fire department, hospitals, public health officials, and police departments should be notified in writing that the pesticides are being stored (MP).
- **Pesticide Disposal** - Facilities are required to dispose of any pesticides, pesticide container, or pesticide residue in a manner consistent with labeling, not including open dumping or burning. Organic pesticides other than organic mercury, lead, cadmium, and arsenic compounds, must be disposed according to specific procedures. Options include incineration at an incinerator that meets air quality standards for gaseous emissions. Metallo-organic pesticides must be disposed of in a manner that facilitates the recovery of heavy metals (40 CFR 165.7).

#### **G. Responsibility for Compliance**

- **Base Civil Engineering (BCE)**. The BCE assures that pest management facilities comply with all applicable U.S. Air Force, USEPA, and OSHA regulations and standards; submits quarterly pesticide usage and applicator certification reports (via WIMS); assumes responsibility for the completion of daily records, inspections, requests for additional support, semi-annual physical examinations, notifications to Director of Base Medical Services (DBMS), the protection of the health and safety of pest management personnel, and the required training and certification or recertification of pesticide applicators. The Pest Management shop within BCE is the principal department charged with proper pesticide management at Air Force installations.
- **The DBMS**. The DBMS identifies and characterizes pests; recommends measures for personal protection and pest control; monitors pests of medical importance; provides industrial hygiene and environmental sanitation assistance; and assures that pest management personnel are physically qualified to work with pesticides.

#### **H. Key Compliance Definitions**

These definitions were obtained from Federal Regulations previously cited in this section.

- **Acute LD<sub>50</sub>** - a statistically derived estimate of the concentration of a substance that would cause 50 percent mortality to the test population under specified conditions (40 CFR 152.3).
- **Caution** - the human hazard signal word required on the front panel of a pesticide container determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category III or IV must bear on the front panel the signal word CAUTION (see Toxicity Category) (40 CFR 156.10(h)).

- **Commercial Applicator** - a certified applicator, other than a private applicator, who uses or supervises the use of any pesticide, for any purpose, on any property, or performs other pest control related activities (40 CFR 171.2).
- **Crisis Exemption** - this is utilized in an emergency condition when the time from discovery of the emergency to the time when the pesticide use is needed is insufficient to allow for the authorization of a specific *quarantine exemption* or *public health exemption* (40 CFR 166.2).
- **Danger** - the human hazard signal word required on the front panel of a pesticide container determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category I must bear on the front panel the signal word DANGER (see Toxicity Category) (40 CFR 156.10(h)).
- **Imminent Hazard** - a situation that exists when the continued use of a pesticide during the time required for cancellation proceedings would be likely to result in unreasonable adverse effects on the environment or will involve unreasonable hazard to the survival of a species declared endangered by the Secretary of the Interior under Public Law (PL) 91-135 (40 CFR 165.1).
- **Management Practice (MP)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- **Pesticide** - any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or disinfectant; and is further categorized into the following (40 CFR 165.1):
  1. **Excess pesticides** means all pesticides that cannot be legally sold pursuant to the Act or that are to be discarded.
  2. **Organic pesticides** means carbon-containing substances used as pesticides, excluding metallo-organic compounds.
  3. **Inorganic pesticides** means noncarbon-containing substances used as pesticides.
  4. **Metallo-organic pesticides** means a class of organic pesticides containing one or more metal or metalloid atoms in the structure.
- **Pesticide Product** - a pesticide in the particular form (including composition, packaging, and labeling) in which the pesticide is, or is intended to be, distributed or sold. This includes any physical apparatus used to deliver or apply the pesticide if distributed or sold with the pesticide (40 CFR 152.3).
- **Professional Pest Management Personnel (PPMP)** - military commissioned officers and equivalent civilian employees of the DOD or its components with a college degree in an applied biological or agricultural science, such as agronomy, entomology, forestry, or wildlife biology, and in a current assignment that includes pest management responsibilities exercised regularly. Civilian personnel must also meet the minimum requirements governing Civil Service Commission Qualification Standards (AFR 19-21, Attachment 1).
- **Public Health Exemption** - this may be authorized in an emergency condition to control a pest that will cause a significant risk to human health (40 CFR 166.2).
- **Quarantine Exemption** - this may be authorized in an emergency condition to control the introduction or spread of any pest new to or not theretofore known to be widely prevalent or distributed within and throughout the United States and its territories (40 CFR 166.2).

- **Restricted Use Pesticides** - pesticides designated for restricted use under the provisions of Section 3(d)(1)(c) of FIFRA (40 CFR 171.2).
- **Specific Exemption** - this exemption may be authorized in an emergency condition to avert 40 CFR 166.2):
  1. a significant economic loss
  2. a significant risk to endangered species, threatened species, beneficial organisms, or the environment.
- **Toxicity Category** - required warnings and precautionary statements are based on the Toxicity Category of the pesticide. The category is assigned on the basis of the highest hazard shown in the table listed in 40 CFR 156.10 (40 CFR 156.10(h)).
- **Warning** - the human hazard signal word required on the front panel of a pesticide container determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category II shall bear on the front panel the signal word **WARNING** (see 40 CFR 156.10 for listing of indicators necessary to meet specific criteria of toxicity categories) (40 CFR 156.10(h)).



**PESTICIDE MANAGEMENT**  
**GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>CONTACT THESE PERSONS OR GROUPS:(a)</b>	<b>REFER TO PAGE NUMBER:</b>
All Installations	P.1 through P.7	(1)(2)(3)(4)	6-11
Registration	P.8	(4)	6-14
Pesticide Application	P.9 through P.16	(1)(3)(4)(5)(7)	6-14
Pesticide Mixing, Storage, and Preparation Facilities	P.17 through P.22	(2)(4)(5)	6-16
Highly and Moderately Toxic Pesticides	P.23 through P.31	(1)(4)(5)(6)	6-18
Disposal	P.32 through P.37	(4)(5)	6-22

**(a) CONTACT/ LOCATION CODE:**

- (1) Base Civil Engineering (BCE)
- (2) Bioenvironmental Engineering (BEE)
- (3) Military Public Health
- (4) Pest Management Shop
- (5) Golf Course Maintenance
- (6) Base Fire Chief
- (7) Base Contracting Office



## **PESTICIDE MANAGEMENT**

### **Records to Review During an ECAMP Assessment**

- Records of pesticides purchased by the installation (purchase orders, inventory)
- Pesticide application records
- Description of the installation's pest control program
- Certification status of pesticide applicators
- Pesticide disposal manifests
- Any emergency exemption granted to the Air Force by the USEPA

### **Physical Features to Inspect During an ECAMP Assessment**

- Personnel Protection Equipment
- Pesticide Application Equipment
- Pesticide Storage Areas, including storage containers
- Golf Course Maintenance Areas

### **People to Interview During an ECAMP Assessment**

- Base Civil Engineering
- Base Medical Services - Environmental Health section (EHO)
- Base Medical Services
- Bioenvironmental Engineering
- Military Public Health
- Pest Management Shop
- Golf Course Maintenance
- Base Fire Chief
- Base Contracting Office and Contract Pesticide Applicators





**COMPLIANCE CATEGORY:  
PESTICIDES MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL INSTALLATIONS</b></p> <p><b>P.1.</b> Actions or changes since previous review of pesticide management should be reviewed (MP).</p> <p><b>P.2.</b> Copies of all relevant Federal, state, and local regulations on pesticide management are required to be maintained at the installation (AFR 19-1, para 11f).</p> <p><b>P.3.</b> Copies of all relevant DOD, and U.S. Air Force directives, and guidance documents on pesticide management should be maintained at the installation (MP).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous review. (1)(2)</p> <p>(NOTE: The term pesticides in this protocol refers to insecticides, rodenticides, herbicides, and other pest control chemicals (see definitions).)</p> <p>Verify that the following documents are maintained and kept current at the base: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance with Pollution Standards.</i></li> <li>- 29 CFR 1910, <i>Occupational Safety and Health.</i></li> <li>- 40 CFR 152, <i>Pesticide Registration and Classification Procedures.</i></li> <li>- 40 CFR 165, <i>Regulations for the Acceptance of Certain Pesticides and Recommended Procedures for the Storage and Disposal of Pesticides and Pesticide Containers.</i></li> <li>- 40 CFR 166, <i>Exemption of Federal and State Agencies for Use of Pesticides Under Emergency Conditions.</i></li> <li>- 40 CFR 171, <i>Certification of Pesticide Applicators.</i></li> <li>- applicable state and local regulations.</li> </ul> <p>Verify that the Base Staff Judge Advocate reviews Federal, state, and local regulations that may affect ongoing or proposed activities and keeps the EPC informed as needed. (1)</p> <p>Verify that the following documents are maintained and kept current at the base: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> <li>- DOD Regulation 4145.19-1, <i>Storage and Materials Handling.</i></li> <li>- DOD Directive 4150.7, <i>IDOD Pest Management Program.</i></li> <li>- AFR 19-1, <i>Pollution Abatement and Environmental Quality.</i></li> <li>- AFR 19-21, <i>Pest Management Program.</i></li> <li>- Military Handbook 1028-8A, <i>Design of Pest Management Facilities.</i></li> <li>- AFPMB TIM 14, 15, 16, 17, 18, and 21.</li> </ul>

(1) Base Civil Engineering (BCE) (2) Bioenvironmental Engineering (BEE) (3) Military Public Health (4) Pest Management Shop (5) Golf Course Maintenance (6) Base Fire Chief (7) Base Contracting Office

**COMPLIANCE CATEGORY:  
PESTICIDES MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>P.4.</b> Installations are required to comply with state and local pesticides management regulations and compliance agreements negotiated with Federal, state, and local governments (EO 12088, Section 1-1).</p>	<p>Verify that the installation is complying with state and local pesticides management requirements. (1)</p> <p>Verify that the installation is operating according to permits or plans issued or approved by state or local agencies. (1)</p> <p>(NOTE: Issues which are typically regulated by state and local agencies include:            - applicator certification            - restricted use pesticides            - application procedures            - banned pesticides            - disposal methods.)</p> <p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreement. (1)</p>
<p><b>P.5.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if any new regulations concerning pesticides have been issued since the finalization of the manual. (1)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)</p>
<p><b>P.6.</b> Installations are required to have a written pest management program that is reviewed and updated annually (DOD Directive 4150.7, para F5).</p>	<p>Verify that the pest management program is reviewed and updated annually and contains the following information: (4)</p> <ul style="list-style-type: none"> <li>- objectives</li> <li>- treatments and controls to be applied</li> <li>- a list of sensitive areas</li> <li>- special safety and health measures required</li> <li>- manpower requirements.</li> </ul> <p>Verify that the program is managed by professional pest management personnel or certified pesticide applicators. (4)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>P.7.</b> All installations must comply with pesticide use requirements unless an emergency exemption has been granted by the USEPA (40 CFR 166.1, 166.2, 166.20, 166.28, 166.32, 166.45, and 166.50).</p>	<p>Verify that pesticide use requirements are followed unless one or more of the following emergency conditions exist: (4)</p> <ul style="list-style-type: none"> <li>- <b>SPECIFIC EXEMPTIONS</b> may be authorized to avoid conditions of:               <ul style="list-style-type: none"> <li>- significant economic loss</li> <li>- significant risk to threatened or endangered species</li> <li>- significant risk to beneficial organisms</li> <li>- significant risk to the environment.</li> </ul> </li> <li>- <b>QUARANTINE EXEMPTIONS</b> may be authorized to control the introduction or spread of any pest new to or unknown to be widespread throughout the US and its territories.</li> <li>- <b>PUBLIC HEALTH EXEMPTIONS</b> may be authorized to control a pest that imposes significant risk to human health.</li> <li>- <b>CRISIS EXEMPTIONS</b> may be utilized when the time constraint between discovery, and implementation of pesticide use will not allow a specific, quarantine, or public health exemption to be issued.</li> </ul> <p>Verify that applications for exemptions are submitted to the Regional Administrator in writing and include: (4)</p> <ul style="list-style-type: none"> <li>- a description of the pesticide</li> <li>- the proposed use</li> <li>- any alternative means of control and why those means are not feasible.</li> </ul> <p>Verify that exemptions are issued for a specific length of time, as follows: (4)</p> <ul style="list-style-type: none"> <li>- no more than 1 yr for Specific and Public Health exemptions</li> <li>- for no longer than 3 yr for a Quarantine permit, but it may be renewed</li> <li>- no longer than 15 days (unless an application for another type of exemption has been submitted) for an emergency exemption.</li> </ul> <p>Verify that any unexpected adverse affects from the use of a pesticide under exemption conditions are reported to the Agency. (4)</p> <p>Verify that a report summarizing the use of a pesticide under exemption was submitted to the agency within 6 mo after the expiration of the exemption (3 mo for a crisis exemption). (4)</p>

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**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>REGISTRATION</b></p> <p><b>P.8.</b> All pesticides present on the installation must be registered or ruled exempt from the registration requirements (40 CFR 152.15 through 152.30).</p> <p><b>PESTICIDE APPLICATION</b></p> <p><b>P.9.</b> Application of general use pesticides must be conducted by a person who is trained or certified in the application of pesticides. (AFR 19-21, para 2c(6) through 2c(9), 2d(1)(b), and 4b).</p> <p><b>P.10.</b> Persons applying restricted use pesticides (Table 6-2) are required to be certified (40 CFR 171.9).</p>	<p>Verify that pesticide products at the installation are registered unless the product is considered exempt, such as the following: (4)</p> <ul style="list-style-type: none"> <li>- certain biological control agents</li> <li>- certain human drugs</li> <li>- treated articles or substances such as paint treated with a pesticide</li> <li>- pheromones and pheromone traps</li> <li>- preservatives for biological specimens</li> <li>- vitamin hormone products</li> <li>- a pesticide transferred between registered establishments operated by the same producer</li> <li>- a pesticide distributed or sold under an experimental use permit</li> <li>- a pesticide transferred solely for export</li> <li>- a pesticide distributed or sold under an emergency exemption.</li> </ul> <p>Determine if a sufficient number of applicators are certified by reviewing the pest management program (see Table 6-1). (4)(7)</p> <p>Verify that recertification is scheduled and performed every 3 yr and that certification is relevant to the pest management activities which are undertaken. (4)</p> <p>Determine if contractors are utilized for pest management and verify certification status. (4)</p> <p>Verify that all pest control contracts, including grounds maintenance and termiticiding, are reviewed and approved by the MAJCOM, PPMP, and Pest Management Shop by interviewing the Base Contracting Officer. (1)(4)(7)</p> <p>Verify that staff applying restricted use pesticides are certified. (4)</p> <p>Determine if contractors are utilized for pest management and verify certification status. (4)</p> <p>Verify that all pest control contracts, including grounds maintenance and termiticiding, are reviewed and approved by the MAJCOM, PPMP, and Pest Management Shop by interviewing the Base Contracting Officer. (1)(4)(7)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>P.11.</b> Health monitoring must be provided for all persons involved in the management or application of pesticides (AFR 19-21, para 2d(1)(k)).</p> <p><b>P.12.</b> Records must be maintained and summary reports written for pest management activities (AFR 19-21, para 2d(1)(e), 2d(1)(h) through 2d(1)(j), and 9).</p>	<p>Verify that all pest management personnel have received baseline physical examinations within 30 days of starting pest management work. (3)(4)(5)</p> <p>Determine if pest management personnel receive additional physical examinations two times each year. (3)(4)(5)</p> <p>Verify that daily pesticide application records are maintained by use of DD Form 1532 (or WIMS equivalent). (4)</p> <p>Determine that the Pest Control Summary Report (RCS: DD-M (A&amp;AR or DOD Form 1532 or WIMS equivalent)) (1080) is prepared quarterly. (1)(4)</p> <p>Verify that the Pest Management Plan (RCS: HAF-LEE (A)8303) which utilizes AF Form 646 or WIMS equivalent) is complete and current. Additions and deletions for the annual program are to be forwarded to MAJCOM by 1 December of each year. The shop should have verification of MAJCOM approval for the current year program. (1)(4)</p> <p>Verify that the Pest Management Maintenance Record (DD Form 1532-1) or WIMS equivalent is filled out for all facilities and areas treated to control pests. (1)(4)</p>
<p><b>P.13.</b> Notification must be made or approval received for certain application activities (AFR 19-21, para 2d(1) and 5d).</p>	<p>Verify that procedures are in place to notify Base Medical Services prior to any pesticide applications in food preparation, consumption or storage areas and areas where a high risk exists for human contact with applied pesticides. (3)</p> <p>Verify that Base Medical Services are notified of all pesticides procured for pest management use. (3)(4)</p> <p>(NOTE: BMS does not approve or direct what pesticides are procured and used. MAJCOM PPMP is responsible.)</p> <p>Verify that Base Medical Services and the fire department are notified prior to the performance of any fumigation activities or use of internal combustion engines used for aerosol or spray mists inside buildings. (3)(4)</p>
<p><b>P.14.</b> Equipment used for pesticide applications must be dedicated to the pest management operation and required to be equipped with specific safety measures (AFR 19-21 para 5c).</p>	<p>Verify that vehicles (prime movers) used for fogging, misting, dusting or ultra low volume (ULV) application are equipped with air conditioning. (4)(5)</p> <p>Verify that vehicles are equipped with locking compartments for storage of pesticides. (4)(5)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>P.15.</b> Insecticides and termiticides must not be injected into the soil to control subterranean termites in any military buildings with sub-slab or in-slab heating ducts or air conditioning unless such systems are made inoperable and duct registers are blocked to prevent air flow (AFR 19-21, para 2d(1)(o)).</p>	<p>Determine if pesticide applications are undertaken to control subterranean termites. (4)</p> <p>Determine if any structures on base have in-slab or sub-slab heating or air conditioning systems. (1)(4)</p> <p>Determine if subterranean termite control is undertaken at any building with slab or sub-slab heating systems. (1)(4)</p>
<p><b>P.16.</b> Installations are required to ensure the prevention of damage to wildlife from pesticide applications (DODR 4145.19-1, para 3-417).</p> <p><b>PESTICIDE MIXING, STORAGE, AND PREPARATION FACILITIES</b></p> <p><b>P.17.</b> Facilities which are used for the storage, mixing and preparation of pesticides must be constructed in a manner that promotes cleanliness, safety and environmental protection (AFR 19-21 paras 2d(1)(a)(1) through 2d(1)(a)(3), 2d(1)(a)(5), and 2d(1)(a)(7)).</p>	<p>Determine if personnel are aware of any endangered or threatened species at the installation and the impact of pesticides on these and other wildlife. (4)(5)</p> <p>Verify that runoff or washoff by rain from treated areas to fishbearing waters is guarded against. (4)(5)</p> <p>Verify that the pesticide storage facility is not co-used with other nonrelated functions. (4)(5)</p> <p>Verify that separate rooms are provided for pesticide storage, pesticide mixing, and laundry facilities. (4)(5)</p> <p>(NOTE: Laundry facilities may be in office, shower, or locker area.)</p> <p>Assess whether office, locker, changing rooms, laundry, and toilet facilities are adequately sealed or separated from pesticide storage, mixing and preparation areas so that pesticide vapors and dusts are excluded. (4)(5)</p> <p>Determine whether pesticide application and support equipment is stored as follows: (4)(5)</p> <ul style="list-style-type: none"> <li>- small equipment is stored in an enclosed indoor area</li> <li>- large equipment is stored in a covered or enclosed area located adjacent to the pesticide mixing and storage building.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>P.18.</b> Security measures shall be provided to assure that only authorized persons can access pesticide storage, mixing, and preparation areas (AFR 19-21, para 2d(1)(a)(9)).</p>	<p>Verify that a climb-resistant fence completely encloses the facility. (4)(5)</p>
<p><b>P.19.</b> A spill containment system, constructed of impervious materials, shall exist adjacent to the pesticide management facility to effectively provide containment for the pesticide storage, mixing, preparation and management areas (AFR 19-21, para 2d(1)(a)(4)).</p>	<p>Verify that the containment system will adequately contain drainage by inspecting the barriers around the required areas. (4)(5)</p> <p>Verify that the floor is impervious by inspecting for drains and cracks in floors. (4)(5)</p> <p>Verify that personnel are trained in spill response procedures by interviewing pest management shop personnel. (4)(5)</p> <p>Determine through interviews whether spill response procedures are understood by staff. (4)(5)</p>
<p><b>P.20.</b> Pesticide storage, mixing and preparation facilities must provide facilities and procedures to ensure the safety of personnel (AFR 19-21, para 2d(1)(a)(6) and 2d(1)(a)(8)).</p>	<p>Determine if a ventilation system is specifically provided for all indoor pesticide mixing or preparation areas. (2)(4)(5)</p> <p>Determine if mixing area ventilation is designed for 6 air changes per hour. (2)(4)(5)</p> <p>Determine if storage area ventilation is designed for two air changes per hour. (2)(4)(5)</p> <p>Determine if the ventilation system is periodically assessed by base medical services for compliance with AFOSH Standard 161.2. (2)</p> <p>Verify that an emergency deluge shower and eye wash station is present at the facility and located so as to provide immediate access to all personnel performing mixing. (4)(5)</p> <p>Determine if health and safety procedures emphasize good work habits and reduce or eliminate hazards by observing facilities and operations. (4)(5)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>P.21.</b> Pesticide personnel are required to make sure that concentrated pesticides are not be released to sanitary wastewater or storm water drains (AFR 19-21, para 2d(1)(a)(3)).</p> <p><b>P.22.</b> Installations should store any pesticide, pesticide container, or pesticide residue according to specific restrictions (MP).</p>	<p>Determine if a system or set of procedures exist to prevent spilled or excess pesticides from entering the sanitary wastewater or storm water systems. (4)(5)</p> <p>Verify that at the pesticide mixing areas with close proximity and accessibility to the wastewater or storm water system appropriate precautions are taken. (4)(5)</p> <p>(NOTE: Observe drains and floors for stains which might result from spills or improper disposal practices.)</p> <p>Verify that pesticide, pesticide container, or pesticide residues are stored in such a way that: (4)(5)</p> <ul style="list-style-type: none"> <li>- it is not inconsistent with labeling</li> <li>- open dumping of pesticides or pesticide containers is not done</li> <li>- open burning is not done except when allowed by state and local regulation</li> <li>- water dumping or ocean dumping does not occur.</li> </ul> <p>(NOTE: These MPs are based on guidelines found in 40 CFR 165.7.)</p>
<p><b>HIGHLY AND MODERATELY TOXIC PESTICIDES</b></p> <p><b>P.23.</b> Sites where pesticides and excess pesticides that are classed as highly toxic or moderately toxic and are required to be labeled DANGER, POISON, WARNING, or the skull and crossbones are stored should meet specific requirements (MP).</p>	<p>Verify that the site location, where possible, is in an area where flooding is unlikely and where hydrogeologic conditions prevents contamination of any water system by run-off or percolation by: (1)(4)(5)</p> <ul style="list-style-type: none"> <li>- inspecting area surrounding facilities and determine proximity to surface water</li> <li>- noting location relative to floodplains, depth of groundwater, and general soil types and typical permeability.</li> </ul> <p>(NOTE: These MPs are based on guidelines found in 40 CFR 165.10(b).)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>P.24.</b> An environmental monitoring system should be considered in the vicinity of pesticide storage facilities when there is no spill management system and the facility handles large quantities of pesticides and is located near a sensitive area (MP).</p>	<p>Determine if the site appears to be contaminated with pesticides and if there is a need for an environmental monitoring system. (1)(4)(5)</p> <p>(NOTE: This MP is based on a guideline found in 40 CFR 165.10(h).)</p>
<p><b>P.25.</b> Storage facilities for pesticides and excess pesticides classed as highly toxic or moderately toxic which are required to be labeled with DANGER, POISON, WARNING, or the skull and crossbones symbol should meet specific structural requirements (MP).</p>	<p>Verify that storage is in a dry, separate room, building, or covered area where fire protection is provided. (4)(5)</p> <p>(NOTE: These MPs are based on guidelines found in 40 CFR 165.10(c)(1).)</p>
<p><b>P.26.</b> The storage of pesticides and excess pesticides classed as highly toxic or moderately toxic which are required to be labeled with DANGER, POISON, WARNING, or the skull and crossbones symbol must meet specific operational requirements (MP).</p>	<p>Verify that: (4)(5)</p> <ul style="list-style-type: none"> <li>- pesticide containers are stored with the label plainly visible</li> <li>- all containers are in good condition</li> <li>- the lids and bungs on metal or rigid plastic containers are tight</li> <li>- the pesticides are segregated, and if practicable, stored under a sign containing the name of the formulation</li> <li>- rigid containers are stored upright and all containers are stored off the ground.</li> </ul> <p>Verify that a complete inventory is kept indicating the number and identity of containers in a storage unit. (4)(5)</p> <p>Verify that containers are regularly inspected for corrosion and leaks and that absorbent material is available for spill cleanup. (4)(5)</p> <p>Verify that excess pesticides and their containers are segregated. (4)(5)</p> <p>(NOTE: These MPs are based on guidelines found in 40 CFR 165.10(d).)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>P.27.</b> Decontamination facilities are required for personnel and equipment at installations which use pesticides classed as highly toxic or moderately toxic and are required to bear the signal words DANGER, POISON, WARNING, or the skull and crossbones symbol on the label (MP).</p>	<p>Verify that facilities are available for personnel decontamination. (4)(5)</p> <p>Verify that facilities are available for the decontamination of equipment, including vehicles which have been used for pesticide applications. (4)(5)</p> <p>Verify that there are berms, curbing, impervious surfaces and catchment drains which are used to impound washwater resulting from decontamination. (4)(5)</p> <p>Verify that drains impound washwater and do not connect to sanitary sewer or storm water systems. (4)(5)</p> <p>Verify that the procedure for disposal of washwater resulting from decontamination activities is the same as for excess pesticides. (4)(5)</p> <p>(NOTE: These MPs are based on guidelines found in 40 CFR 165.10(c)(3) and 165.10(c)(4).)</p>
<p><b>P.28.</b> Facilities where pesticides are stored or used that are classed as highly toxic or moderately toxic and are required to bear the signal words DANGER, POISON, WARNING, or the skull and crossbones symbol should follow specific practices and procedures to ensure safety (MP).</p>	<p>Verify that no food consumption, drinking, smoking, or tobacco use is undertaken in any area where pesticides are present by inspecting facilities. (4)(5)</p> <p>Verify the following practices are performed in pest management operations: (4)(5)</p> <ul style="list-style-type: none"> <li>- persons handling pesticides keep hands away from mouths and eyes and wear rubber gloves during all pesticide handling</li> <li>- persons handling pesticides wash hands immediately upon completion of working with pesticides and always prior to eating, smoking, or using toilet facilities</li> <li>- persons working regularly with organophosphates and N-alkyl carbamate pesticides have periodic physical examinations, including cholinesterase tests</li> <li>- inspections are made once a month to determine if any pesticide containers are leaking</li> <li>- pesticide containers are inspected for leakage prior to handling</li> <li>- unauthorized persons are not allowed in storage areas.</li> </ul> <p>(NOTE: These MPs are based on guidelines found in 40 CFR 165.10(e) and 165.10(f).)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>P.29.</b> Pesticide storage facilities and equipment which contain or use pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or the skull and crossbones symbol are required to have signs and safety procedures posted (MP).</p> <p><b>P.30.</b> Where large quantities of pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol are being stored, or other conditions warrant, the local fire department, hospitals, public health officials, and police department must be notified in writing that pesticides are being stored in the event of a fire (MP).</p>	<p>Look for signs which read DANGER, POISON, PESTICIDE STORAGE on or near entries to storage facilities. (4)(5)</p> <p>Verify that safety precautions and accident prevention measures are posted. (4)(5)</p> <p>Verify that an inventory of pesticides is displayed outside of the storage facility identifying all chemicals in storage. (4)(5)</p> <p>Verify that mobile equipment used for pesticide applications is labeled CONTAMINATED WITH PESTICIDES and is not removed from storage site without being thoroughly decontaminated. (4)(5)</p> <p>(NOTE: These MPs are based on guidelines found in 40 CFR 165.10(c)(2) through 165.10(c)(3), 165.10(e), and 165.10(g)(2).)</p> <p>Verify that notification has been submitted and includes a statement of the hazards that pesticides may present during a fire. (6)</p> <p>Verify that a floor plan of the storage facility indicating the location of the different pesticide classifications has been submitted to the fire department. (6)</p> <p>Verify that the fire chief has the home telephone numbers of the person(s) responsible for the pesticide storage facility. (6)</p> <p>(NOTE: These MPs are based on guidelines found in 40 CFR 165.10(g)(1).)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>P.31.</b> Certain precautions should be taken in the event of a fire at a pesticide storage area where pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or the skull and crossbones symbol (MP).</p>	<p>Verify that the following procedures are practiced by interviewing the Fire Chief: (6)</p> <ul style="list-style-type: none"> <li>- fire fighting personnel wear supplied air suits and rubberized clothing</li> <li>- personnel avoids breathing or otherwise contacting toxic smoke and fumes</li> <li>- personnel washes completely as soon as possible after encountering smoke and fumes</li> <li>- the water used in fire fighting is contained within the storage site drainage system</li> <li>- individuals who might be threatened by the fumes or smoke are evacuated</li> <li>- firemen take cholinesterase tests after fighting fires involving organophosphate or N-alkyl carbamate pesticides.</li> </ul> <p>(NOTE: These MPs are based on guidelines found in 40 CFR 165.10(g)(3).)</p>
<p><b>DISPOSAL</b></p> <p><b>P.32.</b> Disposal must be initiated for all pesticides or pesticide containers which have deteriorated and are not eligible for return to depot stocks (AFR 19-21, para 5(e)).</p>	<p>Determine if procedures are in place for disposal of pesticides and pesticide containers. (4)(5)</p> <p>Determine if containers in storage show signs of deterioration. (4)(5)</p>
<p><b>P.33.</b> Installations should dispose of any pesticide, pesticide container, or pesticide residue according to specific restrictions (MP).</p>	<p>Verify that pesticides, pesticide containers, or pesticide residues are disposed of such that: (4)(5)</p> <ul style="list-style-type: none"> <li>- it is not inconsistent with labeling</li> <li>- open dumping of pesticides or pesticide containers is not done</li> <li>- open burning is not done except when allowed by state and local regulation</li> <li>- water dumping or ocean dumping would not occur.</li> </ul> <p>(NOTE: These MPs are based on guidelines found in 40 CFR 165.7.)</p>
<p><b>P.34.</b> Organic pesticides, except organic mercury, lead, cadmium, and arsenic compounds, should be disposed of according to specific procedures (MP).</p>	<p>Determine if the facility uses organic pesticides. (4)</p> <p>Verify that the organic pesticides are disposed of through incineration at an incinerator which meets the air quality standards for gaseous emissions or in a specially designated landfill if incineration is not available or by another approved method. (4)(5)</p> <p>(NOTE: Municipal solid waste incinerators may be allowed to be used to incinerate pesticides and pesticide containers if they meet criteria of the state.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>P.34. (continued)</b></p>	<p>(NOTE: These MPs are based on guidelines found in 40 CFR 165.8(a.) Metallo-organic pesticides, except organic mercury, lead, cadmium, or arsenic compounds should be disposed of according to specific procedures (MP).)</p> <p>Determine if the facility uses metallo-organic pesticides. (4)(5)</p> <p>Verify that metallo-organic pesticides are subjected to an appropriate chemical or physical treatment to recover the heavy metals from the hydrocarbon structure prior to disposal. (4)(5)</p> <p>Verify that metallo-organic pesticides are disposed of through incineration at an approved incinerators or in a specially designated landfill or by another approved method. (4)(5)</p> <p>(NOTE: These MPs are based on guidelines found in 40 CFR 165.8(b).)</p>
<p><b>P.35. Organic mercury, lead, cadmium, arsenic, and all inorganic pesticides should be disposed of according to specific procedures (MP).</b></p>	<p>Determine if the facility uses organic mercury, lead, cadmium, arsenic, or any inorganic pesticides. (4)(5)</p> <p>Verify that these pesticides are converted to a nonhazardous compound and the heavy metal resources are recovered. (4)(5)</p> <p>Verify that if chemical deactivation facilities are not available, these pesticides are encapsulated and buried in a specially designated landfill and records sufficient to permit location and retrieval are maintained. (4)(5)</p> <p>Determine if an alternate method of disposal has been approved. (4)(5)</p> <p>(NOTE: These MPs are based on guidelines found in 40 CFR 165.8(c).)</p>
<p><b>P.36. Containers should be disposed of according to their classification as either a Group I, Group II, or Group III container (MP).</b></p>	<p>Determine which of the following types of containers the installation has onsite: (4)</p> <ul style="list-style-type: none"> <li>- Group I Containers: combustible containers which formally contained organic or metallo-organic pesticides</li> <li>- Group II Containers: noncombustible containers which formally held organic or metallo-organic pesticides</li> <li>- Group III Containers: containers (both combustible and noncombustible) which formerly held organic mercury, lead, cadmium, or arsenic or inorganic pesticides.</li> </ul> <p>Verify that Group I containers are disposed of in an incinerator or buried in a specially designated landfill. (4)</p> <p>(NOTE: Small quantities of Group I containers may be burned in open fields by the user of the pesticide when allowed by the state.)</p> <p>Verify that Group II containers are triple rinsed. (4)(5)</p>

(1) Base Civil Engineering (BCE) (2) Bioenvironmental Engineering (BEE) (3) Military Public Health (4) Pest Management Shop (5) Golf Course Maintenance (6) Base Fire Chief (7) Base Contracting Office



**Table 6-1****Requirements for Installation Pest Management Program**

<b>Pest Control Recognized Requirements Work Hours*</b>	<b>Minimum No. of Certified Full-time Pesticide Applicators Required</b>	<b>Installation Pest Management Plan</b>	<b>Onsite Program Review</b>
Less than 0.25	None unless restricted use pesticides are used or unusually sensitive environmental conditions exist including endangered species	Individual plan not required; included in supporting installation plan	Requirements established by MACOM Pest Management Consultant (PMC)
0.25 to 0.49	One	Same as above	Same as above
0.50 to 1.49	One	Individual pest management plans required	Annual or biennial
1.50 to 3.99	Two	Same as above	Same as above
4.00 or More	50 percent of the pest management workforce	Same as above	Same as above
* Multiply the total productive work-years required for the pest management program by a factor of 1.19 to determine the recognized requirement. This factor includes essential time allowance for annual and sick leave, on-the-job training, formal training, mandatory attendance at lectures on safety, security, and fire prevention, and required medical examination.			





**Table 6-2**

**Restricted Use Pesticides  
(40 CFR 152.175)**

The following uses of pesticide products containing the active ingredients specified below have been classified for restricted use and are limited to use by or under the direct supervision of a certified applicator.

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Acrolein	As sole active ingredient. No mixtures registered.	All uses.	Restricted	Inhalation hazard to humans Residue effects on avian species and aquatic organisms
Acrylonitrile	In combination with carbon tetrachloride. No registrations as the sole active ingredient.	*do	do	Other hazards-accident history of acrylonitrile and carbon tetrachloride products.
Aldicarb	As sole active ingredient. No mixtures registered.	Ornamental uses (indoor and outdoor). Agricultural crop uses.	do Under further evaluation.	Other hazards-accident history.
Allyl alcohol	All formulations.	All uses.	Restricted	Acute dermal toxicity.
Aluminum phosphide	As sole active ingredient. No mixtures registered.	do	do	Inhalation hazard to humans.
Azinphosmethyl	All liquids with a concentration greater than 13.5%.	do	do	do
	All other formulations.	do	Under further evaluation.	
Calcium cyanide	As sole active ingredient. No mixture registered.	do	Restricted	do

\*do means same as above.

(continued)

**Table 6-2 (continued)**

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Carbofuran	All concrete suspensions and wettable powders 40% and greater.	do	do	Acute inhalation toxicity.
	All granular formulations.	Rice	Under evaluation.	
	All granular and fertilizer formulations.	All uses except rice.	do	
Chlorfenvinphos	All concentrate solutions or emulsifiable or concentrates 21% and greater.	All uses (domestic and nondomestic).	Restricted	Acute dermal toxicity.
Chloropicrin	All formulations greater than 2%.	All uses	Restricted	Acute inhalation toxicity
	All formulations.	Rodent control	Restricted	Hazard to non-target organisms.
	All formulations 2% and less.	Outdoor uses (other than rodent control).	Unclassified	
Clonitralid	All wettable powders 70% and greater.	All uses	do	Acute inhalation toxicity.
	All granulars and wettable powders.	Molluscide uses.	do	Effects on aquatic organisms.
	Pressurized sprays 0.55% and less.	Hospital antiseptics.	Unclassified	
Cycloheximide	All formulations greater than 4%.	All uses.	Restricted.	Acute dermal toxicity.
	All formulations 0.027% to 4%.	All uses.	Under evaluation.	
	All formulations 0.027% and less.	Domestic uses.	Unclassified	

\*do means same as above.

(continued)

**Table 6-2 (continued)**

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Demeton	1% fertilizer formulation, 1.985% granular.	All uses including domestic uses.	Restricted	Domestic uses: Acute oral toxicity. Acute dermal toxicity. Nondomestic outdoor uses. Residue effects on avian and mammalian species.
Dicrotophos	All granular formulations emulsifiable concentrates and concentrated solutions.	All uses.	do	Acute dermal toxicity. Residue effects on mammalian and avian species.
Dioxathion	All liquid formulations 8% and greater.	All uses.	Restricted	Acute dermal toxicity; residue effects on avian species (except for tree injections).
Dioxathion	All concentrate solutions or emulsifiable concentrates <sup>2</sup> greater than 30%.	All uses	Restricted	Acute dermal toxicity.
Dioxathion	Concentrate solutions or emulsion concentrates <sup>2</sup> 30% and less and wettable powders 25% and less.	Livestock and agricultural uses (non-domestic uses only).	Unclassified	
Dioxathion	All solutions <sup>2</sup> 3% and greater.	Domestic	Restricted	do
Dioxathion	3% and greater 2.5% solutions <sup>2</sup> with toxaphene and malathion.	All uses.	Under evaluation.	

\*do means same as above.

(continued)

Table 6-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Disulfoton	All emulsifiable concentrates 65% and greater, all emulsifiable concentrates and concentrate solutions 21% and greater with fensulfothion 43% and greater, all emulsifiable concentrates 32% and greater in combination with 32% fensulfothion and greater.	do	Restricted	do  Acute inhalation toxicity.
	Nonaqueous solution 95% and greater.	Commercial seed treatment.	Restricted	Acute dermal toxicity.
	Granular formulations 10% and greater.	Indoor uses (greenhouse).	do	Acute inhalation toxicity.
Endrin	All emulsions, dusts, wettable powders, pastes, and granular formulations 2% and above.	All uses.	Restricted	Acute dermal toxicity. Hazard to nontarget organisms.
	All concentrations less than 2%.	do	do	Hazard to nontarget organisms.
EPN	All liquid and dry formulations greater than 4%.	All uses.	Restricted	Acute dermal toxicity; acute inhalation toxicity; residue effects on avian species.
		Aquatic uses.	Restricted	Effects on aquatic organisms.
*do means same as above.				

(continued)

**Table 6-2 (continued)**

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Ethoprop	Emulsifiable concentrates 40% and greater.	do	do	Acute dermal toxicity.
	All granular and fertilizer formulations.	do	Under evaluation.	
Ethyl parathion	All granular and dust formulations greater than 2% fertilizer formulations, wettable powders, emulsifiable concentrates, * concentrated suspensions, concentrated solutions. Smoke fumigants.	do	Restricted	Inhalation hazard to humans. Acute dermal toxicity. Residue effects or mammalian, aquatic, avian species. Inhalation hazard to humans.
		do	do	Other hazards-accident history.
	Dust and granular formulations 2% and below.	do	do	
Fenamiphos	Emulsifiable concentrates 35% and greater.	do	do	Acute dermal toxicity.
*do means same as above.				

(continued)

**Table 6-2 (continued)**

<b>Active Ingredient</b>	<b>Formulation</b>	<b>Use Pattern</b>	<b>Classification<sup>1</sup></b>	<b>Criteria Influencing Restriction</b>
Fensulfothion	Concentrate solutions 63% and greater, all emulsifiable concentrates and concentrate solutions 43% and greater with disulfoton 21% and greater all emulsifiable concentrates 32% and greater in combination with disulfoton 32% and greater.	do	Restricted.	do  Acute inhalation toxicity.
	Granular formulations 10% and greater.	Indoor uses (greenhouse).	do	do
Fluoroacetamide/1081	As sole active ingredient in baits. No mixtures registered.	All uses.	Restricted.	Acute oral toxicity.
Fonofos	Emulsifiable concentrates 44% and greater.	All uses.	do	Acute dermal toxicity.
	Emulsifiable concentrates 12.6% and less with pebulate 50.3% and less.	Tobacco	Unclassified	
Hydrocyanic acid	As sole active ingredient. No mixtures registered.	do	do	Inhalation hazard to humans.
Methamidophos	Liquid formulations 40% and greater.	All uses	Restricted	Acute dermal toxicity; residue effects on avian species.
	Dust formulations 2.5% and greater.	All uses	Restricted	Residual effects on avian species.

\*do means same as above.

(continued)

**Table 6-2 (continued)**

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Methidathion	All formulations.	All uses except stock safflower and sunflower.	Restricted	Residue effects on avian species.
	All formulations.	Nursery stock, safflower, and sunflower	Unclassified	Residue effects on avian species.
Methomyl	As sole active ingredient in 1% to 2.5 baits (except 1% fly bait).	Nondomestic outdoor agricultural crops, ornamental and turf. All other registered uses.	Restricted.	Residue effects on mammalian species.
	All concentrated solution formulations.	do	do	Other hazards-accident history.
	90% wettable powder formulations (not in water soluble bags).	do	do	do
	90% wettable powder formulation in water soluble bags.	do	Unclassified	
	All granular formulations.	do	do	
	25% wettable powder formulations.	do	do	
	In 1.24% to 2.5% dusts as sole active ingredient and in mixtures with fungicides and chlorinated hydrocarbon, inorganic phosphate and biological insecticides.	do	do	
*do means same as above.				

(continued)



Table 6-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Methylbromide	All formulations in containers greater than 1.5 lb.	All uses.	Restricted	Other hazard's-accident history.
	Containers with not more than 1.5 lb of methyl bromide with 0.25% to chloropicrin as an indicator.	Single applications (nondomestic use) for soil treatment in closed systems.	Unclassified	
	Containers with not more than 1.5 lb having no indicator.	All uses.	Restricted	
Methyl parathion	All dust and granular formulations less than 5%.	do	do	Other hazards-accident history. All foliar applications restricted based on residue effects on mammalian and avian species.
	Microencapsulated. All dust and granular formulations 5% and greater and all wettable powders and liquids.	do	do	Residue effects on avian species. Hazard to bees. Acute dermal toxicity. Residue effects on mammalian and avian species.
Mevinphos	All emulsifiable concentrates and liquid concentrates.	do	do	do
	Psycodid filter fly liquid formulations.	do	do	Acute dermal toxicity.
	2% dusts.	do	do	Residue effects on mammalian and avian species.
*do means same as above.				

(continued)

**Table 6-2 (continued)**

<b>Active Ingredient</b>	<b>Formulation</b>	<b>Use Pattern</b>	<b>Classification<sup>1</sup></b>	<b>Criteria Influencing Restriction</b>
Monocrotophos	Liquid formulations 19% and greater.	do	do	Residue effects on avian species. Residue effects on mammalian species.
	Liquid formulations 55% and greater.	do	do	Acute dermal toxicity. Residue effects on avian species. Residue effects on mammalian species.
Nicotine (alkaloid)	Liquid and dry formulations 14% and above.	Indoor (greenhouse)	Restricted	Acute inhalation toxicity.
	All formulations.	Applications to cranberries	Restricted	Effects on aquatic organisms.
	Liquid and dry formulations 1.5% and less.	All uses (domestic and nondomestic).	Unclassified	
*do means same as above.				

(continued)

Table 6-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Paraquat (dichloride) and paraquat bis(methylsulfate)	All formulations and concentrations except those listed below.	All uses.	Restricted	Other hazards. Use and accident history, human toxicological data.
	Pressurized spray formulations containing 0.44% Paraquat bis(methyl sulfate) and 15% petroleum distillates as active ingredients.	Spot weed and grass control.	do	
	Liquid fertilizers containing concentrations of 0.025% paraquat dichloride and 0.03% atrazine; 0.03% paraquat dichloride and 0.37% atrazine, 0.04% paraquat dichloride and 0.49% atrazine.	All uses.	Unclassified	
Phorate	Liquid formulations 65% and greater.	do	Restricted	Acute dermal toxicity. Residue effects on avian species (applies to foliar applications only). Residue effects on mammalian species (applies to foliar application only).
Phosacetim	All granular formulations.	Rice	Restricted	Effects on aquatic organisms.
	Baits 0.1% and greater.	All uses.	Restricted	Hazard to nontarget species. Residues effects on mammalian species. Residue effects on avian species.
*do means same as above.				

(continued)

Table 6-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Phosphamidon	Liquid formulations 75% and greater.	do	do	Acute dermal toxicity. Residue effects on mammalian species. Residue effects on avian species.
	Dust formulations 1.5% and greater.	do	do	Residue effects on mammalian species.
Picloram	All formulations and concentrations except tordon 101R.	do	do	Hazard to nontarget organisms (specifically nontarget plants both crop and noncrop).
	Tordon 101 R forestry herbicide containing 5.4% picloram and 20.9% 2, 4-D.	Control of unwanted trees by cut surface treatment.	Unclassified	
Sodium cyanide <sup>3</sup>	All capsules and ball formulations.	All uses.	Restricted	Inhalation hazard to humans.
Sodiumfluoroacetate	All solutions and dry baits.	do	do	Acute oral toxicity. Hazard to nontarget organisms. Use and accident history.
Strychnine	All dry baits pellets and powder formulations greater than 0.5%.	do	do	Acute oral toxicity. Hazard to nontarget avian species. Use and accident history.
	All dry baits pellets and powder formulations.	All uses calling for burrow builders.	do	Hazard to nontarget organisms.
	All dry baits, and pellets, and powder formulations 0.5% and below.	All uses except subsoil.	do	do
	do	All subsoil uses.	Unclassified	do

\*do means same as above.

(continued)

Table 6-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Sulfotepp	Sprays and smoke generators.	All uses.	Restricted	Inhalation hazard to humans.
Tepp	Emulsifiable concentrate formulations.	do	do	Inhalation hazard to humans. Dermal hazard to humans. Residue effects on mammalian and avian species.
Zinc Phosphide	All formulations 2% and less.	All domestic uses and nondomestic uses in and around buildings.	Unclassified	
	All dry formulations 60% and greater.	All uses.	Restricted	Acute inhalation toxicity.
	All bait formulations.	Nondomestic outdoor uses (other than around buildings).	Restricted	Hazard to nontarget organisms.
	All dry formulation 10% and greater.	Domestic uses.	Restricted	Acute oral toxicity.
*do means same as above.				

<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>PESTICIDE MANAGEMENT</b> <b>U.S. ECAMP</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA C RMA	<b>REVIEWER COMMENTS:</b>		

**Section 7**

**POL MANAGEMENT**

## SECTION 7

### POL MANAGEMENT

#### A. Applicability

This section applies to Air Force installations which store, transport, dispose of, or utilize petroleum based fuels, oils, or lubricants (POL). The section presents review action items that respond to regulations, procedures, and organizational mechanisms designed to prevent or limit the accidental release of POL materials to surface water, groundwater, or soils. Procedures designed to review the control of Volatile Organic Compounds (VOCs) from POL sources are addressed in Section 1, *Air Emissions Management*.

This section covers POL management of bulk storage tanks, organizational tanks, underground storage tanks (USTs), pipeline delivery systems, truck fill stands, and immediate operating storage areas. POL materials addressed include petroleum, diesel fuel, and lubricating oils.

#### B. Federal Legislation

- *The Water Quality Improvement Act of 1974*. This law was the primary Federal law governing the discharge of oil into navigable waters. This regulation prohibits the discharge of *harmful* quantities of oil into navigable waters. 40 Code of Federal Regulations (CFR) 110, *Protection of Environment - Discharge of Oil*, defines *harmful* quantities as those discharges which will cause a sheen or discoloration of the surface of the water or a sludge or emulsion to be deposited beneath the surface of the water.
- *The Federal Water Pollution Control Act*. This Act, commonly known as the *Clean Water Act* (CWA), as amended 4 February 1987, 33 U.S. Code (USC) 1251-1387, Public Law (PL) 100-4, governs the control of water pollution in the nation. The objective of the act is to restore and maintain the chemical, physical and biological integrity of the nation's waters. Federal agencies are required to comply with all Federal, state, interstate, and local water pollution control requirements both substantively and procedurally (33 USC 1323(a)).
- *The Oil Pollution Act (OPA) of 1990*. This law, PL 301-308 (33 USC 2701-2761, et. al.) as amended, requires the prevention of oil pollution into navigable waters by tank vessels.
- *The Resource Conservation and Recovery Act (RCRA) Subtitle I*. This law, PL 99-49 (42 USC 6991-6991i), established the standards and procedures for USTs. It required the U.S. Environmental Protection Agency (USEPA) to issue standards on leak detection, record maintenance, release reporting, corrective actions, tank upgrading, and replacement (42 USC 6991b(a)(c)).
- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.



### **C. State/Local Regulations**

Many states and some major metropolitan and regional planning agencies have developed legislation and implemented regulations which closely parallel the Federal regulations. Some, however, may differ in important ways, and the evaluator should obtain copies of the state or local requirements for the Oil and Hazardous Substances Pollution Contingency (OHSPC) and the Spill Prevention, Control, and Countermeasures (SPCC) plans, where appropriate, and review them for those differences before conducting the evaluations. In particular, the evaluator should check for differences in the definitions of reportable quantities and the specific procedures for reporting spills that may exist in state/local regulations.

Many state and local governments have active UST programs. These various governments have developed regulations specific to the physical environment and the regulated communities' needs. It is important to review regulations at the state and local level to ensure that any differences such as reporting or notice requirements, and monitoring requirements can be complied with.

### **D. Department of Defense (DOD) Regulations**

- None that have not been implemented/superseded by Air Force Regulation (AFRs).

### **E. U.S. Air Force Regulations (AFRs)**

- Air Force Instruction (AFI) 32-7044, *Storage Tank Compliance*. This instruction, dated 9 February 1994, identifies compliance requirements for underground and aboveground storage tanks and associated piping that store petroleum and hazardous substances except hazardous waste.
- AFR 19-1, *Pollution Abatement and Environmental Quality*. This regulation outlines the general requirements for the preparation of OHSPC and SPCC plans. This AFR is scheduled to be replaced by Air Force Policy Directive (AFPD) 23-3.
- AFR 19-8, *Hazardous Waste Management and Minimization*. This regulation outlines the requirements for an annual review of the OHSPC and SPCC plans and defines spill reporting requirements. This AFR is scheduled to be replaced by AFI 32-7104.
- AFR 19-14, *Management of Recoverable and Unusable Liquid Petroleum Products*. This regulation describes the management of recoverable and waste liquid petroleum products. This AFR is scheduled to be replaced by AFI 23-504.
- Air Force Manual (AFM) 85-16, *Maintenance of Petroleum Systems*. This manual governs the maintenance of permanently installed storage and dispensing systems for petroleum and unconventional fuels.
- AFM 85-5, *Maintenance and Operation of Cathodic Protection Systems*. This manual provides guidance for maintenance and operation of cathodic protection systems.
- AFR 144-1, *Fuels Management*. This regulation provides objectives, policies, and responsibilities that form the foundation for fuels management activities. This AFR is scheduled to be replaced by AFI 23-205.

- AFR 144-16, *Organization Fuel Tanks*. This regulation provides the policies and procedures for establishing and operating organizational fuel tanks. This AFR is scheduled to be replaced by AFI 23-208.
- Technical Order (TO) 37-1-1. This provides fuels management personnel guidance in the operation, inspection, and operator maintenance of permanently installed fuel facilities.
- TO 42B-1-23. This provides guidelines for collecting, segregating and processing reclaimed, recoverable and waste petroleum products.
- Policy Letter, 30 May 1990, *Underground Storage Tank Management Strategy*. This letter provides a long-term management program for achieving compliance efficiently and economically.
- Policy Letter, 5 July 1991, *Hazardous Waste Operations and Emergency Response Implementation Guidance*. This letter provides proper guidance for Air Force employees training prior to engaging in hazardous waste operations and responding to emergencies involving hazardous substances.

#### **F. Key Compliance Requirements**

- **Petroleum Product Environmental Release Reporting** - Air Force installations are required to notify USEPA and appropriate state agencies when there is a release of POL material to the environment in excess of the amounts specified in the regulations (40 CFR 280.53 and 110.10).
- **Aboveground Storage Tanks (AST) - Bulk ASTs** (over 660 gal) are required to have secondary containment under 40 CFR 112.7(e). This secondary containment is required to be managed so that accumulated rainwater is tested prior to discharge and all discharges of petroleum products are avoided.
- **Spill Prevention and Response Plan** - Air Force installations that operate POL facilities are required to prepare a SPCC Plan (40 CFR 112). This plan must be prepared in accordance with the guidelines in 40 CFR 112.7; the plan must be reviewed every 3 yr and modified within 6 mo of significant changes in POL facilities, or if new, field-proven technology has been developed that will significantly reduce the likelihood of a spill (40 CFR 112.5). The SPCC Plan may combine the required OHSPC Plan (40 CFR 300) into a comprehensive Spill Prevention and Response (SPR) Plan.
- **Spill Response Training** - All Air Force personnel managing and handling of oil and hazardous substances must take part in periodic spill prevention and response training programs (40 CFR 112.7).
- **Used Oil** - Although used oil has not been declared a hazardous waste at the Federal level, it does need to be stored and handled in a manner similar to hazardous waste.
- **Substandard POL USTs** - Substandard UST systems must be upgraded, closed, or removed from service by 22 December 1998. If a release detection system is not available for the UST, it must be phased out in 1 to 5 yr. (40 CFR 280.21(a) through 280.21(c)).
- **New or Upgraded POL USTs** - New or upgraded USTs are required to be fitted with spill and overfill prevention equipment. Notice must be given to the appropriate authority within 30 days when a UST system is brought into service after 8 May 1986. If the UST is installed after 22 December 1988, it must be constructed so that it will remain structurally sound for its operating life. Installa-

tion of UST must be done by a certified installer and UST systems must be made of or lined with, materials compatible with the substance stored (40 CFR 280.20, 280.21(d), 280.22, and 280.32).

- **Metallic POL USTs** - Buried metallic storage tanks installed after 1973 must be protected from corrosion by coatings, cathodic protection or other effective methods. They must also undergo regular pressure testing (40 CFR 112.7(e)(2)(iv)).
- **Spill and Overfill Prevention** - The filling of a UST must include the prevention of overfilling and spilling of the substance. If a spill does occur, installations with UST systems are required to contain and immediately clean up a spill or overfill of petroleum that resulted in a release to the environment of more than 25 gal [93.89 L] or that caused a sheen on nearby surface water (40 CFR 280.30 and 280.53).
- **Corrosion Protection and Repairs** - Corrosion protection on USTs must operate continuously to provide corrosion protection to the metal components that routinely contains regulated substances and are in contact with the ground. UST systems with impressed current cathodic protection are required to be inspected every 60 days by a qualified cathodic protection tester. Repairs to USTs must be performed according to industry code. Tanks and piping that have been replaced or repaired are required to be tested for tightness within 30 days. Records of repairs shall be maintained for the life of the tank (40 CFR 280.31, 280.33, 280.43, and 280.44).
- **Release Detection** - Installations with new and existing USTs are required to provide a method, or combination of methods of release detection. Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs which store fuel solely for use by emergency power generators. Release detection records are required to be kept as follows (40 CFR 280.40 through 280.45):
  1. all written performance claims pertaining to any release detection system used for 5 yr from the date of installation
  2. the results of any sampling testing or monitoring for 1 yr
  3. the results of tank tightness testing, until the next test is done
  4. written documentation of calibration, maintenance, repair, of release detection equipment permanently located onsite, at least 1 yr after the servicing is done
  5. schedules of required calibration and maintenance provided by the release detection equipment manufacturer, 5 yr after the date of installation.

Depending on the age, size, and construction of the tank, acceptable methods of release detection include the following:

1. inventory control
2. manual tank gauging
3. tank tightness testing
4. automatic tank gauging
5. vapor monitoring
6. groundwater monitoring
7. interstitial monitoring.

Existing UST system tanks must implement release detection requirements based on when the system was installed. The table below identifies the deadline for providing release detection:

**Deadlines for Release Detection:**

<b>UST System Installation Date</b>	<b>Leak Detection Required by 22 December of:</b>
All others	1992
1980-December 1988	1993

- **Release Detection for Underground Piping Associated with UST Systems - 40 CFR 280, Subpart D,** establishes separate release detection requirements for underground piping depending on whether it conveys substances under pressure or suction. These include:
  1. Pressurized piping must be equipped with an automatic line leak detector and have an annual line tightness test conducted; or pressurized piping must be equipped with an automatic line leak detector and a permanent release detection system that allows monthly monitoring. Permanent release detection methods acceptable for piping include: vapor monitoring, interstitial monitoring, and groundwater monitoring. The deadline for implementing release detection requirements on pressurized piping is 22 December 1990.
  2. Suction piping either must have a line tightness test conducted every 3 yr or must use a permanent release detection system that allows monthly monitoring. Deadlines for implementing release detection requirements on suction piping are based on when the UST system was installed. The table above identifies the deadline for providing release detection. For suction piping constructed to certain standards, no release detection monitoring is required. It must meet five criteria:
    - a. below-grade piping must operate at less than atmospheric pressure
    - b. below-grade piping must be sloped to drain back into the tank when suction is released
    - c. only one check valve can be included in each suction line
    - d. check valve shall be located directly below and as close as practical to the suction pump
    - e. criteria in paragraphs b through d must be verifiable.
  
- **Reporting and Recordkeeping Requirements -** Installations are required to submit notifications of new USTs, release reports, planned or complete corrective actions, notice of closure or change-in-service when applicable. Records are required to be available at the UST site or at a readily available alternative site. Records are to be kept of the following:
  1. corrosion expert's analysis of site corrosion potential if corrosion protection equipment is not used
  2. documentation of operation of corrosion protection equipment
  3. documentation of repairs
  4. closure records
  5. results of any site investigations (40 CFR 280.34, 280.45, and 280.74).
  
- **Change in Service or Closure of POL USTs -** USTs which are put out of service temporarily must have continued maintenance. If the UST has been out-of-service for near or over 1 yr, plans must be made for permanent closure. The installation must notify the implementing agency for any closure

or change in service 30 days in advance or within a reasonable time frame as determined by the implementing agency. UST closure must be done by either removing the tank from the ground or leaving it in place with the contents removed and filled with an insert solid material and closing it to all future outside access. If a tank is undergoing a change-in-service, it must be emptied and cleaned and a site assessment conducted. Prior to the completion of permanent closure or change-in-service, measurements must be made for the presence of a release where contamination is most likely to be present at the site. Installations with UST systems closed prior to 22 December 1988 must assess the excavation zone and close the UST according to current standards if releases from the UST may pose a current or potential threat to human health and the environment (40 CFR 280.70 through 280.73).

- AAFES Service Station USTs - Installations care for UST systems at AAFES service stations as necessary, including: inspecting, maintaining, repairing, upgrading, cleaning up leaks, reporting spills and releases, and keeping records.

#### **G. Responsibility for Compliance**

- Base Environmental Protection Committee (EPC). The EPC is usually responsible for drafting and reviewing the SPR Plan prior to its promulgation by the Base Commander and for the annual review and update of the SPR Plan. Often, the EPC delegates the specific preparation of the Plan to the Base Civil Engineering (BCE) for implementation by the Base Environmental Coordinator. The EPC also is responsible for review and implementation of the Base Plan for recoverable and waste petroleum.
- Spill Response Team (SRT). The SRT is tasked to respond to spills when requested by an On-Scene Commander (OSC) and to perform spill containment, recovery, cleanup, disposal and restoration activities as directed by the OSC. The SRT is a multidisciplinary team often including the following persons: BCE, Base Environmental Coordinator, Bioenvironmental Engineer (BEE), Base Disaster Preparedness Officer (BDPO), Fire Chief, Security Police Chief, Public Affairs Officer (PAO), Base Fuels Flight Commander, Safety Chief, and Staff Judge Advocate (JA).
- Base Fire Department. The fire department provides support in emergency response, spill events, exercises, and fire protection activities. In addition, the department will be responsible for making periodic fire safety inspections of flammable or combustible storage and handling areas, hazardous waste storage areas, and accumulation points on the installation.
- Safety Manager. This individual is responsible for conducting workplace safety evaluations and inspections of the handling and storage of hazardous materials and waste. They will provide the appropriate manager with a report of their findings and recommended corrective actions. They are also responsible for ensuring the prompt and accurate investigation of any hazardous material mishaps that result in injury or property damage.
- Base Fuels Management Officer (BFMO). The BFMO is responsible for the safe and efficient receipt, storage, handling, issuing, and accounting of all petroleum products to include all general operations and inspections.
- The BCE. The BCE is responsible for the maintenance of all installed petroleum storage and dispensing systems. This responsibility often is discharged by the Liquid Fuels Maintenance (LFM) shop. The BCE also is responsible for the calibration of permanently installed meters.

- **Base Environmental Coordinator (EC).** The EC monitors all POL activities that may affect the environment and usually is responsible for the coordination of the EPC review and updates of the SPR Plan. The EC also often coordinates the reportable spills notification of appropriate Federal and state agencies on behalf of the Base On-Scene Commander (OSC). Generally the EC comes under the BCE.
- **The BEE.** The BEE takes samples to determine the chemical nature, pollutant concentration, and extent of each reportable quantity spill as required for response actions and documentation.
- **The BDPO.** The BDPO is responsible for emergency planning and training of installation disaster response forces. When appointed as EPCRA coordinator, the BPDO will exchange emergency response plans with the LEPC and participate in LEPC meetings.

#### **H. Key Compliance Definitions**

- ***Aboveground Release*** - Any release to the surface of the land or to surface water. This includes, but is not limited to, releases from the aboveground portion of an UST system and aboveground releases associated with overfills and transfer operations as the regulated substance moves to or from an UST system (40 CFR 280.12).
- ***Ancillary Equipment*** - Any devices including, but not limited to, such devices as pipings, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of regulated substances to and from the UST (40 CFR 280.12).
- ***Automotive Service Station*** - that portion of property where flammable or combustible liquids used as motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles and shall include any facilities available for the sale and service of tire, batteries, accessories, and for minor automotive maintenance work. Major automotive repairs, painting, body and fender work are excluded (29 CFR 1910.106(a)(3)).
- ***Below-ground Release*** - any release to the subsurface of the land and to groundwater. This includes, but is not limited to, releases from the belowground portion of an underground storage tank (UST) system and below-ground releases associated with overfills and transfer operations as the regulated substance moves to or from a UST (40 CFR 280.12).
- ***Cathodic Protection*** - a technique to prevent corrosion of a metal surface by making that surface the cathode of an electrochemical cell. For example, a tank system can be cathodically protected through the application of either galvanic anodes or impressed current (40 CFR 280.12).
- ***Cathodic Protection Tester*** - a person who can demonstrate understanding of the principles and measurements of all common types of cathodic protection systems as applied to buried or submerged metal piping and tank systems. At a minimum, such persons must have education and experience in soil resistivity, stray current, structure-to-soil potential, and component electrical isolation measurements of buried metal piping and tank systems (40 CFR 280.12).
- ***CERCLA - Comprehensive Environmental Response Compensation and Liability Act of 1980*** as amended (40 CFR 280.12).

- **Change in Service** - Continued use of a UST system to store an unregulated substance (AFI 32-7044, Attachment 1, Section B).
- **Compatible** - the ability of two or more substances to maintain their respective physical and chemical properties upon contact with one another for the design life of the tank system under conditions likely to be encountered in the UST (40 CFR 280.12).
- **Connected Piping** - all underground piping including valves, elbows, joints, flanges, and flexible connectors attached to a tank system through which regulated substances flow. For the purpose of determining how much piping is connected to any individual UST system, the piping that joins two UST systems should be allocated equally between them (40 CFR 280.12).
- **Consumptive Use** - with respect to heating oil means consumed on the premises (40 CFR 280.12).
- **Container** - any portable device in which materials is stored, transported, treated, disposed of, or otherwise handled (40 CFR 279.1).
- **Contaminated Product** - an off specification product resulting from mixing with another product or products of different type and grade or by introduction of foreign matter such as rust, dirt, or water (AFT141-1, Attachment 1).
- **Corrosion Expert** - a person who, by reason of thorough knowledge of the physical sciences and the principles of engineering and mathematics acquired by a professional education and related practical experience, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be accredited or certified as being qualified by the National Association of Corrosion Engineers or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks (40 CFR 280.12).
- **Deferred USTs** - USTs which are exempt from meeting the requirements in 40 CFR 280 except those concerning release response and corrective action for UST systems containing petroleum or hazardous substances in 40 CFR 280.60 through 280.67. These tanks include (40 CFR 280.10(e):
  1. wastewater treatment tank systems
  2. any UST systems containing radioactive material that are regulated under the *Atomic Energy Act of 1954*
  3. any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
  4. airport hydrant fuel distribution systems
  5. UST system with field-constructed tanks.
- **Dielectric Material** - a material that does not conduct direct electrical current. Dielectric coatings are used to electrically isolate UST systems from the surrounding soils. Dielectric bushings are used to electrically isolate portions of the UST system (e.g., tank from piping) (40 CFR 280.12).
- **Do-It-Yourself (DIY) Used Oil Collection Center** - any site or facility that accepts, aggregates and stores used oil collected only from household DIYs (40 CFR 279.1).
- **Electrical Equipment** - underground equipment that contains dielectric fluid that is necessary for the operation of equipment such as transformers and buried electric cable (40 CFR 280.12).

- **Environmentally Sensitive Area** - an area of environmental importance which is in or adjacent to navigable waters (49 CFR 194.5).
- **Excavation Zone** - the volume containing the tank system and backfill material bounded by the ground surface, walls, and floor of the pit and trenches into which the UST system is placed at the time of installation (40 CFR 280.12).
- **Excluded USTs** - these are underground storage tanks which are not required to meet the requirements found in 40 CFR 280 and include:
  1. any UST system holding hazardous wastes listed under Subtitle C of the *Solid Waste Disposal Act*, or a mixture of such hazardous waste and other regulated substances
  2. any wastewater treatment tank system that is part of a wastewater treatment facility regulated under Section 402 or 307(b) of the *Clean Water Act* (CWA)
  3. equipment of machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment
  4. any UST system whose capacity is 110 gal [416.40 L] or less
  5. any UST system that contains a de minimis concentration of a regulated substance
  6. any emergency spill or overflow containment UST system that is expeditiously emptied after use (40 CFR 280.10(b)).
- **Existing Tank** - a tank that is used for the storage or processing of used oil and that is in operation, or a tank for which installation has commenced on, or prior to the effective date of the authorized used oil program for the state in which the tank is located (40 CFR 279.1).
- **Existing Tank System** - a tank system used to contain an accumulation of regulated substances or for which installation has commenced on or before 22 December 1988. Installation is considered to have commenced if (40 CFR 280.12):
  1. the owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system, and if,
  2. a. either a continuous onsite physical construction or installation program has begun, or  
b. the owner or operator has entered into any contractual obligations:
    1. which cannot be canceled or modified without substantial loss
    2. for physical construction at the site or installation of the tank system to be completed within a reasonable time.
- **Flow-through Process Tank** - a tank that forms an integral part of a production process through which there is a steady, variable, recurring, or intermittent flow of materials during the operation of the process. Flow-through process tanks do not include tanks used for the storage of material prior to their introduction into the production process or for the storage of finished products or by-products from the production (40 CFR 280.12).
- **Free Product** - a regulated substance that is present as a nonaqueous phase liquid (e.g., liquid not dissolved in water) (40 CFR 280.12).
- **Gathering Lines** - any pipeline, equipment, facility, or building used in the transportation of oil or gas during oil or gas production (40 CFR 280.12).
- **Hazardous Waste Fuel** - a waste petroleum product that is mixed with hazardous waste or exhibits characteristics of hazardous waste as defined by the USEPA (AFR 19-14, para 2).



- *Heating Oil* - petroleum that is No. 1, No. 2, No. 4--light, No. 4--heavy, No.5 --heavy, and No. 6 technical grades of fuel oil; other residual fuel oils (including Navy Special Fuel Oil and Bunker C); and other fuels when used as substitutes for one of these fuel oils. Heating oil is typically used in the operation of heating equipment, boilers, or furnaces (40 CFR 280.12).
- *Household "Do-It-Yourself" Used Oil* - oil that is derived from households, such as used oil generated by individuals who generate used oil through the maintenance of their personal vehicles (40 CFR 279.1).
- *Hydraulic Lift Tank* - a tank holding hydraulic fluid for a closed-loop mechanical system that uses compressed air or hydraulic fluid to operate lifts, elevators, and other similar devices (40 CFR 280.12).
- *Liquid Trap* - sumps, well cellars, and other traps used in association with oil and gas production, gathering, and extracting operations (including gas production plants), for the purpose of collecting oil, water, and other liquids. These liquid traps may temporarily collect liquids for subsequent disposition or re-injection into a production or pipeline stream, or may collect and separate liquids from a gas stream (40 CFR 280.12).
- *Maintenance* - the normal operational upkeep to prevent an underground storage tank system from releasing product (40 CFR 280.12).
- *Motor Fuel* - petroleum or a petroleum-based substance that is motor gasoline, aviation gasoline, No.1 or No.2 diesel fuel, or any grade of gasohol, and is typically used in the operation of motor engines (40 CFR 280.12).
- *New Tank* - a tank that will be used to store or process used oil and for which installation has started after the effective date of the authorized used oil program for the state in which the tank is located (40 CFR 279.1).
- *New Tank System* - a tank system that will be used to contain an accumulation of regulated substances and for which installation has commenced after 22 December 1988 (40 CFR 280.12).
- *Noncommercial Purposes with Respect to Motor Fuel* - not for resale (40 CFR 280.12).
- *Offshore Facility* - any facility of any kind located in, on, or under any of the navigable waters of the United States, and any facility or any kind that is subject to the jurisdiction of the United States and is located in, on, or under any other waters, other than a vessel or a public vessel (40 CFR 110.2 and 33 CFR 153.103).

- **Off-Specification Oil** - Used oil burned for energy recovery and any fuel produced from used oil that exceeds the following allowable limits (40 CFR 279):

Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash Point	100 °F minimum
Total halogens	4000 ppm maximum

- **Oil** - when used in relation to Section 311 of the Act, means oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil (40 CFR 110.2 and 33 CFR 153.103).
- **On the Premises Where Stored (heating oil)** - UST systems located on the same property where the stored heating oil is used (40 CFR 280.12).
- **Onshore Oil Pipeline Facilities** - new and existing pipe, rights of way and any equipment, facility, or building used in the transportation of oil located in, on, or under, any land within the United States other than submerged land (49 CFR 194.5).
- **Operator** - in relationship to onshore oil pipeline facilities, a person who owns or operates onshore oil pipeline facilities (49 CFR 194.5).
- **Operator** - any person in control of or having responsibility for the daily operation of the UST system (40 CFR 280.12).
- **Organizational Fuel Tank** - these are tanks which may be fixed or portable and must meet established engineering criteria. They do not include fuel tanks that are an integral part of a vehicle or equipment, any type of hand-carried safety can, 55 gal drums, or missile propellant conditioning systems. The 3 categories of organizational fuel tanks are support tanks, issue tanks, and portable tanks (AFR 144-16, para 2).
- **Organizational Issue Tank** - a tank not permanently connected to any facility or equipment and may be used to issue fuel to vehicles, equipment, or portable containers (AFR 144-16, para 2).
- **Organizational Portable Tank** - a tank which may be used as either an issue or a support tank that is portable (AFR 144-16, para 2).
- **Organizational Support Tank** - a tank connected by fixed piping to a consuming facility or installed equipment item (AFR 144-16, para 2).
- **Overfill Release** - a release that occurs when a tank is filled beyond its capacity, resulting in a discharge of the regulated substance to the environment (40 CFR 280.12).

- **Person** - an individual, trust, firm, joint stock company, Federal agency, corporation, state, municipality, commission, political subdivision of a state, or any interstate body. *Person* also includes a consortium, a joint venture, a commercial entity, and the U.S. Government (40 CFR 280.12).
- **Petroleum UST System** - an UST system that contains petroleum or a mixture of petroleum with de minimis quantities of other regulated substances. Such systems include those containing motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils (40 CFR 280.12).
- **Pipe or Piping** - a hollow cylinder or tubular conduit that is constructed of nonearthen materials (40 CFR 280.12).
- **Pipeline** - all parts of an onshore pipeline facility through which oil moves, including, but not limited to, line pipe, valves, and other appurtenances connected to the line pipe, pumping units, fabricated assemblies associated with pumping units, metering and delivery stations and fabricated assemblies therein, and breakout tanks (49 CFR 194.5).
- **Pipeline Facilities** - (including gathering lines) are new and existing pipe rights-of-way and any associated equipment, facilities, or buildings (40 CFR 280.12).
- **Processing** - chemical or physical operations designed to produce from used oil, or to make used oil more amenable for production, of fuel oils, lubricants, or other used oil-derived product. Processing includes, but is not limited to blending used oil with Virgin petroleum products, blending used oils to meet the fuel specification, filtration, simple distillation, chemical or physical separation and re-refining (40 CFR 279.1).
- **Qualified Individual** - an English-speaking representative of an operator, located in the United States, available on a 24 h basis, with full authority to:
  1. activate and contract with required oil spill removal organizations; activate personnel and equipment maintained by the operator
  2. act as liaison with the OSC
  3. obligate any funds required to carry out all required or directed oil response activities (49 CFR 194.5).
- **Recoverable Product** - product which has served its intended purpose or which contains foreign matter which renders it unfit for original or alternate use, but through processing or refining can be reclaimed for other use by the Agency or commercial industry (40 CFR 280.12).
- **Recyclable Product** - products that are determined to be surplus to Air Force needs that are burned for energy recovery or are recycled through the DRMO (AFR 19-14, para 2).
- **Regulated Substance** -
  1. any substance defined in section 101(14) of the CERCLA of 1980 (but not including any substance regulated as a hazardous waste under subtitle C), and
  2. petroleum, including crude oil or any fraction thereof that is liquid at standard conditions of temperature and pressure (60 °F [15.56 °C] and 14.7 lb/psia).

(NOTE: The term *regulated substance* includes, but is not limited to, petroleum and petroleum based substances comprised of a complex blend of hydrocarbons derived from crude

oil. through processes of separation, conversion, upgrading, and finishing, such as motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils (40 CFR 280.12).)

- **Release** - any spilling, leaking, emitting, discharging, escaping, leaching, or disposing from an UST into groundwater, surface water, or subsurface soils (40 CFR 280.12).
- **Release Detection** - determining whether a release of a regulated substance has occurred from the UST system into the environment or into the interstitial space between the UST system and its secondary barrier or secondary containment around it (40 CFR 280.12).
- **Repair** - to restore a tank or UST system component that has caused a release of product from the UST system (40 CFR 280.12).
- **Re-refining Distillation Bottoms** - the heavy fractions produced by vacuum distillation of filtered and dehydrated used oil. The composition of still bottoms varies with column operation and feed-back (40 CFR 279.1)
- **Residential Tank** - a tank located on property used primarily for dwelling purposes (40 CFR 280.12).
- **SARA - Superfund Amendments and Reauthorization Act** (40 CFR 280.12).
- **Septic Tank** - a water-tight covered receptacle designed to receive or process, through liquid separation or biological digestion, the sewage discharged from a building sewer. The effluent from such receptacle is distributed through the soil and settled solids and scum from the tank are pumped out periodically and hauled to a treatment facility (40 CFR 280.12).
- **Stormwater or Wastewater Collection System** - piping, pumps, conduits, and any other equipment necessary to collect and transport the flow of surface water runoff resulting from precipitation, or domestic, commercial, or industrial wastewater to and from retention areas or any areas where treatment is designated to occur. The collection of stormwater and wastewater does not include treatment except where incidental to conveyance (40 CFR 280.12).
- **Surface Impoundment** - a natural topographic depression, man-made excavation, or diked area formed of primarily of earthen materials (although may be lined with manmade materials) that is not an injection well (40 CFR 280.12).
- **Tank** - any stationary device, designed to contain an accumulation of used oil, which is constructed primarily of nonearthen materials which provides structural support (40 CFR 279.1).
- **Tank** - a stationary device designed to contain an accumulation of regulated substances and constructed of nonearthen materials (e.g., concrete, steel, plastic) that provide structural support (40 CFR 280.12).
- **Underground Area** - an underground room such as a basement, cellar, shaft, or vault, providing enough space for physical inspection of the exterior of the tank situated on or above the surface of the floor (40 CFR 280.12).
- **Underground Release** - any belowground release (40 CFR 280.12).

- **Underground Storage Tank (UST)** - any one or a combination of tanks (including underground pipes connected thereto) that is used to contain an accumulation of regulated substances, and the volume of which (including the volume of underground pipes connected thereto) is ten percent or more beneath the surface of the ground. This term does not include any (40 CFR 280.12):
  1. farm or residential tank of 1100 gal [4163.95 L] or less capacity used for storing motor fuel for noncommercial purposes
  2. tank used for storing heating oil for consumptive use on the premises where stored
  3. septic tanks
  4. pipeline facility (including gathering lines) which are regulated by other acts
  5. surface impoundment, pit, pond, or lagoon
  6. stormwater or waste water collection system
  7. flow-through process tank
  8. liquid trap or associated gathering lines directly related to oil or gas production and gathering operations
  9. storage tank situated in an underground area if the storage tank is situated upon or above the surface of the floor such as basements or tunnels
  10. tanks holding 110 gal [106.21 L] or less, or
  11. emergency spill and overflow tanks.

(NOTE: The definition of UST does not include any pipes connected to any tank which is described in para (1) through (9) of this definition.)

- **Upgrade** - the addition or retrofit of some systems such as cathodic protection, lining, or spill and overflow controls to improve the ability of an underground storage tank system to prevent the release of product (40 CFR 280.12).
- **Used Oil** - any oil that has been refined from crude oil or any synthetic oil that has been used and as a result of such use is contaminated by physical or chemical impurities (40 CFR 279.1).
- **Used Oil Aggregation Point** - any site or facility that accepts, aggregates, and/or stores used oil collected only from other used oil generation sites owned or operated by the owner or operator of the aggregation point, from which used oil is transported to the aggregation point in shipments of no more than 55 gal [208.20 L]. Used oil aggregation points may also accept used oil from household DIYs (40 CFR 279.1).
- **Used Oil Burner** - a facility where used oil not meeting the specification requirements is burned for energy recovery (40 CFR 279.1).
- **Used Oil Collection Center** - any site or facility that is registered/licensed/ permitted/recognized by a state/county/municipal government to manage used oil and accepts/aggregates and stores used oil collected from used oil generators who bring used oil to the collection centers in shipments of no more than 55 gal [208.20 L]. Used oil collection centers may accept used oil from household DIYs (40 CFR 279.1).
- **Used Oil Fuel Marketer** - any person who conducts either of the following activities (40 CFR 279.1):
  1. directs a shipment of off-specification used oil from their facility to a used oil burner, or
  2. first claims that used oil that is to be burned for energy recovery meet used oil fuel specifications.

- ***Used Oil Generator*** - any person, by site, whose act or process produces used oil or whose act first causes used oil to become subject to regulation (40 CFR 279.1).
- ***Used Oil Processor/Re-refiner*** - a facility that processes used oil (40 CFR 279.1).
- ***Used Oil Transfer Facility*** - any transportation related facility, including loading docks, parking areas, storage areas, and other areas where shipments of used oil are held for more than 24 h during the normal course of transportation and not longer than 35 days (40 CFR 279.1).
- ***Used Oil Transporter*** - any person who transports used oil, any persons who collects used oil from more than one generator and transports the collected oil, and owners and operators of used oil transfer facilities. Used oil transporters may consolidate or aggregate loads of used oil for purposes of transportation, but, with the following exception, may not process used oil. Transporters may conduct incidental processing operations that occur in the normal course of used oil transportation (e.g., settling and water separation), but that are not designed to produce or make more amenable for production of used oil derived products or used oil fuel (40 CFR 279.1).
- ***UST System or Tank System*** - underground storage tank, connected underground piping, underground ancillary equipment, and containment system, if any (40 CFR 280.12).
- ***Wastewater Treatment Tank*** - a tank that is designed to receive and treat influent waste water through physical, chemical, or biological methods (40 CFR 280.12).



**POL MANAGEMENT PROTOCOL**  
**GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>CONTACT THESE PERSONS OR GROUPS:(a)</b>	<b>REFER TO PAGE NUMBER:</b>
All Installations	POL.1 through POL.10	(1)(3)(4)(5)	7-21
Personnel Training	POL.11	(1)(2)(3)(4)(12)	7-25
Plans	POL.12 through POL.19	(1)(2)(12)	7-26
Discharges, Spills, and Releases	POL.20 through POL.29	(1)(2)(3)(4)(6)	7-30
POL Containment Facilities	POL.30 through POL.39	(1)(2)(3)(4)(5)(6) (7)	7-33
Pipelines	POL.40 through POL.49	(1)(2)(4)(10)	7-37
Organizational Fuel Tanks	POL.50	(3)	7-42
Substandard USTs	POL.51	(3)	7-43
New or Upgraded USTs	POL.52 through POL.56	(3)(4)(5)	7-44
Metallic USTs	POL.57	(1)(3)(4)(5)	7-46
Heating Oil USTs	POL.58	(1)(2)(4)	7-46
UST Filling	POL.59 and POL.60	(1)(2)(4)	7-47
Corrosion Protection and Repairs	POL.61 and POL.62	(1)(3)(4)	7-47
UST Release Detection	POL.63 through POL.65	(1)(3)(4)(5)	7-48

**(a) CONTACT OR LOCATION CODE:**

- (1) Base Environmental Coordinator (EC)
- (2) Base Civil Engineer (BCE)
- (3) Base Fuels Management Office (BFMO)
- (4) Liquid Fuels Management (LFM)
- (5) Base Bioenvironmental Engineer (BEE)
- (6) Base Fire Department
- (7) BCE Contract Management Office
- (8) Engineering Technical and Design Section
- (9) Base Contracting Office
- (10) Interior electric Shop or Base Cathodic Protection Engineer
- (11) Contract Programmer
- (12) Base Disaster Preparedness Officer (BDPO)



## GUIDANCE FOR CHECKLIST USERS (continued)

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>CONTACT THESE PERSONS OR GROUPS:(a)</b>	<b>REFER TO PAGE NUMBER:</b>
UST Releases	POL.66 and POL.67	(1)(3)(4)	7-51
Deferred UST Systems	POL.68	(3)(4)(5)	7-51
UST Documentation	POL.69 through POL.72	(1)(2)(3)	7-52
Changes-in-Service or Closure	POL.73 through POL.78	(1)(2)(3)	7-53
Used Oil	POL.79	(2)(3)(4)	7-55
Used Oil Generators	POL.80 through POL.86	(2)(3)(4)	7-56
Used Oil Collection Centers and Aggregation Points	POL.87 through POL.89	(2)(3)(4)	7-58
Used Oil Transporters	POL.90 through POL.98	(1)(2)(3)(4)(5)	7-59
Used Oil Burners	POL.99 through POL.105	(3)(5)	7-62
Used Oil Marketing	POL.106 through POL.110	(3)(4)(9)	7-64
Used Oil Dust Suppression	POL.111	(2)(3)(4)	7-66

**(a) CONTACT OR LOCATION CODE:**

- (1) Base Environmental Coordinator (EC)
- (2) Base Civil Engineer (BCE)
- (3) Base Fuels Management Office (BFMO)
- (4) Liquid Fuels Management (LFM)
- (5) Base Bioenvironmental Engineer (BEE)
- (6) Base Fire Department
- (7) BCE Contract Management Office
- (8) Engineering Technical and Design Section
- (9) Base Contracting Office
- (10) Interior Electric Shop or Base Cathodic Protection Engineer
- (11) Contract Programmer
- (12) Base Disaster Preparedness Officer (BDPO)

## **POL MANAGEMENT**

### **Records to Review During an ECAMP Assessment**

- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)
- Official correspondence with state implementing agency
- Spill Prevention and Response Plan
- Records of spill response training programs
- Results of all UST testing, sampling, monitoring, inspection, maintenance, and repair work (for 1 yr)
- Registration records for all in-service, temporarily out-of-service, and permanently closed tanks
- Records for UST disposal, closure, and removal from activity and results of excavation area assessment (for 3 yr)
- UST Management Strategy (per Policy Letter, 30 May 90)

### **Physical Features to Inspect During an ECAMP Assessment**

- Refueling facilities, including:
  - Above and belowground storage tanks and dikes
  - Venting
  - Fill pipe
  - Gauges
- Washrack areas
- Fire training pits
- Vehicle maintenance areas
- Oil separators
- Oil and hazardous substance site

### **People to Interview During an ECAMP Assessment**

- Base Environmental Coordinator
- Base Civil Engineer
- Base Fuels Management Officer
- Liquid Fuels Maintenance
- Base Bioenvironmental Engineer
- Base Fire Department
- BCE Contract Management Officer
- Technical and Design Engineer
- Base Contracting Officer
- Interior Electric Shop/Base Cathodic Protection Engineer
- Contract Programmer
- Base Disaster Preparedness Officer



**COMPLIANCE CATEGORY:  
POL MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL INSTALLATIONS</b></p> <p><b>POL1.</b> Actions or changes since previous review of POL Management should be examined.</p> <p><b>POL2.</b> Copies of all relevant Federal, state, and local regulations on POL management are required to be maintained at the installation (AFR 19-1, para 11f).</p> <p><b>POL3.</b> Copies of all relevant DOD, and U.S. Air Force regulations, and guidance documents on POL management should be maintained at the installation (MP).</p>	<p>Determine if noncompliance issues have been resolved by obtaining a copy of the previous POL Management review. (1)(3)</p> <p>Verify that a file of Federal and state POL, SPCC plan (Spill Prevention), and OHSPC Regulations are maintained and kept current at the installation: (1)(5)</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance With Pollution Standards.</i></li> <li>- 33 CFR 153, <i>Control of Pollution by Oil and Hazardous substances, discharge removal.</i></li> <li>- 40 CFR 110, <i>Discharge of Oil.</i></li> <li>- 40 CFR 112, <i>Oil Pollution Prevention.</i></li> <li>- 40 CFR 266, <i>Standards for Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Constituting Disposal.</i></li> <li>- 40 CFR 279, <i>Standards for the Management of Used Oil.</i></li> <li>- 40 CFR 280, <i>Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST).</i></li> <li>- 40 CFR 300, <i>National Oil and Hazardous Substances Pollution Contingency Plan.</i></li> <li>- applicable state and local regulations.</li> </ul> <p>Verify that the Base Staff Judge Advocate reviews Federal, state, and local regulations that may affect ongoing and proposed activities and keeps the EPC informed as needed. (1)(5)</p> <p>Verify that the following documents are maintained and kept current at the installation: (1)(5)</p> <ul style="list-style-type: none"> <li>- AFI 32-7044, <i>Storage Tank Compliance.</i></li> <li>- AFR 19-1, <i>Pollution Abatement and Environmental Quality.</i></li> <li>- AFR 19-8, <i>Environmental Protection Committees and Environmental Reporting.</i></li> <li>- AFR 19-14, <i>Management of Recoverable and Unusable Liquid Petroleum Products.</i></li> <li>- AFR 144-1, <i>Fuels Management.</i></li> <li>- AFR 144-16, <i>Organizational Fuel Tanks.</i></li> <li>- AFM 85-5, <i>Maintenance of Cathodic Protection Systems.</i></li> <li>- AFM 85-16, <i>Maintenance of Petroleum Systems.</i></li> <li>- Technical Orders 35-1-3, 36-1-3, 37-1-1, 42B-1-1, 42B-1-23, and 00-25-172.- <i>Air Force Underground Storage Tank Management Strategy.</i></li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.4.</b> Installations are required to comply with state and local regulations and compliance agreements negotiated with Federal, state, and local governments concerning POL management (EO 12088, Section 1-1).</p>	<p>Verify that the installation is complying with state and local requirements. (1)</p> <p>Verify that the installation is operating according to permits issued by the state or local agencies. (1)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- spill management</li> <li>- handling of wastewater and fuel sludge from tank cleaning</li> <li>- use of product recovery systems</li> <li>- containment</li> <li>- used oil</li> <li>- AST operational standards</li> <li>- UST operational standards</li> <li>- UST permitting requirements</li> <li>- UST replacement and removal schedules</li> <li>- UST cathodic protection requirements</li> <li>- UST alarm system requirements.)</li> </ul> <p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreement. (1)</p>
<p><b>POL.5.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if any new regulations concerning POL management have been issued since the finalization of the manual. (1)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.6.</b> As a good management practice the BCE Liquid Fuel Maintenance (LFM) and BFMO should have a Memorandum of Agreement pertaining to draining of floating roof tanks and interior dike basins. This Memorandum should be signed by the BCE, BFMO, Base EC and the BEE (MP).</p>	<p>(NOTE: This MP is based on guidelines found in AFM 85-16, Attachment 5.)</p> <p>Verify through interviews that a Memorandum of Agreement (MOA) has been prepared. (3)(4)</p> <p>Verify that the MOA was signed or coordinated through the Base EC and the BEE. (1)(3)(4)(5)</p>
<p><b>POL.7.</b> The Air Force UST Management Strategy strongly recommends annual leak testing of airfield hydrant fuel systems even though they are currently deferred from USEPA regulations (30 May 1990, UST Management Strategy Letter and AFI 32-7044, para 2.12).</p>	<p>Determine if installation has an airfield hydrant fuel system, and if so, when it was last leak tested. (3)(4)</p> <p>(NOTE: Not required where approved leak detection system (i.e. tracer) is installed).</p> <p>(NOTE: Some states do not defer airfield hydrant fueling systems.)</p> <p>Verify that all new hydrant systems have automatic release detection systems and line leak detectors. (3)(4)</p>
<p><b>POL.8.</b> The Air Force Management Strategy directs the installation to notify the regulators in writing if they are going to miss a compliance deadline. If a compliance deadline is not met, the installation must work a compliance agreement with the regulator (30 May 1990, UST Management Strategy Letter).</p>	<p>Determine if the installation missed a compliance deadline, and if so, review letter of notification to regulator and compliance agreement. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.9.</b> A separate file is to be maintained on each individual UST system at an installation (30 May 1990 UST Management Strategy Letter).</p>	<p>Determine if file contains a completed UST inventory form; a completed risk assessment form; spill reports; leak detection sampling and monitoring tests; performance claims by manufacturer; calibration, maintenance, and repair records; history of products stored; certification, if applicable that site conditions do not require cathodic protection; and results of site investigation conducted at the time USTs are permanently closed. (1)</p>
<p><b>POL.10.</b> Installations are required to have in place a program for managing recoverable and unusable liquid-petroleum products (AFR 19-14, para 8, 9, and 10).</p>	<p>Verify that the base program, either in the form of a plan or a regulation, addresses the segregation and collection, reuse, or recycling of recoverable products and the disposition of material categorized as unusable petroleum. (1)</p> <p>Verify that at the user level and operating agencies which generate unused, recoverable, or unusable fuels properly collect, segregate, handle, and dispose of these products and hazardous waste fuels of according to TO 42B-1-23 and applicable United States and state regulations. (1)</p> <p>Verify that mixed petroleum liquids which are contaminated by halogenated solvents or other listed hazardous wastes are disposed of as hazardous waste. (1)(3)</p> <p>Verify that used crankcase oils or lubricants are being collected by inspecting vehicle hobby shops. (1)</p>
<p><b>PERSONNEL TRAINING</b></p>	<p>Determine if training has been done by interviewing staff in BFMO and LFM and the BDPO. (3)(4)(12)</p> <p>Verify that proper training has been conducted by spot checking training records. AF Personnel Form 991 and Civilian Personnel AF Form 971 are often used for this purpose. (1)(2)(3)(12)</p> <p>(NOTE: HAZWOPER training will fulfill these requirements.)</p>
<p><b>POL.11.</b> All base personnel involved with the management and handling of oil must take part in periodic training in spill prevention and response (40 CFR 112.7(e)(10)).</p>	

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.11. (continued)</b></p>	<p>(NOTE: Installations are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the installation, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:               <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met:               <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the installation is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the installation is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L] (40 CFR 112.1(d)(2)).</li> </ul> </li> </ul>
<p><b>PLANS</b></p> <p><b>POL.12.</b> Air Force installations that store, transport, or dispense petroleum products are required to prepare a SPCC plan (40 CFR 112.3).</p>	<p>Verify that a SPCC plan has been prepared and obtain copies for review. (1)(2)(12)</p> <p>(NOTE: Installations are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the installation, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:               <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met:               <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the installation is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the installation is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L] (40 CFR 112.1(d)(2)).</li> </ul> </li> </ul>
<p><b>POL.13.</b> The SPCC plan is required to contain specific information (40 CFR 112.7).</p>	<p>Verify that the SPCC is complete, including: (1)</p> <ul style="list-style-type: none"> <li>- command approval</li> <li>- spill reporting procedures</li> <li>- prespill planning for major potential spill areas</li> <li>- spill containment and cleanup equipment and facilities</li> <li>- oil spill contingency plan</li> <li>- training procedures</li> <li>- spill response exercises</li> <li>- plan review and update procedures.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.13. (continued)</b></p>	<p>Verify that the SPCC contains: (1)(2)</p> <ul style="list-style-type: none"> <li>- general information about the installation such as:               <ul style="list-style-type: none"> <li>- the name</li> <li>- type of function</li> <li>- location of installation drainage patterns</li> <li>- location maps</li> </ul> </li> <li>- name and title of designated coordinator</li> <li>- inventory of all storage, handling, and transfer facilities that could produce a significant spill. For each listing include:               <ul style="list-style-type: none"> <li>- prediction of direction and rate of flow</li> <li>- total quantity of oil that could be spilled as a result of major failure.</li> </ul> </li> </ul> <p>(NOTE: Installations are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the installation, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:               <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met:               <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the installation is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the installation is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L] (40 CFR 112.1(d)(2)).)</li> </ul> </li> </ul>
<p><b>POL.14.</b> Each SPCC plan must be reviewed at least once every 3 yr (40 CFR 112.5(b)).</p>	<p>Verify that the SPCC plan has been reviewed at least once every 3 yr. (1)(2)</p> <p>(NOTE: Installations are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the installation, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:               <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met:               <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the installation is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the installation is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L] (40 CFR 112.1(d)(2)).)</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.15.</b> The EPC is required to review the SPCC Plan annually and recommend changes to keep it up to date (AFR 19-8, para 3c(3)).</p> <p><b>POL.16.</b> The SPCC plan must be reviewed and/or amended, or both under specific circumstances (40 CFR 112.4 and 112.5).</p>	<p>Verify that the EPC reviews the SPCC plan annually. (1)(2)</p> <p>Verify that the plan was amended if there was a material change in facility design, construction, operations, or maintenance that alters the potential for an oil spill. (1)(2)</p> <p>Verify that the plan was sent to the USEPA for review if: (1)(2)</p> <ul style="list-style-type: none"> <li>- there was a discharge of more than 1000 gal [3785.4 L] into navigable waters in a single spill event</li> <li>- oil was discharged in harmful quantities into navigable waters in two reportable spill events within any 12-mo period.</li> </ul> <p>Verify that plan was amended and recertified by a registered professional engineer. (1)(2)(3)</p> <p>(NOTE: Installations are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the installation, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the installation is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the installation is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L] (40 CFR 112.1(d)(2)).)</li> </ul> </li> </ul>

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<p><b>POL17.</b> Each SPCC Plan and any amendments must be certified by a professional engineer and the plan and each amendment must be prepared according to sound engineering practices (40 CFR 112.3(d) and 112.5(c)).</p>	<p>Verify that the SPCC Plan has been certified.(1)(2)</p> <p>(NOTE: Installations are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the installation, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:               <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met:               <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the installation is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the installation is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L] (40 CFR 112.1(d)(2)).)</li> </ul> </li> </ul>
<p><b>POL18.</b> A copy of the SPCC plan is required to be available at sites that are normally attended at least 8 h/day where there is a potential for a discharge (40 CFR 112.3(e)).</p>	<p>Verify that a copy of the SPCC is available at facilities that have personnel onsite at least 8 h a day.</p> <p>(NOTE: If personnel is not onsite for 8 h/day the plan may be kept at the nearest field office and the plan should be made available to the Regional Administrator.)</p> <p>(NOTE: Installations are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the installation, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:               <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met:               <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the installation is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the installation is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L] (40 CFR 112.1(d)(2)).)</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.19.</b> Installations are required to develop and maintain a OHSPC Plan when there is a potential for discharge into the waters of the United States (AFR 19-8, para 3c(3)).</p> <p><b>DISCHARGES, SPILLS, AND RELEASES</b></p> <p><b>POL.20.</b> Discharges of oil into or upon navigable waters of the United States or adjoining shorelines, or into or upon the waters of the contiguous zone or into areas that may affect natural resources belonging to, or under the exclusive management authority of the United States must be reported (40 CFR 110.2 through 110.10).</p>	<p>(NOTE: The SPCC and OHSPC Plans may be combined into one plan.)</p> <p>Examine and review the OHSPC Plan for the following items: (1)</p> <ul style="list-style-type: none"> <li>- a list of all areas where hazardous substances are stored</li> <li>- one individual or department is designated to initiate the spill response</li> <li>- phone numbers of Federal, state, and local agencies that must be notified when a spill occurs</li> <li>- contacts for agencies that provide emergency advice and assistance (e.g., Chemical Transportation Emergency Center [CHEMTREC], 1-800-424-9300)</li> <li>- personnel decontamination procedures to be followed after the spill has been cleaned up.</li> </ul> <p>Verify that the OHSPC Plan is review by the EPC annually. (1)</p> <p>Conduct interviews with Base Fire Department to determine if spills have occurred. (6)</p> <p>(NOTE: Discharges of oil are defined as those which violate applicable water quality standards or cause a film or a sheen or discoloration of the surface of the water or adjoining shoreline or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shores.)</p> <p>Verify that the National Response Center (NRC) was notified as soon as possible after discovery of a discharge as defined in the above NOTE. (1)(2)</p> <p>(NOTE: If direct reporting to the NRC is not practicable, reports may be made to the Coast Guard or USEPA predesignated OSC.)</p> <p>Verify that washwater and sludges from tank cleaning are not discharged. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.21.</b> Installations with UST systems are required to contain and immediately cleanup a spill or overfills and report it to the implementing agency within 24 h in specific situations (40 CFR 280.53).</p>	<p>Determine if the installation has reported, contained, and cleaned up any and all spills or overfills which met the following criteria: (1)</p> <ul style="list-style-type: none"> <li>- spills or overfills of petroleum that resulted in a release to the environment of more than 25 gal [94.64 L] or that caused a sheen on nearby surface water</li> <li>- spills or overfills of hazardous substances that result in a release to the environment in excess of the reportable quantity (see Hazardous Waste Management).</li> </ul> <p>Determine if an investigation of the incident took place and what the investigation found by interviewing the EC. (1)</p>
<p><b>POL.22.</b> HQ USAF/CEV must be notified of releases (AFI 32-7044, para 2.8.3.2).</p>	<p>Verify that the installation has notified HQ USAF/CEV of a release. (1)(2)</p>
<p><b>POL.23.</b> Installations are not allowed to add dispersants or emulsifiers to oils that are discharged (40 CFR 110.8).</p>	<p>Verify that installations do not add dispersants or emulsifiers to discharges by checking oil/water separators and washracks. (1)(3)</p>
<p><b>POL.24.</b> Installations with a suspected release from a UST are required to perform specific activities (AFI 32-7044, para 2.8.1.1 and 2.8.1.2).</p>	<p>Verify that if the installation suspects a leaking UST, it performs a tightness test of the system. (2)(3)(4)</p> <p>Verify that if there is a suspected release because of environmental contamination but a leak is not detected, a site check is performed by sampling and measuring for contamination at the UST site. (2)(3)(4)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.25.</b> Installations with a confirmed release from petroleum USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements, are required to perform specific initial response actions within 24 h of a release (40 CFR 280.60 and 280.61).</p>	<p>Verify that installation personnel are aware of the following initial response actions: (1)(3)(4)</p> <ul style="list-style-type: none"> <li>- the release is reported</li> <li>- immediate action is taken to prevent further release of the regulated substance into the environment</li> <li>- fire, explosion, and vapor hazards are identified and mitigated.</li> </ul>
<p><b>POL.26.</b> Installations with a confirmed release from petroleum USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements, are required to perform specific initial abatement measures and site checks unless directed to do otherwise by the implementing agency (40 CFR 280.60 and 280.62).</p>	<p>Verify that the following actions are performed: (1)(3)(4)</p> <ul style="list-style-type: none"> <li>- as much of the substance as is possible is removed from the UST system</li> <li>- visual inspection of aboveground releases or exposed belowground releases is done and further migration of the released substance into surrounding soils and groundwaters is prevented</li> <li>- monitoring and mitigation of any fire and safety hazards caused by vapors or free product is done</li> <li>- hazards from contaminated soils that are excavated or exposed are remedied</li> <li>- measurements are done for the presence of a release where the contamination is most likely to be present unless the presence and source of the release has previously been confirmed</li> <li>- an investigation is done for the presence of free product and the removal of free product is done as soon as possible.</li> </ul> <p>Verify that within 20 days after release confirmation a report is submitted to the implementing agency summarizing the initial abatement measures and site checks and the resulting information and data collected. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.27.</b> Installations with a confirmed release from petroleum USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements, are required to assemble information about the site and nature of the release unless exempted by the implementing agency (40 CFR 280.60 and 280.63).</p>	<p>Verify that the following information is collected: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> <li>- data from available sources or site investigations concerning surrounding population, water quality, use and approximate locations of wells potentially affected, subsurface soil conditions, locations of subsurface sewers, climatological conditions, and land use</li> <li>- data on the nature and estimated quantities of the release</li> <li>- results of site check</li> <li>- results of free product investigation.</li> </ul> <p>Verify that within 45 days of the release confirmation this information is submitted to the implementing agency in a manner that demonstrates the applicability and technical adequacy or according to a format required by the implementing agency. (1)</p>
<p><b>POL.28.</b> Installations with a confirmed release from petroleum USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements, where site investigations have indicated free product must, to the maximum extent possible as required by the implementing agency, remove the free product (40 CFR 280.60 and 280.64).</p>	<p>Determine if there are release sites at the installation where free product has been confirmed. (1)(3)(4)(6)</p> <p>Verify that free product removal is done so that the spread of contamination is minimized. (1)(3)(4)</p> <p>Verify that, unless exempted by the implementing agency, within 45 days after confirming a release, a free product removal report is submitted to the implementing agency that includes the following: (1)(3)(4)</p> <ul style="list-style-type: none"> <li>- the name of the person responsible for implementing the free product removal system</li> <li>- the estimated quantity, type, and thickness of free product observed or measured</li> <li>- the type of free product recovery system used</li> <li>- whether there will be any onsite or offsite discharges during the recovery operation and where this discharge will be located</li> <li>- the type of treatment used for any discharge</li> <li>- the steps taken to obtain any required permits</li> <li>- the disposition of the recovered free product.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.29.</b> Installations with a confirmed release from petroleum USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements, are required to perform an investigation for soil and groundwater contamination (40 CFR 280.60 and 280.65).</p>	<p>Verify that an investigation of the release, the release site, and possibly affected surrounding areas has been done and identified if any of the following conditions exists: (1)(3)(4)</p> <ul style="list-style-type: none"> <li>- evidence that groundwater wells have been affected</li> <li>- free product is evident</li> <li>- evidence that contaminated soil is in contact with groundwater.</li> </ul> <p>Verify that the results of the investigation are submitted to the implementing agency according to a time schedule defined by the implementing agency. (1)(3)(4)</p>
<p><b>POL CONTAINMENT FACILITIES</b></p> <p><b>POL.30.</b> Appropriate containment, diversionary structures, and cleanup equipment to prevent discharged petroleum products from reaching a navigable water course is required to be readily available on the installation (40 CFR 112.7(c)).</p>	<p>Determine that one of the following prevention systems or an equivalent is used: (1)(2)(3)(6)</p> <ul style="list-style-type: none"> <li>- absorbant material</li> <li>- dikes, berms, or retaining walls sufficiently impervious to contain spilled oil, such as:             <ul style="list-style-type: none"> <li>- sand bags, temporary curbing devices</li> <li>- culverting gutters, or other drainage systems</li> </ul> </li> <li>- weirs, booms, or other barriers</li> <li>- spill diversion ponds</li> <li>- retention ponds.</li> </ul> <p>Determine the following for prevention systems in petroleum storage areas: (1)(3)(6)</p> <ul style="list-style-type: none"> <li>- adequacy of material types and quantities</li> <li>- accessibility of storage location</li> <li>- condition of equipment.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.32. (continued)</b></p> <p><b>POL.33.</b> ASTs are required to be provided with drainage or diking to prevent any accidental discharge from endangering adjoining property or reaching waterways (AFI 32-7044, para 3.3.3).</p> <p><b>POL.34.</b> Dikes should be inspected daily by Base Fuels Management (TO 37-1-1).</p> <p><b>POL.35.</b> Drainage of rainwater from diked areas must be controlled by a valve that is closed when not in active use and attended when open (40 CFR 112.7(e)(1) and 112.7(e)(2)).</p>	<p>- both of the following criteria are met:</p> <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the installation is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the installation is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L] (40 CFR 112.1(d)(2)).</li> </ul> <p>Verify that ASTs on the installation are provided with drainage or diking to prevent any accidental discharge from endangering adjoining property or reaching waterways. (1)(3)(4)</p> <p>Examine AFTO Form 39 records to verify that dikes have been inspected daily. (3)</p> <p>Verify that any deficiencies noted on AFTO Form 39 have been corrected. (2)(4)</p> <p>(NOTE: Refer to AFM 85-16, para 2-10; and TO 37-1-1 for technical guidance.)</p> <p>Verify that valves are closed and locked when not in use by inspecting drainage valves. (3)</p> <p>Verify that drainage valves are attended when open by interviewing personnel. (3)</p> <p>Verify that operating personnel understand the meaning of a harmful discharge as described in 40 CFR 110.6. (1)(3)</p> <p>Determine if drainage water has been inspected to determine if it would represent a harmful discharge by reviewing records. (1)(5)</p> <p>Drainage water that is determined to contain petroleum products in harmful quantities must be treated prior to discharge to meet applicable water quality standards (40 CFR 112.7(e)(2) and 112.7(e)(2)).</p> <p>(NOTE: Refer to TO 42B-1-23, AFM 88-15, and AFM 85-16 for technical guidance.)</p> <p>(NOTE: Drainage water containing petroleum products may meet the definition of a hazardous waste and must be treated as such.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>POL.35. (continued)</b>	<p>Verify through interview and records inspection that discharges containing harmful quantities of petroleum products were properly treated, recovered, and disposed. Test records should be maintained by the BEE; AFTO Form 39 should indicate which discharges require testing. (1)(4)(5)</p> <p>Determine locations of oil and water separators and effectiveness of service, cleaning, and maintenance to ensure proper operation by interviewing base personnel. Inspect a sample of the separator. (1)(2)(7)</p>
<p><b>POL.36.</b> Aboveground storage tanks are required to go through periodic integrity testing (40 CFR 112.7(e)(2)(vi)).</p>	<p>Verify that periodic leak tests have been conducted by inspecting AFTO Form 39. (3)</p> <p>(NOTE: Periodic testing should take tank design into account and involve such techniques as hydrostatic testing, visual inspection, or a system of non-destructive shell thickness testing.)</p> <p>(NOTE: TO 37-1-1 states that the leak testing frequency will be set by the BCE.)</p> <p>(NOTE: A decrease in converted fuel volume equal to or greater than 1/4 inch constitutes a suspected leak.)</p> <p>Verify that leaking tanks have been repaired or replaced. (2)(4)</p>
<p><b>POL.37.</b> A product recovery system should be installed at the tank water drainoff valve for tanks storing aviation fuels (MP).</p>	<p>(NOTE: This MP is based on guidance given in AFM 88-15.)</p> <p>Verify that product recovery systems are in place and operating correctly by inspecting aviation fuel tanks. (3)(4)</p>
<p><b>POL.38.</b> Federal regulations do not require product recovery systems for ground use petroleum products; however, state and local regulations may require such systems; inspect to verify that required operable systems are in place. Inspections are required to be done of the Fuels Laboratory (AFR 144-1, para 8-11).</p>	<p>Determine if the installation operated a Fuels Laboratory. (3)</p> <p>Verify that the laboratory undergoes quarterly inspections of its equipment and procedures by Quality Control and Inspection (QC&amp;I) personnel by reviewing the written assessment results. (3)</p> <p>Verify that the laboratory undergoes at least five spot checks each week by the QC&amp;I or the Quality Assurance Evaluator (QAE). (3)</p> <p>(NOTE: Installations with less than 20 full-time fuels specialists may conduct as few as two spot checks per week.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.39.</b> The Base Safety Officer is required to conduct annual inspections of all Air Force facilities (AFR 127-2, para 6-2).</p> <p><b>PIPELINES</b></p> <p><b>POL.40.</b> Air Force operated offsite pipelines should be inspected at least once per week by air patrol, and once a year by line walker or vehicle patrol (MP).</p> <p><b>POL.41.</b> Buried piping at a transfer operation, pumping and in-plant operation is required to have a protective wrapping and coating and is required to be cathodically protected if soil conditions warrant (40 CFR 112.7(e)(3)(i)).</p>	<p>Verify that annual inspection are being done of POL storage areas by reviewing the annual inspection report. (1)</p> <p>Verify that noted deficiencies in the report have been corrected. (1)</p> <p>(NOTE: This MP is based on guidance found in AFM 85-16, Chapter 8.)</p> <p>Verify that weekly inspections have been performed by inspecting records. (4)</p> <p>Verify through interview and records search that any detected leaks were reported and leaking pipes repaired or replaced. (4)</p> <p>Examine records and interview to confirm that buried fuel piping is properly protected from corrosion. (1)(4)(10)</p> <p>(NOTE: Refer to AFM 85-5 and ETL 91-6 for guidance.)</p> <p>Verify that if cathodic protection is used the methods are appropriate and correctly applied. (1)(4)(10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.42.</b> All Air Force operated above and underground fuel piping systems at transfer operations, pumping and in-plant processing operations are required to be regularly examined and any suspected leaks investigated immediately and are required to be pressure tested once per year; any suspected leaks should be investigated immediately to include pressure testing and excavation. In addition, the pipeline should be walked twice a year (40 CFR 112.7(e)(3) and AFM 85-16).</p>	<p>Verify that pressure tests have been conducted as required. Check under remarks Section of AF Form 172 if the testing pressure was maintained during the 2 h period. (4)</p> <p>Determine if confirmed leaks have been reported and leaking pipes repaired or replaced. (2)(4)</p> <p>Determine if pipelines are walked at least twice a year and any suspicious circumstances lead to immediate investigation to include pressure testing of the line and excavation if soil conditions permit. (4)</p>
<p><b>POL.43.</b> All underground aviation fuel transfer pipelines should be subject to a hydrostatic pressure test on a 5-yr reoccurring basis (MP).</p>	<p>(NOTE: This MP is based on guidance outlined in AFM 85-16, Chapter 8).</p> <p>Verify that hydrostatic pressure tests were conducted as required by reviewing attachments to AF Form 172 and interviewing LFM personnel. (4)</p> <p>Verify that detected leaks were corrected through repair or replacement by inspecting test results. (2)(4)</p> <p>Determine if 150 percent of normal pressure was maintained during the 4-h test period by reviewing the Remarks section of AF Form 172. (2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.44.</b> Installations with onshore oil pipelines that, because of location, could reasonably be expected to cause substantial harm, or significant and substantial harm to the environment by discharging oil into or on any navigable waters of the United States or adjoining shorelines are required to prepare a response plan (49 CFR 194.3 and 194.101 through 194.107).</p>	<p>Verify that the response plan includes: (2)(4)</p> <ul style="list-style-type: none"> <li>- a statement indicating which sections in a response zone can be expected to cause significant and substantial harm to the environment if there is a discharge of oil into or on the navigable water or adjoining shorelines</li> <li>- indications of the worst case discharge</li> <li>- immediate notification procedures</li> <li>- spill detection and mitigation procedures</li> <li>- the name address and phone number of an oil spill response organization</li> <li>- response activities and response resources</li> <li>- training procedures</li> <li>- equipment testing</li> <li>- schedules for drills</li> <li>- plan updating procedures</li> <li>- an appendix for each response zone indicating all the above general information in a way that is tailored to that response zone.</li> </ul> <p>Verify that the response plan is in English and if necessary, any other language understood by personnel responsible for carrying out the plan. (2)(4)</p> <p>(NOTE: Significant and substantial harm can be expected if the line is greater than 6 5/8 in. [16.83 cm] in outside nominal diameter, greater than 10 mi [16.09 km] in length and the line section:</p> <ul style="list-style-type: none"> <li>- has experienced a release greater than 1000 barrels (bbl) [158,987.3 L] in the previous 5 yr</li> <li>- has experienced two or more reportable releases in the previous 5 yr</li> <li>- contains any electric resistance welded pipe, manufactured prior to 1970, operated at maximum operating pressure that corresponds to a stress level greater than 50 percent of the specified minimum yield strength of the pipe</li> <li>- is located within a 5-mi [8.05 km] radius of potentially affected public drinking water intakes and could reasonably be expected to reach the intake</li> <li>- is located within 1 mi [1.61 km] radius of potentially affected environmentally sensitive areas, and could reasonably be expected to reach these areas.)</li> </ul> <p>(NOTE: The requirement to submit a response plan is effective 18 February 1993. After 18 August 1993, the onshore pipeline must be operated according to the details outlined in the response plan.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.46.</b> If RSPA does not approve a response plan for a pipeline identified as expected to cause significant and substantial harm to the environment, the operator must submit certification to the RSPA by 18 July 1993 that the operator has obtained, through contract or other means, the necessary personnel and equipment to respond to a worst case discharge or a substantial threat of a discharge (49 CFR 194.119(e)).</p> <p><b>POL.47.</b> Copies of the response plan are required to be kept at specific locations (49 CFR 194.111).</p> <p><b>POL.48.</b> Training is required for the implementation of the response plan (49 CFR 194.117).</p>	<p>Determine if the installation has an approved response plan. (1)(2)</p> <p>Verify that if there is not an approved response plan, the necessary certification has been submitted. (1)(2)</p> <p>Verify that a copy of the complete response plan is at the operators headquarters and a copy is provided to each responsible individual. (1)(2)</p> <p>Verify that a copy of the core portion of the plan and relevant response zone appendices for each line section whose pressure may be affected by the operation of a particular pump station is provided at the pump station. (1)(2)</p> <p>Verify that a copy of the core portion of the plan and relevant response zone appendices is kept at locations where response activities might be conducted. (1)(2)</p> <p>Verify that training is conducted such that all personnel know: (1)(2)</p> <ul style="list-style-type: none"> <li>- their responsibilities under the plan</li> <li>- the names and addresses and procedures for contacting the operator on a 24-h basis and an qualified individual.</li> </ul> <p>Verify that reporting personnel know: (1)(2)</p> <ul style="list-style-type: none"> <li>- the content of the information summary</li> <li>- the toll free number of the NRC</li> <li>- the notification process.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.48. (continued)</b></p>	<p>Verify that personnel engaged in response activities know: (1)(2)</p> <ul style="list-style-type: none"> <li>- the characteristics and hazards of oil discharged</li> <li>- the conditions that are likely to worsen emergencies and appropriate corrective actions</li> <li>- the steps needed to control any accidental discharge of oil and to minimize the potential for fire, explosion, toxicity, or environmental damage</li> <li>- the proper firefighting procedures and use of equipment, fire suits and breathing apparatus.</li> </ul> <p>Verify that training records exist for each individual that has been trained, specifically: (1)(2)</p> <ul style="list-style-type: none"> <li>- records for operator personnel are at the operators headquarters</li> <li>- records for personnel engaged in response are maintained as determined by the operator.</li> </ul> <p>(NOTE: This training does not take the place of emergency response training requirements as found in 29 CFR 1910.120.)</p>
<p><b>POL.49.</b> Pipeline response plans are required to be reviewed every 3 yr from the date of submission and modified to address new or different operating conditions or information (49 CFR 194.121).</p>	<p>Verify that the plan is reviewed every 3 yr. (1)(2)</p>
<p><b>ORGANIZATIONAL FUEL TANKS</b></p>	
<p><b>POL.50.</b> All organizational fuel tanks are required to meet specific standards and following specified operating procedures (AFR 144-16, para 3d, 8, 9, 11, and 14).</p>	<p>Verify that the BFMO has a listing of all organizational fuel tanks supported. (3)</p> <p>Verify that organizational fuel tanks are marked to indicate NO SMOKING. (3)</p> <p>Verify that organizational fuel tanks over 660 gal [2498.37 L] are diked. (3)</p> <p>Verify that all issue tanks are equipped with a calibrated dispensing meter. (3)</p> <p>Verify that all organizational fuel tank meters are calibrated annually, after repairs, and when accuracy is in doubt. (3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.54.</b> UST systems installed after 22 December 1988 must be constructed in such a manner that they will remain structurally sound for their operating life (40 CFR 280.20(a) and 280.20(b)).</p>	<p>Verify that USTs conform to industry standards by reviewing records. (3)(4)(5)</p> <p>Verify that USTs meet the following: (3)(4)(5)</p> <ul style="list-style-type: none"> <li>- they have leak/spill prevention protection</li> <li>- the tank is constructed of one of the following materials:               <ul style="list-style-type: none"> <li>- fiberglass-reinforced plastic</li> <li>- steel which has one of the following types of cathodic protection:                   <ul style="list-style-type: none"> <li>- coated with a suitable dielectric material</li> <li>- field installed cathodic protection (expert installed), and</li> <li>- impressed current systems which allow determination of current operating status</li> </ul> </li> <li>- steel fiberglass reinforced plastic composite</li> <li>- metal without additional corrosion protection provided that:                   <ul style="list-style-type: none"> <li>- the site has been determined not to cause corrosion to the tank by a corrosion expert</li> <li>- records are maintained for the life of the tank that it is in a corrosion free environment</li> </ul> </li> </ul> </li> <li>- construction is in a manner that is deemed to prevent release of the petroleum substance.</li> </ul> <p>(NOTE: Piping must also meet these criteria with the exception of not being constructed of steel fiberglass reinforced plastic composite.)</p>
<p><b>POL.55.</b> Installation of UST systems must be done by a certified installer and according to standard practices (40 CFR 280.20(d) and 280.20(e)).</p>	<p>Determine if new UST systems have been properly installed by reviewing records for certification. (3)(4)(5)</p> <p>Verify that if the installation does its' own installation of USTs, the installation is done according to standard practices. (3)(4)(5)</p> <p>Verify that the installer was certified by manufacturer or implementing agencies. (3)(4)(5)</p>
<p><b>POL.56.</b> Installations are required to use UST systems made of or lined with materials compatible with the substance stored (40 CFR 280.32).</p>	<p>Verify that the substances stored in UST systems are compatible with the system. (3)(4)(5)</p> <p>Determine which USTs are being used to store a substance other than that for which it was originally intended. (3)(4)(5)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>METALLIC USTs</b></p> <p><b>POL.57.</b> Buried metallic storage tanks installed after 1973 must be protected from corrosion by coatings, cathodic protection or other effective methods (40 CFR 112.7(e)(2)(iv)).</p> <p><b>HEATING OIL USTs</b></p> <p><b>POL.58.</b> USTs used to store heating oil for consumptive use on the premise should be stored in tanks that meet the requirements outlined in 40 CFR 280 (MP).</p> <p><b>UST FILLING</b></p> <p><b>POL.59.</b> The filling of a UST must include the prevention of overfilling and spilling of the substance (40 CFR 280.30(a)).</p>	<p>Verify that new underground storage tanks are appropriately protected from corrosion by inspecting records and interviewing personnel. (1)(3)(4)(5)</p> <p>Verify that the tanks are pressure tested regularly. (1)(3)(4)(5)</p> <p>(NOTE: Installations are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the installation, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT.</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the installation is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the installation is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L](40 CFR 112.1(d)(2).)</li> </ul> </li> </ul> <p>Determine if the installation has tanks used for storing heating oil for consumptive use on the premise. (1)(2)(4)</p> <p>Verify that these tanks meet release detection requirements, spill and overfill protection requirements, corrosion control requirements, and release reporting requirements applicable to tanks that meet the definition of UST. (1)(2)(4)</p> <p>(NOTE: Under 40 CFR 280.12 USTs storing heating oil for consumptive use on the premises are exempted from the regulatory definition of UST.)</p> <p>Determine if there is a problem with overfilling of USTs or spills by observing the filling operations, reviewing records, and checking the ground around the fill-lines for visible or odorous indications of contamination. (1)(2)(4)</p> <p>Determine if the level of the UST is checked before a transfer is made and that the volume available in the tank is greater than the volume of the product to be transferred. (1)(2)(4)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.60.</b> Installations with UST systems are required to contain and immediately cleanup a spill or overflow and report it to the implementing agency within 24 h in specific situations (40 CFR 280.30(b) and 280.53).</p>	<p>Verify that fill-lines are capped and locked. (1)(2)(4)</p> <p>Verify that the transfer is monitored constantly. (1)(2)(4)</p> <p>Determine if the installation has reported, contained, and cleaned up any and all spills or overfills of hazardous substances that result in a release to the environment in excess of the reportable quantity (see the Tables in Section 2, Hazardous Materials Management). (1)(2)(4)</p> <p>Verify that the installation has contained and immediately cleaned-up a spill or overflow of petroleum that is less than 25 gal [94.64 L]. (1)(2)(4)</p> <p>Verify that if less than reportable quantities of spills and overfills cannot be cleaned up within 24 h. or another reasonable time period established by the implementing agency, the implementing agency is notified. (1)(2)(4)</p>
<p><b>CORROSION PROTECTION AND REPAIRS</b></p> <p><b>POL.61.</b> UST systems with corrosion protection must meet specific requirements (40 CFR 280.31).</p>	<p>Determine which UST systems have corrosion protection. (1)(3)(4)</p> <p>Verify that the corrosion protection systems operate continuously to provide corrosion protection to the metal components that routinely contained petroleum substances and are in contact with the ground. (1)(3)(4)</p> <p>Verify that all cathodic protection systems are tested within 6 mo after installation and every 3 yr thereafter. (1)(3)(4)</p> <p>Verify that UST systems with impressed current cathodic protection are inspected every 60 days. (1)(3)(4)</p> <p>Verify that inspection records are maintained of the last three inspections for systems with impressed current cathodic protection and of the last two inspections for all other cathodic protection systems. (1)(3)(4)</p> <p>Verify that inspections are carried out by a qualified cathodic protection tester. (1)(3)(4)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.62.</b> Repairs to USTs must be performed according to industry code (40 CFR 280.33, 280.43, and 280.44).</p>	<p>Determine if there have been any repairs by reviewing the records and interviewing personnel. (1)(3)</p> <p>Determine who does repairs to USTs and that the following procedures are used to repair USTs: (1)(3)</p> <ul style="list-style-type: none"> <li>- fiberglass reinforced tanks are repaired by the manufacturers authorized representative or according to industry standards</li> <li>- metal pipe fittings and sections that have leaked due to corrosion are replaced whereas fiberglass may be repaired according to manufacturers specifications.</li> </ul> <p>Verify that tanks and piping that have been replaced or repaired are tested for tightness within 30 days. (1)(3)</p> <p>(NOTE: Tanks and piping need not be tested if:</p> <ul style="list-style-type: none"> <li>- repairs which are internally inspected</li> <li>- the repaired portion is already monitored monthly</li> <li>- an equally protective test is used.)</li> </ul> <p>Verify that within 6 mo of repair, tanks with cathodic protection systems are tested as follows: (1)(3)</p> <ul style="list-style-type: none"> <li>- every 3 yr thereafter for all cathodic protection systems</li> <li>- every 60 days for impressed current cathodic protection systems.</li> </ul> <p>Verify that records of repairs are maintained for the life of the tank. (1)(3)</p>
<p><b>UST RELEASE DETECTION</b></p> <p><b>POL.63.</b> Installations with new and existing underground storage tanks are required to provide a method, or combination of methods of release detection (40 CFR 280.10(d), 280.40, and 280.45).</p>	<p>Verify that the installed release detection system can detect a release from any portion of the tank and the connected underground piping. (1)(3)(4)(5)</p> <p>Verify that the installation has a program in place (or at least in the proposed stage) for provisions of release detection. (1)(3)(4)(5)</p> <p>Verify that the appropriate schedule is being complied with (see Table 7-2). (1)(3)(4)(5)</p> <p>(NOTE: Any pressurized delivery lines must be retrofitted by 22 December 1990.)</p> <p>(NOTE: Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs which store fuel solely for use by emergency power generators.)</p> <p>(NOTE: See Table 7-3 for information on release detection methodologies.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.65.</b> UST systems containing fuel used solely for emergency generators should meet specific release detection system requirements (MP).</p>	<p>Verify that tanks are monitored every 30 days using the method in Table 7-3 except for: (1)(3)</p> <ul style="list-style-type: none"> <li>- UST systems which meet performance standards for new or upgraded systems and monthly inventory requirements may use tank tightness testing at least every 5 yr until 22 December 1998 or until 10 yr after the tank is upgraded or installed</li> <li>- UST systems which do not meet performance standards for new or upgraded systems, may use monthly inventory controls and annual tank tightness testing until 22 December 1998, at which time the tank must be upgraded or permanently closed</li> <li>- tanks which hold less than 550 gal [2081.98 L] may use weekly tank gauging.</li> </ul> <p>Verify that underground piping which routinely contains a petroleum substance has the following release detection done according to the methods in Table 7-3: (1)(3)</p> <ul style="list-style-type: none"> <li>- pressurized piping               <ul style="list-style-type: none"> <li>- equipped with automatic line leak detector</li> <li>- annual tightness testing or monthly monitoring</li> </ul> </li> <li>- suction piping               <ul style="list-style-type: none"> <li>- line tightness testing every 3 yr or monthly monitoring</li> <li>- no release detection system is needed for suction piping which is below grade and:                   <ul style="list-style-type: none"> <li>- operates at less than atmospheric pressure</li> <li>- is sloped so that contents of pipe will roll back to tank when suction is released</li> </ul> </li> <li>- only one check valve is included in each suction line                   <ul style="list-style-type: none"> <li>- check valve is located directly below and as close as practical to the suction pump.</li> </ul> </li> </ul> </li> </ul> <p>(NOTE: Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs which store fuel solely for use by emergency power generators.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>UST RELEASES</b></p> <p><b>POL.66.</b> Installations with UST systems are required to report suspected releases under specific conditions (40 CFR 280.50).</p> <p><b>POL.67.</b> Installations must investigate and confirm all suspected releases of a petroleum substance requiring reporting within 7 days unless a corrective action is started immediately as detailed in 40 CFR 280.60 through 280.67 (40 CFR 280.52).</p> <p><b>DEFERRED UST SYSTEMS</b></p> <p><b>POL.68.</b> Deferred UST systems (see definition) are required to meet specific standards (40 CFR 280.10(c) and 280.11).</p>	<p>Determine if the installation has reported any and all releases which met the following criteria: (1)(3)(4)</p> <ul style="list-style-type: none"> <li>- released petroleum substances were found at the UST site or in the surrounding area (such as the presence of free product or vapors in soils, basements, sewer and utility lines, and nearby surface waters</li> <li>- unusual operating conditions were observed such as the erratic behavior of dispensing equipment or a sudden loss of product unless it is determined the problem lies in the equipment but it is not leaking and is immediately repaired or replaced</li> <li>- monitoring results indicate a possible release.</li> </ul> <p>Verify that the implementing agency was notified within 24 h (or time period specified by the implementing agency) of the release. (1)(3)(4)</p> <p>Verify that tightness testing is done within 7 days of a suspected release to determine whether a leak is in the tank or the delivery piping. (1)(3)(4)</p> <p>Verify that if environmental contamination is the basis for suspecting a leak and the tightness test does not indicate that a leak exists, a site check is done that measure for the presence of a release in the areas where contamination is most likely to be present. (1)(3)(4)</p> <p>(NOTE: If the results indicate that a leak has occurred, corrective actions must be started.)</p> <p>(NOTE: If the tightness test does not indicate a leak and environmental contamination is not the basis for suspecting a release, no further investigation is needed.)</p> <p>Verify that deferred UST systems (whether single or double-walled) are not installed to store petroleum substances unless: (3)(4)(5)</p> <ul style="list-style-type: none"> <li>- releases due to corrosion or structural failure will be prevented for the operational life of the system</li> <li>- it is cathodically protected against corrosion, constructed of noncorrodible materials, steel clad with a noncorrodible material, or designed to prevent release</li> <li>- it is constructed or lined with material that is compatible with the stored substance.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.68. (continued)</b></p> <p><b>UST DOCUMENTATION</b></p> <p><b>POL.69.</b> Installations with USTs are required to meet specific reporting requirements (40 CFR 280.34(a)).</p> <p><b>POL.70.</b> Installations with USTs are required to meet specific record keeping requirements (40 CFR 280.34(b), 280.34 (c), and 280.74).</p> <p><b>POL.71.</b> Installations are required to have a UST inventory readily available on WIMS-ES (AFI 32-7044, para 2.10.1).</p>	<p>Verify that deferred systems meet the standards concerning release response and action for USTs containing petroleum found in 40 CFR 280.60 through 280.67. (3)(4)(5)</p> <p>Verify that the installation has submitted the following when applicable: (1)(2)(3)</p> <ul style="list-style-type: none"> <li>- notifications of new USTs</li> <li>- release reports</li> <li>- planned or complete corrective actions</li> <li>- notice of closure or change-in-service.</li> </ul> <p>Verify that records are kept of the following: (1)(2)(3)</p> <ul style="list-style-type: none"> <li>- a corrosion expert's analysis of site corrosion potential if corrosion protection equipment is not used</li> <li>- documentation of operation of corrosion protection equipment</li> <li>- documentation of repairs</li> <li>- closure records</li> <li>- results of any site investigations.</li> </ul> <p>Verify that records are available at one of the following: (1)(2)(3)</p> <ul style="list-style-type: none"> <li>- at the UST site and immediately available for inspection</li> <li>- at a readily available alternative site and provided for inspection.</li> </ul> <p>Verify that the installation is maintaining an inventory of USTs. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.72.</b> The BFMO is required to maintain inventory control records and keep them available for inception (AFI 32-7044, para 2.10.2).</p> <p><b>CHANGES- IN- SERVICE OR CLOSURE</b></p> <p><b>POL.73.</b> USTs which are put out of service temporarily, must have continued maintenance (40 CFR 280.70).</p>	<p>Verify that the BFMO is maintaining the inventory control records. (3)</p> <p>Determine if the installation has any out-of-service USTs. (1)(2)(3)</p> <p>Verify that proper maintenance is being performed for the following: (1)(2)(3)</p> <ul style="list-style-type: none"> <li>- corrosion protection</li> <li>- release detection.</li> </ul> <p>Verify that if the UST has been out-of-service for near or over 1 yr plans have been made for permanent closure. (1)(2)(3)</p> <p>(NOTE: If the UST is empty, release detection is not required.)</p> <p>(NOTE: An empty UST is one which has no more than 2.5 cm (1 in.) of residue or less than 0.3 percent by weight of total capacity of the UST system.)</p> <p>Verify that if a UST system is closed for 3 mo or more that the vent lines are open and functioning and all other lines, pumps, manways, and ancillary equipment is capped and secured. (1)(2)(3)</p> <p>Verify that if the UST has been out of service for more than 12 mo and does not meet the standards for new or upgraded USTs, it is permanently closed unless the implementing agency has provided an extension. (1)(2)(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.74.</b> Notification must be given to the implementing agency (USEPA) for any closure or change in service 30 days in advance or within a reasonable time frame as determined by the implementing agency (40 CFR 280.71(a) and 280.71(b)).</p>	<p>Determine if the installation is planning to close of change any USTs. (1)(2)(3)</p> <p>Verify that notification of changes were given within 30 days. (1)(2)(3)</p> <p>UST closure must be done in one of the following methods: (1)(2)(3)</p> <ul style="list-style-type: none"> <li>- it is removed from ground</li> <li>- it is left in place with substance removed, and filled with an inert solid material and closing it to all future outside access.</li> </ul> <p>Determine if there are any closed USTs or USTs in the process of being closed at the installation. (1)(2)(3)</p> <p>Verify that tanks being permanently closed are emptied and cleaned by removing all liquids and accumulated sludges. (1)(2)(3)</p> <p>Determine if there are any possible abandoned USTs and if there are plans to close the UST off in an appropriate manner. (1)(2)(3)</p> <p>Determine if a site assessment was made to ensure that no releases to the environment have occurred by reviewing records. (1)(2)(3)</p>
<p><b>POL.75.</b> Prior to a change-in-service, tanks must be emptied and cleaned and a site assessment conducted (40 CFR 280.71(c)).</p>	<p>Determine if there are any tanks which the installation has continued to use to store a nonhazardous substance (a change-in-service). (1)(2)(3)</p> <p>Verify that prior to the change, the tank was emptied and cleaned. (1)(2)(3)</p> <p>Verify that prior to the change a site assessment was done. (1)(2)(3)</p>
<p><b>POL.76.</b> Prior to permanent closure or change-in-service is completed measurements must be made for the presence of a release where contamination is most likely to be present at the site (40 CFR 280.72).</p>	<p>Verify that measurements for the presence of a release have been done. (1)(2)(3)</p> <p>(NOTE: These requirements are met if other approved leak detection methods have been used.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.77.</b> When directed by the implementing agency, installations with UST systems closed prior to 22 December 1988 must assess the excavation zone and close the UST according to current standards if releases from the UST may pose a current or potential threat to human health and the environment (40 CFR 280.73).</p>	<p>Determine if the installation has any USTs which were closed prior to 22 December 1988. (1)(2)(3)</p> <p>Verify that the excavation zone of these USTs has been assessed and clean-up done as needed. (1)(2)(3)</p>
<p><b>POL.78.</b> Excavation zone assessment records shall be maintained for 3 yr (40 CFR 280.74).</p>	<p>Verify that excavation zone assessment records are maintained for 3 yr in one of the following ways: (1)(2)(3)</p> <ul style="list-style-type: none"> <li>- by the installation</li> <li>- at the implementing agency if they cannot be maintained at the closed installation.</li> </ul>
<p><b>USED OIL</b></p> <p><b>POL.79.</b> Depending on the constituents of the used oil. (see Table 7-4), installations are required to handle used oil as a hazardous waste or according to specific used oil requirements (40 CFR 279.10).</p>	<p>Determine which types of the used oils listed in Table 7-4 are generated at the installation. (2)(3)(4)</p> <p>Verify that used oil is handled according to its classification as one of the following: (2)(3)(4)</p> <ul style="list-style-type: none"> <li>- a hazardous waste</li> <li>- used oil that falls under the requirements of 40 CFR 279 in checklist items POL.80 through POL.121</li> <li>- used oil that is not subject to the requirements of 40 CFR 279 and neither is it a hazardous waste unless testing indicate it does contain hazardous constituents.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>USED OIL GENERATORS</b></p> <p><b>POL.80.</b> Containers and tanks used to store used oil at used oil generators must be in good condition and not leaking (279.22(b)).</p> <p><b>POL.81.</b> Containers of used oil at used oil generators should be managed in accordance with good management practices (MP).</p> <p><b>POL.82.</b> Containers and ASTs used for storage and fill pipes for transferring used oil into USTs are required to be marked or labeled USED OIL (40 CFR 279.22(c)).</p>	<p>(NOTE: The requirements for used oil generators do not apply to the following:</p> <ul style="list-style-type: none"> <li>- household do-it-yourselfer used oil generators</li> <li>- vessels at sea or at port (in these cases generation occurs when it is transported ashore)</li> <li>- mixtures of used oil and diesel fuel mixed by the generators for use in the generators own vehicles</li> <li>- farmers who generate an average of 25 gal/mo [94.64 L] or less of used oil from vehicles or machinery used on the farm in a calendar year.)</li> </ul> <p>(NOTE: In relation to used oil coming ashore from vessels, the owner or operator of the vessel and the person removing or accepting used oil from the vessel are co-generators of the used oil and are both responsible for managing the waste as used oil once it is ashore.)</p> <p>Verify that containers and tanks are not leaking, bulging, rusting, damaged or dented. (2)(3)(4)</p> <p>Verify that used oil is transferred to a new container or managed in another appropriate manner when necessary. (2)(3)(4)</p> <p>Inspect containers and storage areas to determine the following: (2)(3)(4)</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- at least 3 ft of aisle space is provided between rows of containers.</li> </ul> <p>Verify that containers and ASTs and fill pipes for USTs are labeled or marked USED OIL. (2)(3)(4)</p> <p>(NOTE: USTS used to store used oil are required to meet the standards outlined in 40 CFR 280.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.83.</b> Used oil generators that detect a release (other than a UST release) after the effective date of the authorized used oil program for the state in which the release is located must meet specific requirements (40 CFR 279.22(d)).</p>	<p>Verify that when a release is detected the following is done: (2)(3)(4)</p> <ul style="list-style-type: none"> <li>- the release is stopped</li> <li>- the released used oil is contained</li> <li>- the released used oil is cleaned up and properly managed</li> <li>- any leaking used oil storage containers or tanks are repaired or replaced prior to returning them to service.</li> </ul>
<p><b>POL.84.</b> Generators are allowed to burn used oil in used oil-fired space heaters if specific parameters are met (40 CFR 279.23).</p>	<p>Determine if the installation operates any used oil-fired space heaters. (2)(3)(4)</p> <p>Verify that the following parameters are met: (2)(3)(4)</p> <ul style="list-style-type: none"> <li>- the heater burns only used oil that the installation generates or used oil received from household do-it-yourself used oil generators</li> <li>- the heater is designed to have a maximum capacity of not more than 0.5 million British thermal units (MBtu)/h</li> <li>- the combustion gases from the heater are vented to the ambient air.</li> </ul>
<p><b>POL.85.</b> Except in specific circumstances, used oil generators must ensure that their used oil is transported only by transporters who have USEPA identification number (40 CFR 279.24).</p>	<p>Determine if the installation is transporting used oil or contracting the transportation of used oil. (2)(3)(4)</p> <p>Verify that the transporter has an USEPA identification number except when: (2)(3)(4)</p> <ul style="list-style-type: none"> <li>- the generator does not transport more than 55 gal [208.20 L] at any time, the vehicle used is owned by the generator or an employee of the generator, and the used oil is going to a used oil collection center that is permitted</li> <li>- the generator is transporting the used oil to an aggregation point owned and/or operated by the same generator in a vehicle owned by the generator or an employee and no more than 55 gal [208.20 L] is transported</li> <li>- the used oil is reclaimed under a contractual agreement and the reclaimed oil is returned to the generator for use as lubricant, cutting oil, or coolant and the contract (or tolling agreement) contains the following: <ul style="list-style-type: none"> <li>- the type of used oil and frequency of shipments</li> <li>- that the vehicle used for transportation is owned by the used oil processor/refiner</li> <li>- that reclaimed oil will be returned to the generator.</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.86.</b> Used oil generators are not allowed to mix hazardous waste with used oil unless specific parameters are met (40 CFR 279.21(a)).</p> <p><b>USED OIL COLLECTION CENTERS AND AGGREGATION POINTS</b></p>	<p>Verify that the installation does not mix hazardous waste with used oil unless: (2)(3)(4)</p> <ul style="list-style-type: none"> <li>- the resulting mixture does not exhibit any characteristics of hazardous waste</li> <li>- the waste is hazardous solely because it exhibits the characteristic of ignitability and is not a listed hazardous waste.</li> </ul>
<p><b>POL.87.</b> Do-It-Yourselfer (DIY) used oil collection centers are required to meet the same standards as used oil generators (40 CFR 279.30).</p>	<p>Verify that DIY used oil collection centers such as the auto hobby shop meet the requirements outlined in the sections titled Used Oil Generators. (2)(3)(4)</p>
<p><b>POL.88.</b> Used oil collection centers are required to be licensed/permitted and operated according to specific standards (40 CFR 279.31).</p>	<p>Determine if the installation operates a used oil collection center. (2)(3)(4)</p> <p>Verify that the collection center meets the requirements for used oil generators outlined in the section titled Used Oil Generators. (2)(3)(4)</p> <p>Verify that the collection center is registered/licensed/permitted recognized by a state/county/municipal government to manage used oil. (2)(3)(4)</p>
<p><b>POL.89.</b> Used oil aggregation points are required to be operated according to the standards for used oil generators (40 CFR 279.32).</p>	<p>Verify that the used oil aggregation point is operated according to the standards outlined in the sections titled Used Oil Generators. (2)(3)(4)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>USED OIL TRANSPORTERS</b></p> <p><b>POL.90.</b> Transporters who put used oil in a truck that has previously transported hazardous waste without emptying and cleaning the truck are required to transport and handle the used oil as a hazardous waste (40 CFR 279.40(b) through 279.40(c)).</p> <p><b>POL.91.</b> Used oil transporters can consolidate or aggregate loads of used oil (40 CFR 279.41).</p> <p><b>POL.92.</b> Used oil transporters are required to have an USEPA identification number (40 CFR 279.42).</p>	<p>(NOTE: These requirements concerning transportation and transfer of used oil do not apply to the following:</p> <ul style="list-style-type: none"> <li>- onsite transportation</li> <li>- generators who transport shipments of used oil totaling 55 gal [208.20 L] or less from the generator to a used oil collection center</li> <li>- generators who transport shipments of used oil totaling 55 gal [208.20 L] or less from the generator to a used oil aggregation point owned by the generator</li> <li>- transportation of used oil generated by household do-it-yourselfers from the initial generator to a regulated generator, collection center, aggregation point, processor/refiner, or burner.)</li> </ul> <p>Verify that used oil that is contaminated with hazardous waste is transported as a hazardous waste. (1)(2)(3)(4)(5)</p> <p>(NOTE: Installations that transport used oil imported from abroad or exported outside of the United States must meet these requirements while in the boundaries of the United States.)</p> <p>Verify that transporters conduct only incidental processing operations such as settling and water separation unless they also comply with the requirements for processors and refiners. (1)(2)(3)(4)(5)</p> <p>Verify that if the installation is transporting used oil, it has an USEPA identification number. (1)(2)(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.93.</b> Transporters must meet specific requirements for deliveries and shipments of used oil (40 CFR 279.43(a) through 279.43(b)).</p>	<p>Verify that all used oil is delivered to: (1)(2)(3)(4)(5)</p> <ul style="list-style-type: none"> <li>- another used oil transporter if the transporter has an USEPA identification number</li> <li>- a used oil processing/re-refining facilities with an USEPA identification number</li> <li>- an off-specification used oil burner facility with an USEPA identification number</li> <li>- an on-specification used oil burner facility.</li> </ul> <p>Verify that DOT labeling, packaging, and placarding requirements are met. (1)(2)(3)</p>
<p><b>POL.94.</b> Transporters are required to take specific actions if there is a discharge of used oil during transportation (40 CFR 279.43(c)).</p>	<p>Verify that if there is a discharge the following are done: (1)(2)(3)</p> <ul style="list-style-type: none"> <li>- notification of authorities (NRC), if required</li> <li>- containment of the discharge</li> <li>- submit a written report to the DOT</li> <li>- cleanup.</li> </ul>
<p><b>POL.95.</b> Transporters are required to determine if the total halogen content of used oil being transported or stored at a transfer facility is above or below 1000 ppm (40 CFR 279.44).</p>	<p>Verify that the transporter determines the total halogen content of the used oil by one of the following methods: (1)(2)(3)</p> <ul style="list-style-type: none"> <li>- testing the used oil</li> <li>- applying knowledge of halogen content of the used oil in light of the materials or processes used.</li> </ul> <p>Verify that records of analyses are kept for 3 yr. (1)(2)(3)</p>
<p><b>POL.96.</b> Used oil transporters are required to keep records for used oil shipments and deliveries (40 CFR 279.46).</p>	<p>Verify that the following records are kept for each shipment accepted for transport: (1)(2)(3)</p> <ul style="list-style-type: none"> <li>- name and address of the generator, transporter, or processor/re-refiner who provided the used oil for transport</li> <li>- USEPA identification number</li> <li>- the quantity of oil accepted</li> <li>- the day of acceptance</li> <li>- signature of receipt.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>USED OIL BURNERS</b></p> <p><b>POL.99.</b> Off-specification used oil fuel may be burned for energy recovery in industrial furnaces and boilers (40 CFR 279.12(c), 279.60 (a), and 279.61(a)).</p> <p><b>POL.100.</b> Used oil burners are required to have an USEPA identification number (40 CFR 279.60(a) and 279.62).</p> <p><b>POL.101.</b> Used oil burners are required to determine if used oil is a hazardous waste (40 CFR 279.60(a) and 279.63).</p> <p><b>POL.102.</b> Used oil burners are required to store used oil in tanks and containers that meet specific requirements (40 CFR 279.60(a) and 279.64(a) through 279.64(f)).</p>	<p>Determine if the installation burns use oil fuel for the purpose of energy recovery. (3)(5)</p> <p>Verify that off-specification used oil fuel is only burned for energy recovery in one of the following: (3)(5)</p> <ul style="list-style-type: none"> <li>- an industrial furnace</li> <li>- a boiler that is identified as one of the following: <ul style="list-style-type: none"> <li>- industrial boilers that are located on the site of a facility engaged in a manufacturing process where substances are transformed into new products by mechanical or chemical processes</li> <li>- utility boilers used to produce electric power steam, heated or cooled air, or other gases or fluids for sale</li> <li>- used oil-fired space heaters</li> <li>- hazardous waste incinerators.</li> </ul> </li> </ul> <p>(NOTE: The following are exempt from meeting these requirements:  - the burning of used oil by a generator in an onsite space heater  - the burning of used oil by a processor/re-refiner for purposes of processing.)</p> <p>Verify that the installation has an USEPA identification number. (3)(5)</p> <p>(NOTE: The following are exempt from meeting these requirements:  - the burning of used oil by a generator in an onsite space heater  - the burning of used oil by a processor/re-refiner for purposes of processing.)</p> <p>Verify that the used oil is either tested or the used oil burner applies their knowledge of the halogen content of the used oil in light of the materials or processes used, or using information from another source. (3)(5)</p> <p>Verify that copies of analyses are maintained for 3 yr. (3)(5)</p> <p>Verify that the tanks and containers at used oil burners meet the requirements outlined in the section titled Used Oil Generators. (3)(5)</p> <p>Verify that containers and aboveground storage tanks used to store used oil have secondary containment that meets the following minimum requirements: (3)(5)</p> <ul style="list-style-type: none"> <li>- dikes, berms, or retaining walls</li> <li>- a floor that covers the entire area within the dikes, berms, or retaining walls</li> <li>- the system is impervious.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.105.</b> Before a burner can accept the first shipment of off-specification used oil fuel from a generator, transporter, or processor/re-refiner, the burner must provide a one time written notice (40 CFR 279.60(a) and 279.66).</p>	<p>Verify that the burner issued a notice to the USEPA stating the location and description of the activity and certifying that the used oil will only be burned in an industrial furnace or boiler. (3)(5)</p> <p>Verify that the certification is maintained for 3 yr from the date of the last shipment received. (3)(5)</p> <p>(NOTE: The following are exempt from meeting these requirements: - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.)</p>
<p><b>USED OIL MARKETING</b></p>	
<p><b>POL.106.</b> Used oil fuel marketers may only initiate a shipment of off-specification used oil to a used oil burner who has an USEPA identification number and burns the used oil in an industrial furnace or boiler (40 CFR 279.70(b) and 279.71).</p>	<p>Determine if the installation is marketing off-specification used fuel oil. (3)(4)(9)</p> <p>Verify that it is going to an appropriate used oil burner. (3)(4)(9)</p> <p>(NOTE: These requirements do not apply to the following: - persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification - used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their installation to a used oil burner.)</p>
<p><b>POL.107.</b> Generators, transporters, processor/re-refiners, or burners must determine if the fuel oil is off or on-specification (40 CFR 279.70(b) and 279.72).</p>	<p>Verify that a determination as to whether the used oil fuel is off or on-specification is made by analyses or obtaining copies of other analyses. (3)(4)(9)</p> <p>Verify that records of analyses are maintained for 3 yr. (3)(4)(9)</p> <p>(NOTE: These requirements do not apply to the following: - persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification - used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their installation to a used oil burner.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL.108.</b> Used oil fuel marketers are required to have a USEPA identification number (40 CFR 279.70(b) and 279.73).</p> <p><b>POL.109.</b> Any used oil marketer that directs a shipment of used oil to a burner is required to keep specific records (40 CFR 279.70(b) and 279.74).</p>	<p>Verify that the installation has a USEPA identification number if it is a used oil fuel marketer. (3)(4)(9)</p> <p>(NOTE: These requirements do not apply to the following:</p> <ul style="list-style-type: none"> <li>- persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification</li> <li>- used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their installation to a used oil burner.)</li> </ul> <p>Verify that records containing the following information are kept of each shipment of off-specification oil: (3)(4)(9)</p> <ul style="list-style-type: none"> <li>- the name and address of the transporter who delivers the used oil to the burner</li> <li>- the name and address of the burner who will receive the used oil</li> <li>- the USEPA identification number of the burner</li> <li>- the quantity of used oil shipped</li> <li>- the date of shipment.</li> </ul> <p>Verify that records containing the following information are kept of each shipment of on-specification oil: (3)(4)(9)</p> <ul style="list-style-type: none"> <li>- the name and address of the facility receiving the shipment</li> <li>- the quantity of used oil delivered</li> <li>- a cross-reference to the record of used oil analysis</li> <li>- the date of shipment.</li> </ul> <p>Verify that records are maintained for 3 yr. (3)(4)(9)</p> <p>(NOTE: These requirements do not apply to the following:</p> <ul style="list-style-type: none"> <li>- persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification</li> <li>- used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their installation to a used oil burner.)</li> </ul>

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**Table 7-1**  
**UST Applicability Guide**

<b>Type of UST</b>	<b>Applicable CFR Citation</b>	<b>Checklist #'s</b>
Underground Storage Tanks as defined in 40 CFR 280.12 (see definitions)	40 CFR 280	POL.25 - POL.29, POL.51 - POL.78
Excluded USTs (see definitions)	none	
Deferred USTs (see definitions)	40:280.11	POL.68
USTs storing fuel for emergency generators	40:280.20 through 280.22	POL.51 - POL.55
	280.30 through 280.34	POL.56, POL.59 - POL.62, POL.69, POL.70
	280.50 through 280.53	POL.60, POL.66 -
	280.60 through 280.67	POL.67
	280.70 through 280.74	POL.25 - POL.29 POL.70, POL.73 - POL.78



**Table 7-2**

**Schedule for Phase-in of Release Detection**

Year system was installed	Year when release detection is required (by 22 December of the year indicated)				
	1989	1990	1991	1992	1993
Before 1965 or date unknown.	RD	P			
1965-69		P/RD			
1970-74		P	RD		
1975-79		P		RD	
1980-88		P			RD

P = must begin release detection for all pressurized piping as defined in 280.41(b)(1).

RD = must begin release detection for tanks and suction piping.



**Table 7-3**

**Release Detection Requirements for USTs and Underground Piping  
(40 CFR 280.41 through 280.43)**

**A. UST Options (see NOTE for additional guidance)**

1. **Inventory control:** Product inventory control must be conducted monthly to detect a release of at least 1.0 percent of flow-through plus 130 gal on a monthly basis in the following manner:
  - i. inventory volume measurements for regulated substance inputs, withdrawals, and the amount still remaining in the tank are recorded each operating day
  - ii. the equipment used is capable of measuring the level of product over the full range of the tanks height to the nearest one-eighth of an inch
  - iii. the regulated substance inputs are reconciled with delivery receipts by measurements of the tank inventory volume before and after delivery
  - iv. deliveries made through a drop tube that extends to within one foot of the tank bottom
  - v. product dispensing is metered and recorded within the local standards of product withdrawn
  - vi. the measurement of any water level in the bottom of the tank is made to the nearest one-eighth of an inch at least once a month.
  
2. **Manual gauging:** Manual tank gauging must meet the following requirements:
  - i. tank liquid level measurements are taken at the beginning and end of a period of at least 36 h during which no liquid is added to or removed from the tank
  - ii. level measurements are based on an average of two consecutive stick readings at both the beginning and end of the period
  - iii. the equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth of an inch
  - iv. a leak is suspected and subject to the requirements of subpart E if the variation between beginning and ending measurements exceeds the weekly or monthly standards of Table A below
  - v. only tanks of 550 gal or less nominal capacity may use this as a sole method of release detection. Tanks of 551 to 2000 gal may also use inventory control. See paragraph 1 in this appendix. Tanks of greater than 2000 gal nominal capacity may not use this method to meet release detection requirements.

**Table A**

<b>Nominal Tank Capacity</b>	<b>Weekly Standard (one test)</b>	<b>Monthly Standard (average of four)</b>
550 gal or less	10 gal	5 gal
551-1000 gal	13 gal	7 gal
1001-2000 gal	26 gal	13 gal

(continued)

**Table 7-3 (continued)**

3. **Tank tightness testing:** Tank tightness testing must be capable of detecting a 0.1 gal/h leak rate from any portion of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table.
4. **Tank automatic gauging:** Equipment for automatic tank gauging that tests for the loss of product and conducts inventory control; must meet the following requirements:
  - i. the automatic product level monitor test can detect a 0.2 gal/h leak rate from any portion of the tank that routinely contains product
  - ii. inventory control is conducted according to requirements (see para 1 above).
5. **Vapor monitoring:** Testing or monitoring for vapors within the soil gas of the excavation zone must meet the following requirements:
  - i. the materials used as backfill are sufficiently porous (e.g., gravel, sand, crushed rock) to easily allow diffusion of vapors from releases into the excavation area
  - ii. the stored regulated substance, or a tracer compound placed in the tank system, is sufficiently volatile (e.g., gasoline) to result in a vapor level that is detectable by the monitoring devices located in the excavation zone in the event of a release from the tank
  - iii. the measurement of vapors by the monitoring device is not rendered inoperative by the ground water, rainfall, or soil moisture or other unknown interferences so that a release could go undetected for more than 30 days
  - iv. the level of background contamination in the excavation zone will not interfere with the method used to detect releases from the tank
  - v. the vapor monitors are designed and operated to detect any significant increase in concentration above background of the regulated substance stored in the tank system. a component or components of that substance, or a tracer compound placed in the tank system
  - vi. in the UST excavation zone, the site is assessed to ensure compliance with the requirements of paragraph 5 subparagraph i through iv above and to establish the number and positioning of monitor wells that will detect any releases within the excavation zone from any portion of the tank that routinely contains product
  - vii. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.
6. **Groundwater monitoring:** Testing or monitoring for liquids in the groundwater must meet the following requirements:
  - i. the regulated substance stored is immiscible in water and has a specific gravity of less than one
  - ii. groundwater is never more than 20 ft from the ground surface and the hydraulic conductivity of the soil(s) between the UST system and the monitoring wells or devices is not less than 0.01 cm/s (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts or other permeable materials
  - iii. the slotted portion of the monitoring well casing must be designed to prevent migration of natural soils or filter pack into the well and to allow entry of regulated substance on the water table into the well under both high and low groundwater conditions
  - iv. monitoring wells should be sealed from the ground surface to the top of the filter pack;
  - v. monitoring wells or devices intercept the excavation zone or are as close to it as is technically feasible

(continued)

**Table 7-3 (continued)**

- vi. the continuous monitoring devices or manual methods used can detect the presence of at least one-eighth of an inch of free product on top of the groundwater in the monitoring wells
  - vii. within and immediately below the UST system excavation zone, the site is assessed to ensure compliance with the requirements of paragraphs 6 i-v above and to establish the number and positioning of monitoring wells or devices that will detect releases from any portion of the tank that routinely contains product
  - viii. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.
- 7. Interstitial monitoring:** Interstitial monitoring between the UST system and a secondary barrier immediately around or beneath it may be used, but only if the system is designed, constructed and installed to detect a leak from any portion of the tank that routinely contains product and also meets one of the following requirements:
- i. for double-walled systems, the sampling or testing method can detect a release through the inner wall in any portion of the tank that routinely contains product
  - ii. for UST systems with a secondary barrier within the excavation zone, the sampling or testing method used can detect a release between the UST system and the secondary barrier
    - a. the secondary barrier around or beneath the UST system consists of artificially constructed material that is sufficiently thick and impermeable (at least  $10^{-6}$  cm/s for the regulated substance stored) to direct a release to the monitoring point and permit its detection.
    - b. the barrier is compatible with the regulated substance stored so that a release from the UST system will not cause a deterioration of the barrier allowing a release to pass through undetected
    - c. for cathodically protected tanks, the secondary barrier must be installed so that it does not interfere with the proper operation of the cathodic protection system
    - d. the groundwater, soil moisture, or rainfall will not render the testing or sampling method used inoperative so that a release could go undetected for more than 30 days
    - e. the site is assessed to ensure that the secondary barrier is always above the groundwater and not in a 25 yr flood plain, unless the barrier and monitoring designs are for use under such conditions
    - f. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering
  - iii. for tanks with an internally fitted liner, an automated device can detect a release between the inner wall of the tank and the liner. The liner is compatible with the substance stored.
- 8. Other methods:** Any other type of release detection method, or combination of methods, can be used if:
- i. it can detect a 0.2 gal/h leak rate or a release of 150 gal within a month with a probability of detection of 0.95 and a probability of false alarm of 0.05
  - ii. the implementing agency may approve another method, if it can be demonstrated that this method can detect releases as effectively as the methods listed in this appendix.

(continued)



**Table 7-3 (continued)**

**NOTE:** The following are alternatives on the above listings for UST release detection options:

1. USTs meeting the requirements in 40 CFR 280.20 for new tanks (see checklist items HM.23, HM.25, and HM.26) and the monthly inventory requirements in A1 and A2 above can use tank tightness testing as outlined in A3 at least every 5 yr until 22 December 1998, or until 10 yr after the tank is installed or upgraded under 40 CFR 280.21(b) (see checklist item HM.22).
2. USTs that do not meet the standards of 40 CFR 280.20 or 280.21 (see checklist items HM.22 through HM.23, HM.25, HM.26) may use monthly inventory as outlined in A1 or A2 and annual tank tightness testing done according to A3 until 22 December 1998 when the tank must be upgraded or permanently closed.
3. USTs with a capacity of 550 gal or less may use weekly tank gauging done according to A2.

### **B. Underground Piping Options**

1. **Automatic line detectors:** Methods which alert the operator to the presence of a leak by restricting or shutting off the flow of regulated substances through piping, or triggering an audible or visual alarm may be used only if they detect leaks of 3 gal/h at 10 lb/in<sup>2</sup> line pressure within one hour. An annual test of the operation of the leak detector must be conducted in accordance with the manufacturer's requirements.
2. **Line tightness testing:** A periodic test of piping may be conducted only if it can detect a 0.1 gal/h leak one and one-half times the operating pressure.
3. **Applicable tank methods:** The methods outlined in A2 through A4 may be used if they are designed to detect a release from any portion of the underground piping that routinely contains regulated substances.

**NOTE:** The following is additional information on the above listings for underground piping release detection options:

1. Pressurized piping must meet both of the following:
  - a. be equipped with an automatic line leak detector as outlined in B1
  - b. have an annual line tightness test done according to B2 or have monthly monitoring done in accordance with B3.
2. Underground suction piping must either have a line tightness test done according to B2 at least every 3 yr or use a monthly monitoring method in accordance with B3. No release detection is required for suction piping that is designed and constructed to meet the following standards:
  - a. the belowgrade piping operates at less than atmospheric pressure
  - b. the belowgrade piping is sloped so that the contents of the pipe will drain back into the storage tank is the suction is released

**Table 7-3 (continued)**

- c. only one check valve is included in each suction line
- d. the check valve is located directly below and as close as practical to the suction pump
- e. a method is provided that allows compliance with these standards to be readily determined.



**Table 7-4**

**Used Oil Classifications  
(40 CFR 279.10 and 279.11)**

**Used Oils Which Are Required to be Handled According to the Requirements in 40 CFR 279 (40 CFR 279.10(b)(2)(ii), 279.10(b)(2)(iii), 279.10(b)(3), 279.10(c)(2), 279.10(d), 279.10(e)(2), and 279.10(i))**

1. Used oil containing more than 1000 ppm of total halogens when the generator has demonstrated that the used oil does not contain hazardous waste.
2. Used metalworking oils/fluids containing chlorinated paraffins when they are recycled or disposed of and the generator has demonstrated that the used oil does not contain hazardous waste.
3. Used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units and the generator has demonstrated that the used oil does not contain hazardous waste.
4. Materials produced from used oil that are burned for energy recovery.
5. Mixtures of used oil and hazardous waste if the resultant mixture does not exhibit any characteristics of hazardous waste.
6. Mixtures of used oil and a waste that is hazardous solely because it exhibits the characteristic of ignitability (e.g., ignitable-only mineral spirits) and is not a listed waste.
7. Mixtures of used oil and conditionally exempt small quantity generator (CESQG) hazardous waste.
8. Mixtures of used oil and fuels or other fuel products except those marked onsite by the generator for use in the generator's own vehicles if the used oil and the diesel fuel have been mixed.
9. Used oil burned for energy recovery and any fuel produced from used oil that exceeds the following allowable limits:

Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash Point	100° F minimum
Total halogens	4000 ppm maximum

10. Materials containing or otherwise contaminated with used oil that are burned for energy recovery.
11. Used oil drained or removed from materials containing or otherwise contaminated with used oil.
12. Used oil at marketers or burners with any quantifiable level of PCBs (the standards in 40 CFR 761.20(a) must also be met for this type of oil).

(continued)

**Table 7-4 (continued)**

**Used Oil that is Required to be Handled as a Hazardous Waste (40 CFR 279.10(b)).**

1. Mixtures of used oil and listed hazardous waste.
2. Used oil containing more than 1000 ppm total halogens.
3. Used metalworking oils/fluids containing chlorinated paraffins if processed through a tolling agreement.
4. Used oil contaminated with CFCs removed from refrigeration units where the CFCs are destined for reclamation.
5. Mixtures of used oil and hazardous waste if the resultant mixture exhibits characteristics of a hazardous waste.

**Used Oil that is not Subject to the Requirements of 40 CFR 279, Nor is it to be Handled as a Hazardous Waste Unless Testing Indicates Hazardous Constituents (40 CFR 279.10(c)(1), 279.10(d)(2), 279.10(e)(1), 279.10(e)(3), 279.10(e)(4), and 279.10(f) through 279.10(h)).**

1. Mixtures of used oil and diesel fuel mixed onsite by the generator of the used oil for use in the generator's own vehicles.
2. Materials that are reclaimed from used oil that are used beneficially and are not burned for energy recovery or used in a manner constituting disposal.
3. Materials derived from used oil that are disposed of or used in a manner constituting disposal.
4. Used oil re-refining distillation bottoms that are used as feedstock to manufacture asphalt products.
5. Wastewater discharges with de minimis quantities of used oil.
6. Used oil within a crude oil or natural gas pipeline.
7. Used oil on vessels.
8. Materials containing or otherwise contaminated with used oil from which the used oil has been properly drained or removed so that no signs of visible free-flowing remains.

<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>POL MANAGEMENT</b> <b>U.S. ECAMP</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA    C    RMA	<b>REVIEWER COMMENTS:</b>		

**Section 8**

**SOLID WASTE MANAGEMENT**

## SECTION 8

### SOLID WASTE MANAGEMENT

#### A. Applicability

This section addresses the collection, storage and disposal of solid waste at Air Force installations. Solid waste is considered to be nonhazardous trash, rubbish, garbage, bulky wastes, liquids, or sludges generated by any installation's operations and activities. The handling and disposal of asbestos waste materials are addressed in Section 9, *Special Pollutants Management*.

Recycling and resource recovery activities are also included in this section because they are considered a form of solid waste management.

#### B. Federal Legislation

- *Resource Conservation and Recovery Act (RCRA) of 1976*. This is the Federal law which governs the disposal of solid waste. Subtitle D of this Act, as last amended in November 1984, Public Law (P.L.) 98-616, 42 U.S. Code (USC) 6941-6949a, establishes Federal standards and requirements for state and regional authorities respecting solid waste disposal. The objectives of this subtitle are to assist in developing and encouraging methods for the disposal of solid waste which are environmentally sound and which maximize the utilization of valuable resources recoverable from solid waste. The objectives are to be achieved through Federal technical and financial assistance to states and regional authorities for comprehensive planning (42 USC 6941).
- *The Solid Waste Disposal Act (SWDA) of 1965*, as amended. This Act requires that Federal facilities comply with all Federal, state, interstate, and local requirements concerning the disposal and management of solid wastes. These requirements include permitting, licensing, and reporting.
- *The Occupational Safety and Health Act (OSHA)*. The general purpose of this Act is to assure, as much as possible, every individual working in the United States safe and healthful working conditions. The control of medical waste is one aspect of assuring safe and healthy working conditions.
- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the Agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.
- EO 12780, *Federal Agency Recycling and the Council on Federal Recycling and Procurement Policy*. This EO requires Federal agencies to promote cost-effective waste reduction and recycling of reusable materials from wastes generated at their activities. Federal agencies are required to initiate a program to promote cost-effective waste reduction through:
  1. practices that reduce waste generation
  2. the recycling of recyclable materials such as paper, plastic metals, glass, used oil, lead acid batteries, tires, and the composting of organic materials such as yard waste.



### **C. State/Local Regulations**

The Federal government set minimum national standards for municipal solid waste disposal in 40 CFR 258, but state and local governments are responsible for implementing and enforcing waste programs. States are required to develop their own programs based on the federal regulations. Most states and municipalities have already developed their own regulations governing the permitting, licensing, and operations of landfills, incinerators, and source separation/recycling programs.

States are required to incorporate revised criteria for municipal solid waste landfills (MSWLF) into their permit programs and gain approval from U.S. Environmental Protection Agency (USEPA). States that apply for and receive USEPA approval of their programs have the opportunity to provide a lot of flexibility in implementing the regulations. This flexibility allows states to take local conditions into account and gives them the authority to alter some of the requirements. Evaluators will need to determine if a state has been granted approval for the 40 CFR 258 Program in order to accurately assess an installation's compliance with the criteria. Many states have also instigated categories of special wastes which cannot be placed in landfills or dumps, or may only be disposed of under specific circumstances.

### **D. Department of Defense (DOD) Regulations**

- DOD Directive 4165.60, *Solid Waste Management*. This directive provides guidance and direction to all DOD facilities relative to solid waste collection disposal, material recovery, and recycling in agreement with the SWDA.

### **E. U.S. Air Force Regulations (AFRs)**

- Air Force Regulation (AFR) 19-1, *Pollution Abatement and Environmental Quality*. This regulation, directs Air Force Installations to use municipal or regional waste disposal systems for the disposal of solid waste whenever feasible. When the use of such facilities is not feasible, Air Force installations must do whatever is necessary to comply with all applicable laws, rules, and regulations. This AFR is scheduled to be replaced with AFPD 23-3
- Air Force Instruction (AFI) 32-7042, *Solid and Hazardous Waste Compliance*. This AFI, dated 30 November 1993, contains requirements for solid and hazardous waste management, planning, training, collecting, and disposal.

### **E. Key Compliance Requirements**

- Storage/Collection - Installations are required to store all solid wastes and materials separated for recycling so that it does not cause a fire, safety, or health hazard. All installations are required to operate their collection systems in a manner to protect the health and safety of personnel associated with the operation. All collection equipment is required to have a suitable cover to prevent spillage. and the equipment is constructed, operated, and maintained adequately. All installations are required to collect solid wastes or materials and separate for recycling, according to a certain schedule, in a safe, efficient manner (40 CFR 243.200-1, 243.201-1, 243.202-1(a) through 243.202-1(c), 243.203-1, and 243.204-1).

- **Solid Waste Containers** - Installation personnel should be periodically informed about materials that are prohibited from disposal in solid waste receptacles (MP).
- **Recycling** - Air Force installations should participate in any state or local recycling programs and reduce the volume of solid waste materials at the source whenever practical. Installations with offices of over 100 office workers are required to recover high-grade paper. Installations at which more than 500 families reside are required to recycle newspapers. Any installation generating 10 tons [10,160.5 kg] or more of waste corrugated containers per month are required to segregate or collect separately for recycling or alternate energy use (40 CFR 246.200-1 and 246.202-1).
- **Specific Wastes** - Bulky wastes must be disposed of according to certain methods, which differ depending of the variety of waste (i.e. automobile bodies, furniture and appliances) are required to be salvaged, or crushed and pushed onto working face near the bottom of the cell. Water treatment plant sludges, containing no free moisture, and digested or heat treated wastewater treatment plant sludges must be disposed of by covering them with soil or municipal solid wastes. Incinerator and air pollution control residues must be disposed of by covering them as necessary to prevent their becoming airborne (40 CFR 241.200-3).
- **Land Disposal Site Operations Other Than a MSWLF**- Installations are required to place cover material at the end of each operating day. Land disposal sites that accept special wastes must have approval from the responsible agency. Installations that operate land disposal sites are required to provide a list of excluded materials to regular users, to operate the sites in a manner that will protect water quality and air quality, and control decomposition gases and vectors. Land disposal sites are required to be designed and operated in an aesthetically acceptable manner and to be designed, constructed, and operated to protect the health and safety of personnel. Land disposal site cover material is required to minimize fire hazards, infiltration of precipitation, odors and litter, control gas venting and vectors, discourage scavenging, and provide a pleasing appearance. Municipal solid waste and cover material must be compacted to the smallest practicable volume. The operators of land disposal sites are required to maintain records and monitoring data (40 CFR 241.200-3(a), 241.201-2, 241.201-3, 241.204-3, 241.205-3 241.206-241.211, and 241.212-3(a)).
- **Land Disposal Site Closure Other Than a MSWLF** - Upon closure of a site, a detailed description is required to be recorded with the area's land recording authority. Installations should survey for and be aware of old disposal sites at the installation (40 CFR 241.212-3(b)).
- **New Landfills Other Than MSWLFs** - New landfills are required to meet certain location and design criteria, which include evaluation of hydrogeology and onsite soil characteristics, and verification of easy access to vehicles. Plans for the design, construction, and operation of new sites or modification to existing sites are required to be prepared or approved by a professional engineer (40 CFR 241.202-2 and 40 CFR 241.203-1)
- **Municipal Solid Waste Landfills (MSWLF)** - MSWLFs must meet restrictions for location, the types of waste to be placed in them, and the types of monitoring required. Limitations, design criteria, and closure requirements vary depending on whether it is a new or existing MSWLF (40 CFR 258).
- **Thermal Processing Facilities** - Facilities that are designed to process or are processing 50 tons [45,359.24 kg] or more per day of municipal solid wastes, must be operated in a manner that prevents water and/or air contamination. Additionally, there must be an operating plan that specifies procedures and precautions to be taken if unacceptable wastes are delivered to or left at the installa-

tion. The residue and solid waste resulting from the thermal processing must be disposed of in a manner that prevent environmental damage (40 CFR 240).

- **Resource Recovery Facilities** - Resource recovery facilities have to be designed to process at least 65 percent by wet weight of the input solid waste to recycled material, fuel or energy (40 CFR 245).
- **Medical Waste** - Contaminated reusable sharps and other regulated wastes are required to be placed in puncture resistant, color coded, leakproof containers, as soon as possible after use until properly reprocessed. Specimens of blood or other potentially infectious material are required to be placed in a container that prevents leakage during collection, handling, processing, storage, transport, and/or shipping; and specific labeling and handling requirements are followed (29 CFR 1910.1030(d))
- **Medical Waste Containers** - All bins, cans, and other receptacles intended for reuse that have the likelihood of becoming contaminated with blood or other potentially infectious materials are required to be inspected and decontaminated on a regularly scheduled basis. Labels affixed to containers of regulated wastes, refrigerators and freezers containing blood, and other containers used to store, transport, or ship blood or other potentially infectious materials must meet specific standards; which include the biohazard symbol, and being colored a fluorescent orange with contrasting-colored lettering and symbols (29 CFR 1910.1030(d)(4)(ii)(c) and 1910.1030(g)(1)(i))

#### **G. Responsibility for Compliance**

- **Base Environmental Manager (EM)**. The EM acts for the Environmental Protection Committee (EPC) to ensure the overall management of the installation's environmental program is a coordinated effort in line with Federal, state, and local guidelines and DOD and Air Force Directives.
- **Base Civil Engineering (BCE)**. The BCE is responsible for site location, licensing, construction, and operation of on-base landfills, and for storing and transporting of solid wastes to either on-base or off-base disposal activities.
- **Base Bioenvironmental Engineer (BEE)**. The BEE is responsible for compliance sampling data at on-base landfills and for reviewing and coordinating asbestos disposal plans and operations.

#### **H. Key Compliance Definitions**

- **Active Life** - the period of operation beginning with the initial receipt of solid waste and ending with the completion of closure activities (40 CFR 258.2).
- **Active Portion** - that part of a facility or unit that has received or is receiving wastes and that has not been closed (40 CFR 258.2).
- **Aquifer** - a geological formation, group of formations, or a portion of a formation capable of yielding significant quantities of groundwater to wells or springs (40 CFR 258.2).
- **Blood** - human blood, human blood components, and products made from human blood (29 CFR 1910.1030(a)).

- **Bottom Ash** - the solid material that remains on a hearth or falls off the grate after thermal processing is complete (40 CFR 240.101(b)).
- **Bulky Wastes** - large items of solid waste such as household appliances, furniture, large auto parts, trees, branches, stumps, and other oversize wastes which large size precludes or complicates their handling by normal solid waste collection, processing, or disposal methods (40 CFR 243.101).
- **Cell** - compacted solid wastes that are enclosed by natural soil or cover material in a land disposal site (40 CFR 241.101).
- **Collection** - the act of removing solid waste (or materials which have been separated for the purpose of recycling) from a central storage point (40 CFR 243.101 and 246.101).
- **Commercial Solid Waste** - all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial wastes (40 CFR 243.101 and 258.2).
- **Construction and Demolition Wastes** - the waste building materials, packaging and rubble resulting from the construction, renovation, repair, and demolition operation on pavements, houses, commercial buildings, and other structures (40 CFR 243.101 and 246.101).
- **Contaminated** - the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface (29 CFR 1910.1030(a)).
- **Contaminated Sharps** - any contaminated object that can penetrate the skin, including but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires (29 CFR 1910.1030(a)).
- **Corrugated Container Waste** - discarded corrugated boxes (40 CFR 246.101).
- **Cover Material** - soil or other suitable material that is used to cover compacted solid wastes in a land disposal site (40 CFR 241.101).
- **Daily Cover** - cover material that is spread and compacted on the top and side slopes of compacted solid wastes at least at the end of each operating day in order to control vectors, fire, moisture, and erosion and to assure an aesthetic appearance (40 CFR 241.101).
- **Decontamination** - the use of physical or chemical means to remove, inactivate, or destroy blood-borne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface of item is rendered safe for handling, use, or disposal (29 CFR 1910.1030(a)).
- **Design Capacity** - the weight of solid waste of a specified gross calorific value that a thermal processing facility is designed to process in 24 hours of continuous operation (40 CFR 240.101(d)).
- **Existing MSWLF Unit** - any municipal solid waste landfill unit that is receiving solid waste as of the appropriate dates specified in 258.1(e)(see Appendix 8-1). Waste placement in existing units must be consistent with past operating practices or modified practices to ensure good management (40 CFR 258.2).

- **Facility** - all contiguous land, structure, and other appurtenances and improvements on the land used for the disposal of solid waste (40 CFR 258.2).
- **Final Cover** - cover materials that serve the same function as daily cover but, in addition, may be permanently exposed on the surface (40 CFR 241.101).
- **Fly Ash** - suspended particles, charred paper, dust, soot, and other partially oxidized matter carried in the products of combustion (40 CFR 240.101).
- **Food Waste** - the organic residues generated by the handling, storage, sale, preparation, cooking, and serving of foods, commonly called garbage (40 CFR 243.101 and 246.101).
- **Garbage** - in relation to solid waste coming from outside the continental United States, it is all waste material derived in whole or in part from fruits, vegetables, meats, or other plant or animal material, and other refuse of any character whatsoever that has been associated with any such material on board any means of conveyance, and includes food scraps, table refuse, galley refuse, food wrappers, or packaging materials, and other waste materials from stores, food preparation areas, passengers; or crews quarters, dining rooms, or any other areas or means of conveyance. It also means meals and other food that were available for consumption by passengers and crew on an aircraft but were not consumed (7 CFR 330.400(b)).
- **Groundwater** - water present in the unsaturated zone of an aquifer (40 CFR 241.101).
- **High-grade Paper** - letterhead, dry copy papers, miscellaneous business forms, stationary, typing paper, tablet sheets, and computer printout paper and cards, commonly sold as white ledger, computer printout, and tab card grade by the wastepaper industry (40 CFR 246.101).
- **Household Waste** - any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use-recreation areas) (40 CFR 258.2).
- **Incinerator** - a facility consisting of one or more furnaces in which wastes are burned (40 CFR 240.101).
- **Indian Lands of Indian Country** - this means:(40 CFR 258.2)
  1. all land within the limits of any Indian reservation under the jurisdiction of the U.S. Government, notwithstanding the issuance of any patent, and including rights-of-way running throughout the reservation;
  2. all dependent Indian communities within the borders of the United States whether within the original or subsequently acquired territory thereof, and whether within or without the limits of the State; and
  3. all Indian allotments, the Indian titles to which have not been extinguished, including rights of way running through the same.
- **Indian Tribe** - any Indian tribe, band, nation, or community recognized by the Secretary of the Interior and exercising substantial governmental duties and powers on Indian lands (40 CFR 258.2).
- **Industrial Solid Waste** - the solid waste generated by industrial processes and manufacturing that is not a hazardous waste (40 CFR 243.101)

- **Industrial Solid Waste** - in relation to MSWLF, solid waste generated by manufacturing or industrial processes that is not a hazardous waste regulated under subtitle C of RCRA. Such waste may include, but is not limited to, waste resulting from the following manufacturing processes: Electric power generation; fertilizer/agricultural chemicals; food and related products/by-products; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/foundries; organic chemicals; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay, and concrete products; textile manufacturing; transportation equipment; and water treatment. This term does not include mining waste or oil and gas waste (40 CFR 258.2).
- **Infectious Waste** - (40 CFR 240.101, 241.101, 242.101, and 245.101):
  1. equipment, instruments, utensils, and fomites of a disposable nature from the rooms of patients who are suspected to have or have been diagnosed as having a communicable disease and must, therefore, be isolated as required by public health agencies
  2. laboratory wastes such as pathological specimens and disposable fomites (any substance that may harbor or transmit pathological organisms)
  3. surgical operating room pathological specimens and disposable fomites attendant thereto and similar disposable materials from outpatient areas and emergency rooms.
- **Institutional Solid Waste** - solid wastes generated by educational, health care, correctional, and other institutional facilities (40 CFR 243.101, 245.101, and 256.101).
- **Intermediate Cover** - cover material that serves the same function as daily cover, but must resist erosion for a longer period of time, because it is applied in areas where additional cells are not to be constructed for extended periods of time (40 CFR 241.101).
- **Lateral Expansion** - a horizontal expansion of the waste boundaries of an existing municipal solid waste landfill unit (40 CFR 258.2).
- **Leachate** - liquid that has percolated through solid waste and has extracted dissolved or suspended materials from it (40 CFR 241.101).
- **Leachate** - in relation to MSWLFs, this is a liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste (40 CFR 258.2).
- **Management Practice (MP)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- **Medical/Pathological Wastes** - any solid waste that is generated in the diagnosis, treatment, immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals. This does not include hazardous waste or household waste (40 CFR 259.10).
- **Municipal Solid Waste** - residential and commercial solid wastes generated within a community (40 CFR 240.101).
- **Municipal Solid Waste Landfill (MSWLF) Unit** - a discrete area of land or an excavation that received household waste and that is not a land application unit, surface impoundment, injection well, or waste pile. It may also receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste and indus-

trial solid waste. Such a landfill may be publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit, or a lateral expansion (40 CFR 258.2).

- **New MSWLF Unit** - any municipal solid waste landfill unit that has not received wastes prior to 9 October 1993, or prior to 9 October 1995 if the MSWLF unit disposes of less than 20 tons [18,143,699 kg] of municipal solid waste daily, based on an annual average and the MSWLF unit serves either:
  1. a community that experiences an annual interruption of at least 3 consecutive months of surface transportation that prevents access to a regional waste management facility
  2. a community that has no practicable waste management alternative and the landfill is located in an areas that annually receives less than or equal to 25 in. [62.5 cm] of precipitation (40 CFR 258.2).
- **Open Burning** - in relation to MSWLFs, the combustion of solid waste without:
  1. control of combustion air to maintain adequate temperature for efficient combustion
  2. containment of the combustion reaction in an enclosed device to provide sufficient residence time and mixing for complete combustions
  3. control of the emission of the combustion product (40 CFR 258.2).
- **Open Burning** - burning of solid wastes in the open, such as in an open dump (40 CFR 240.101(r)).
- **Open Dump** - a land disposal site at which solid wastes are disposed of in a manner that does not protect the environment, are susceptible to open burning, and are exposed to the elements, vectors, and scavengers (40 CFR 240.101 and 241.101).
- **Recoverable Resource** - materials that still have useful physical, chemical, or biological properties after serving their original purpose and can, therefore, be reused or recycled for the same or other purposes (40 CFR 245.101 and 246.101).
- **Recycled Material** - a material that is utilized in place of a primary, raw, or virgin material in manufacturing a product (40 CFR 245.101 and 246.101).
- **Recycling** - the process by which recovered materials are transformed into new products (40 CFR 245.101).
- **Regulated Wastes** - liquid or semi-liquid blood or other potentially infectious materials, contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps, and pathological and microbiological wastes containing blood or other potentially infectious materials (29 CFR 1910.1030(a)).
- **Residential Solid Waste** - the wastes generated by the normal activities of households including, but not limited to, food wastes, rubbish, ashes, and bulky wastes (40 CFR 243.101 and 246.101).
- **Resource Recovery Facility** - any physical plant that processes residential, commercial, or institutional solid waste biologically, chemically, or physically, and recovers useful products (40 CFR 245.101).

- *Runoff* - the portion of precipitation that drains from an area as surface flow (40 CFR 241.101).
- *Runoff* - in relation to MSWLF, any rainwater, leachate, or other liquid that drains over land from any part of a facility (40 CFR 258.2).
- *Run-on* - any rainwater, leachate, or other liquid that drains over land onto any part of a facility (40 CFR 258.2).
- *Sanitary Landfill* - a land disposal site employing an engineered method of disposing of solid wastes on land in a manner that minimizes environmental hazards by spreading the solid wastes in thin layers, compacting the solid wastes to the smallest practical volume, and applying and compacting cover material at the end of each operating day (40 CFR 240.101).
- *Separate Collection* - collection of recyclable materials which have been separated at the point of generation and keeping those materials separated from other collected solid waste in separate compartments of a single collection vehicle or through the use of separate collection vehicles (40 CFR 246.101).
- *Sludge* - the accumulated semiliquid suspension of settled solids deposited from waste waters or other fluids in tanks or basins (40 CFR 240.101).
- *Sludge* - in relation to MSWLF, any solid, semi-solid, or liquid waste generated from a municipal, commercial, industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant (40 CFR 258.2)
- *Solid Waste* - in relation to MSWLF, any garbage, refuse, or sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded materials, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial mining and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, solid or dissolved materials in irrigation return flows, or industrial discharges that are point sources subject to permit under 33 USC 1342, or source, special nuclear, or by-product material as defined by the *Atomic Energy Act* of 1954, as amended (68 Stat. 932) (40 CFR 258.2).
- *Solid Waste* - garbage, refuse, sludge, and other discarded solid materials resulting from industrial and commercial operations and from community activities. It does not include solids or dissolved materials in domestic sewage or other significant pollutants in water resources (40 CFR 240.101).
- *Source Separation* - the setting aside of recyclable materials at their point of generation by the generator (40 CFR 246.101).
- *Special Wastes* - nonhazardous solid wastes requiring handling other than that normally used for municipal solid wastes (40 CFR 240.101).
- *Thermal Processing* - processing of waste material by means of heat (40 CFR 240.101).
- *Transfer Station* - a station at which solid wastes are concentrated for transport to a processing facility or land disposal site. A transfer station may be fixed or mobile (40 CFR 243.101).



- *Universal Precautions* - an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens (29 CFR 1910.1030(a)).
- *Uppermost Aquifer* - the geologic formation nearest the natural ground surface that is an aquifer, as well as, lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary (40 CFR 258.2).
- *Vector* - a carrier, usually an arthropod, that is capable of transmitting a pathogen from one organism to another (40 CFR 240.101, 241.101, and 423.101).
- *Waste Management Unit Boundary* - a vertical surface located at the hydraulically downgradient limit of the unit. This vertical surface extends down into the uppermost aquifer (40 CFR 258.2).
- *Working Face* - that portion of the land disposal site where solid wastes are discharged and are spread and compacted prior to the placement of cover material (40 CFR 241.101).

**SOLID WASTE MANAGEMENT**  
**GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>CONTACT THESE PERSONS OR GROUPS:(a)</b>	<b>REFER TO PAGE NUMBER:</b>
All Installations	SW.1 through SW.7	(1)(2)	8-15
Storage/Collection of Solid Waste	SW.8 through SW.14	(1)(2)(3)	8-17
Recycling	SW.15 through SW.20	(1)(2)	8-19
Land Disposal Sites Other Than a MSWLF Specific Wastes	SW.21 through SW.24	(1)(2)	8-21
Operations	SW.25 through SW.43	(1)(2)	8-22
Closure	SW.44	(1)(2)	8-27
Site Criteria For New Landfills Other Than a MSWLF	SW.45 through SW.47	(1)(2)	8-28
Municipal Solid Waste Landfills			
Location restrictions	SW.48 through SW.53	(1)(2)(3)	8-29
Operations	SW.54 through SW.63	(1)(2)	8-31
Monitoring	SW.64 through SW.76	(1)(2)	8-34
Closure	SW.77 through SW.81	(1)(2)	8-41
Postclosure	SW.82 through SW.84	(1)(2)	8-43
Design	SW.85 and SW.86	(1)(2)	8-43
Thermal Processing Facilities	SW.87 through SW.104	(1)(2)	8-44
Resource Recovery Facilities	SW.105 through SW.107	(1)(2)	8-52
Refuse From Outside the United States	SW.108	(1)(3)	8-53
Resource Recovery Facilities	SW.109 and SW.110	(1)	8-54
Medical Waste	SW.111 through SW.116	(1)	8-54

**(a) CONTACT/LOCATION CODE:**

- (1) Base Environmental Manager (EM)
- (2) Base Civil Engineer (BCE)
- (3) Base Bioenvironmental Engineer (BEE)



## **SOLID WASTE MANAGEMENT**

### **Records to Review During an ECAMP Assessment**

- Record of current nonhazardous solid waste management practices
- Documentation of locations (map) and descriptions of all nonhazardous waste storage, and disposal facilities
- Records of operational history of all active and inactive disposal facilities
- State and Federal inspection reports
- Environmental monitoring procedures or plans
- Records of resource recovery practices, including the sale of materials for the purpose of recycling
- Solid waste removal contracts and inspection records
- Operating record for onsite municipal solid waste landfills

### **Physical Features to Inspect During an ECAMP ASSESSMENT**

- Resource recovery facilities
- Incineration and land disposal facilities (active and inactive)
- Areas where nonhazardous waste is disposed
- Construction debris areas
- Waste receptacles
- Solid waste vehicle storage and washing areas
- Compost facilities
- Transfer stations
- Recycling centers

### **People to Interview During an ECAMP Assessment**

- Base Environmental Manager (EM)
- Base Civil Engineer (BCE)
- Base Bioenvironmental Engineer (BEE)



**COMPLIANCE CATEGORY:  
SOLID WASTE MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL INSTALLATIONS</b></p> <p><b>SW.1.</b> Actions or changes since previous review on solid waste management should be examined (MP).</p> <p><b>SW.2.</b> Copies of all relevant Federal, state, and local regulations on solid waste management are required to be maintained at the installation (AFR 19-1, para 11f).</p> <p><b>SW.3.</b> Copies of all relevant DOD and US Air Force directives, and guidance documents on solid waste should be maintained at the installation (MP).</p>	<p>Determine whether noncompliance issues were resolved by examining a copy of the previous review report. (1)(2)</p> <p>Determine if the following regulations are maintained at the installation. (1)</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Compliance With Pollution Standards.</i></li> <li>- 7 CFR 330, <i>Federal Plant Pest Regulations, General, Plant Pests, Soil, Stone and Quarry Products, Garbage.</i></li> <li>- 29 CFR 1910.1030, <i>Bloodborne Pathogens.</i></li> <li>- 40 CFR 240, <i>Guidelines for Thermal Processing of Solid Waste.</i></li> <li>- 40 CFR 241, <i>Guidelines for Land Disposal of Solid Wastes.</i></li> <li>- 40 CFR 243, <i>Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste.</i></li> <li>- 40 CFR 245, <i>Promulgation Resource Recovery Facility Guidelines.</i></li> <li>- 40 CFR 246, <i>Source Separation for Materials Recovery Guidelines.</i></li> <li>- 40 CFR 258, <i>Criteria for Municipal Solid Waste Landfills.</i></li> <li>- applicable state and local regulations.</li> </ul> <p>Verify that the Base Staff Judge Advocate reviews Federal, state, and local regulations that may affect ongoing and proposed activities and keeps the EPC informed as needed. (1)</p> <p>Determine if the following documents are maintained at the installation. (1)</p> <ul style="list-style-type: none"> <li>- AFR 19-1, <i>Pollution Abatement and Environmental Quality</i></li> <li>- AFI 32-7042, <i>Solid and Hazardous Waste Compliance</i></li> <li>- HQ UASF/CEV Policy Letter, <i>Interim Affirmative Procurement Guidance</i>, 30 December 1993</li> <li>- HQ UASF/CE Policy letter, <i>Air Force Recycling Policy</i>, 13 October 1993.</li> </ul> <p>(NOTE: A consolidated listing of approved test methods should also be maintained at the installation: Test Methods for Evaluating Solid Waste, Physical and Chemical Methods, USEPA Publication SW-846, Document # PB87-120-291.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.4.</b> Installations are required to comply with state and local solid waste regulations and compliance agreements negotiated with Federal, state, and local governments (EO 12088, Sect. 1-1).</p>	<p>Verify that the installation is abiding by state and local solid waste requirements. (1)</p> <p>Verify that the installation is operating according to permits issued by the state or local agencies. (1)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- license or permit requirements for existing onsite landfills</li> <li>- requirements for filing a closure plan for onsite landfills specifying monitoring and inspection procedures</li> <li>- design and operation specifications for solid waste receptacles</li> <li>- disposal of solid waste offsite only at licensed or permitted facilities</li> <li>- design and policy procedures of thermal processing of solid waste</li> <li>- analysis for hazardous properties of ash residues and sludge from air pollution control devices at coal fired installation heating plant operations before sale or disposal</li> <li>- handling and disposal of medical, pathological, and infectious waste</li> <li>- recycling requirements</li> <li>- disposal of household hazardous wastes</li> <li>- yard waste</li> <li>- used tires.)</li> </ul> <p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreement. (1)</p>
<p><b>SW.5.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding.)</p>	<p>Determine if any new regulations concerning solid waste management have been issued since the finalization of the manual. (1)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)</p>
<p><b>SW.6.</b> Installations are required to have a complete Solid Waste Management Plan (AFI 32-7042, para 3.2).</p>	<p>Verify that the installation has a solid waste management plan. (1)</p> <p>Verify that the plan contains: (1)</p> <ul style="list-style-type: none"> <li>- an inventory and analysis of solid waste disposal technologies and methods</li> <li>- an inventory of solid waste streams and management methods</li> <li>- analysis of recovery, conservation, and recycling of solid waste</li> <li>- evaluation of on-base operating landfills (if applicable)</li> <li>- plan improvements.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.7.</b> The installations solid waste management program is required to include scheduled and unscheduled inspections of solid waste collection, transfer, and disposal facilities (AFI 32-7042, para 3.5.1).</p> <p><b>STORAGE AND COLLECTION OF SOLID WASTE</b></p> <p><b>SW.8.</b> Installations are required to store all solid wastes and materials separated for recycling according to specific guidelines (40 CFR 243.200-1).</p> <p><b>SW.9.</b> All installations are required to operate their collection systems in a manner to protect the health and safety of personnel associated with the operation (40 CFR 243.201-1).</p>	<p>Verify that scheduled and unscheduled inspections of collection, transfer, and disposal facilities are done. (1)</p> <p>Verify that findings are documented and corrective actions implemented promptly. (1)</p> <p>Verify that each installation inspects industrial shop wastes to confirm that hazardous waste is not deposited and records of these inspections are retained for 2 yr from the date of inspection. (1)</p> <p>Verify that all solid wastes are stored so as not cause a fire, health or safety hazard, or provide food or harborage to vectors and is contained or bundled to prevent spillage. (2)</p> <p>Verify that all solid waste containing food wastes are stored in covered or closed containers which are nonabsorbent, leakproof, durable, easily cleaned, and designed for safe handling. (2)(3)</p> <p>Verify that solid waste containers are of an adequate size and number to contain all waste generated between collections. (2)</p> <p>Verify that bulky wastes are stored so as not to create a nuisance and to avoid the accumulation of solid waste and water in and around the bulky items. (2)(3)</p> <p>Verify that reusable containers are capable of being serviced without the collector coming into contact with the waste. (2)(3)</p> <p>Verify that collection system is operated safely by interviewing collection system personnel to determine if health and safety regulations are implemented. (2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.10.</b> Installations are required to maintain collection equipment according to certain standards if such equipment is considered to be operating in interstate or foreign commerce (40 CFR 243.202-1).</p>	<p>Verify that all vehicles used for the collection and transportation of solid waste meet all applicable standards established by the Federal Government including: (2)</p> <ul style="list-style-type: none"> <li>- <i>Motor Carrier Safety Standards</i> (49 CFR 390 through 396)</li> <li>- <i>Noise Emission Standards for Motor Carriers Engaged in Interstate Commerce</i> (40 CFR 202)</li> <li>- <i>Federal Motor Vehicle Safety Standards</i> (49 CFR 500 through 580) (Federally owned collection equipment only).</li> </ul>
<p><b>SW.11.</b> All collection equipment is required to meet specific criteria (40 CFR 243.202-1(b), 243.202-1(d)).</p>	<p>Verify that all vehicles used for collection and transportation of solid wastes or materials separated for recycling are enclosed and have suitable cover to prevent spillage. (1)(2)</p> <p>Verify that equipment used in the compaction, collection, and transportation of solid waste or materials separated for recycling are constructed, operated, and maintained adequately. (1)(2)</p> <p>Verify that the following types of equipment meet the standards established by the American National Standards Institute (ANSI): (1)(2)</p> <ul style="list-style-type: none"> <li>- rearloading compaction equipment</li> <li>- sideloading compaction equipment</li> <li>- frontloading compaction equipment</li> <li>- tilt frame equipment</li> <li>- hoist type equipment</li> <li>- satellite vehicles</li> <li>- special collection compaction equipment</li> <li>- stationary compaction equipment.</li> </ul>
<p><b>SW.12.</b> All installations are required to collect solid wastes or materials separated for recycling according to a certain schedule (40 CFR 243.203-1).</p>	<p>Verify that solid wastes which contain food wastes are collected at a minimum of once during each week. (2)(3)</p> <p>Verify that bulky wastes are collected at a minimum of once every 3 mo. (2)</p> <p>Verify that all wastes are collected with sufficient frequency to inhibit the propagation or attraction of vectors and the creation of nuisances. (2)(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.13.</b> Installations are required to collect solid wastes in a safe, efficient manner (40 CFR 243.204-1).</p> <p><b>SW.14.</b> Installation personnel are required to be periodically informed about materials that are prohibited from disposal in solid waste receptacles (AFI 32-7042, para 3.5.2).</p>	<p>Verify that solid wastes or materials separated for recycling are collected in a safe efficient manner. (1)(2)</p> <p>Verify that the collection vehicle operator immediately cleans up any spillage caused by its operations. (1)(2)</p> <p>Determine if a program exists at the installation to keep personnel informed about proper waste disposal practices. (2)</p>
<p><b>RECYCLING</b></p> <p><b>SW.15.</b> Installations are required to recover and recycle commercial, residential, and institutional solid and other waste (EO 12780, Sec. 301).</p> <p><b>SW.16.</b> Installations with office facilities of over 100 office workers are required to recover high grade paper (40 CFR 246.200-1).</p>	<p>Verify that a solid waste reduction program exists. (1)(2)</p> <p>Verify that recycling programs are in compliance with applicable state or local requirements. (1)</p> <p>Verify that quantities of solid waste are reduced at the source when possible. (1)(2)</p> <p>Verify that reusable or marketable materials are collected at regular intervals. (2)</p> <p>(NOTE: Materials to be included in recycling programs are paper, plastic, metals, glass, used oil, lead acid batteries, tires, and yard waste composting.)</p> <p>Determine if the installation has over 100 office workers. (1)</p> <p>Verify that high grade paper is separated at the source of generation. (1)</p> <p>Verify that high grade paper is separately collected and recycled. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.17.</b> Installations at which more than 500 families reside are required to recycle newspapers (40 CFR 246.201-1).</p>	<p>Determine if the installation has more than 500 families residing on it. (1)</p> <p>Verify that used newspapers are separate at the source of generation and are separately collected. (1)</p> <p>Verify that used newspapers are sold for recycling. (1)</p>
<p><b>SW.18.</b> Any installation generating 10 tons/mo [10,160.47 kg/mo] or more of waste corrugated containers are required to segregate and separately collect for recycling or alternate energy use (40 CFR 246.202-1).</p>	<p>Determine if the installation generates 10 tons/mo [10,160.47 kg/mo] or more of waste corrugated containers. (1)</p> <p>Verify that waste corrugated containers are collected separately and recycled or used for alternate energy. (1)</p>
<p><b>SW.19.</b> Installations generating more than 100 tons/day or more of residential, commercial, and institutional solid waste after complying with waste reduction and source separation policies, shall establish or use resource recovery facilities to separate and recover materials or energy, or both, from solid waste (40 CFR 245.200-1).</p>	<p>Determine if the installation meets the listed criteria. (1)</p> <p>Verify that a resource recovery facility is used. (1)(2)</p> <p>Verify that joint or regional civilian community resource recovery facilities are utilized when possible. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.20.</b> Installations are required to procure materials containing recycled material and report the amounts purchased each fiscal year (HQ USAF/CEV Policy Letter, 30 December 1993).</p>	<p>Verify that the installation collects data for items locally purchased or provided through construction contracts such as: (1)(2)</p> <ul style="list-style-type: none"> <li>- cement and concrete containing fly ash</li> <li>- building insulation containing recovered materials</li> <li>- re-refined lubricating oil</li> <li>- retread tires</li> <li>- paper and paper products.</li> </ul> <p>Verify that the installation reports quarterly on the Affirmative Procurement screens of the Pollution Prevention module in WIMS-ES the total value of the produce purchased and the total value of the product purchased that met the USEPA guidelines criteria. (1)(2)</p>
<p><b>LAND DISPOSAL SITES OTHER THAN MSWLFs:</b></p> <p><b>Specific Wastes</b></p> <p><b>SW.21.</b> Installations will identify what wastes can and cannot be accepted at the disposal facility in conjunction with the responsible agency (40 CFR 241.200-1).</p> <p><b>SW.22.</b> Bulky wastes should be disposed of according to certain methods (AFI 32-7042, para 3.4.1).</p>	<p>Verify that the installation has specifically identified what wastes can and cannot be accepted for disposal at the site. (1)(2)</p> <p>Verify that automobile bodies, furniture, and appliances are either salvaged or crushed and pushed onto the working face near the bottom of the cell. (1)(2)</p> <p>Verify that demolition and construction debris, tree stumps, and large timbers are pushed onto the working face near the bottom of the cell. (1)(2)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements recommendations found in 40 CFR 241-200-3(b).)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.23.</b> Water treatment plant sludges containing no free moisture and digested or heat treated wastewater treatment plant sludges should be disposed of according to certain methods (AFI 32-7042, para 3.4.1).</p>	<p>Verify that water treatment plant sludges containing no free moisture and digested or heat treated wastewater treatment plant sludges are covered with soil or municipal solid wastes. (1)(2)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements the recommendations found in 40 CFR 241.200-3(d).)</p>
<p><b>SW.24.</b> Incinerator and air pollution control residues should be disposed of according to certain methods (AFI 32-7042, para 3.4.1).</p>	<p>Verify that incinerator and air pollution control residues are incorporated into the face and covered as necessary to prevent them from becoming airborne. (1)(2)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements recommendations found in 40 CFR 241.200-3(e).)</p>
<p><b>Operations</b></p>	
<p><b>SW.25.</b> Using information from the generation sources on the installation, the disposal facility operator and the responsible agency are required to determine specific wastes that are excluded from disposal and identify them in plans (40 CFR 241.201-1).</p>	<p>Verify that the disposal facility has designated what wastes are excluded from disposal at the site. (1)(2)</p> <p>Verify that the list of excluded wastes is documented in a plan (1)(2)</p>
<p><b>SW.26.</b> Installations which operate land disposal sites should provide a list of excluded materials to regular users (MP).</p>	<p>Verify that a list of excluded materials is displayed prominently at the site entrance. (1)(2)</p> <p>Verify that a list of excluded materials is given to all regular users of the site. (1)(2)</p> <p>(NOTE: This MP is based on recommendations found in 40 CFR 241.201-3).</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.27.</b> The location, construction, and design of land disposal sites are required to meet the most stringent of applicable water quality standards and be constructed, located, designed, and operated in a manner to provide adequate protection to ground and surface water used as drinking water supplies (40 CFR 241.204-1).</p>	<p>Verify that applicable water quality standards are met and ground and surface water used as drinking water supplies are protected. (1)(2)</p>
<p><b>SW.28.</b> Land disposal sites should be operated in a manner which will protect water quality (AFI 32-7042, para 3.4.1).</p>	<p>Verify that surface water course and runoff are diverted from the land disposal site. (1)(2)</p> <p>Verify that the land disposal site is constructed and graded to promote rapid surface water runoff without excessive erosion. (1)(2)</p> <p>Verify that regrading is done as necessary to avoid ponding of precipitation and to maintain cover material integrity. (1)(2)</p> <p>Verify that siltation or retention basins or other approved methods of retarding runoff are used where necessary to avoid stream siltation or flooding problems. (1)(2)</p> <p>Verify that leachate collection and treatment systems are used where necessary to protect groundwater and surface water resources. (1)(2)</p> <p>Verify that municipal solid wastes and leachate are not in contact with groundwater or surface water. (1)(2)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements recommendations found in 40 CFR 241.204-3).</p>
<p><b>SW.29.</b> Land disposal sites should operate in a manner which will protect air quality (AFI 32-7042, para 3.4.1).</p>	<p>Verify that there is no open burning of municipal solid wastes. (1)(2)</p> <p>Verify that dust control measures are initiated as necessary. (1)(2)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements recommendations found in 40 CFR 241.205-3).</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.30.</b> Land disposal sites are required to control decomposition gases as necessary to avoid posing a hazard to occupants of adjacent property (40 CFR 241.206-1)</p>	<p>Verify that land disposal sites are controlling decomposition gases. (1)(2)</p>
<p><b>SW.31.</b> Land disposal sites should control decomposition gases according to the following recommended procedures (AFI 32-7042, para 3.4.1).</p>	<p>Verify that decomposition gases are not allowed to migrate laterally from the land disposal site. (1)(2)</p> <p>Verify that decomposition gases do not pose an explosion or toxicity hazard.</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements recommendations found in 40 CFR 241.206-3.)</p>
<p><b>SW.32.</b> Land disposal sites are required to control vectors (40 CFR 241.207-1).</p>	<p>Verify that conditions are maintained that are unfavorable for the harboring, feeding, and breeding of vectors. (1)(2)</p>
<p><b>SW.33.</b> Land disposal sites are required to be designed and operated in an aesthetically acceptable manner (40 CFR 241.208-1).</p>	<p>Verify that the disposal site is designed and operated in an aesthetically acceptable manner. (1)(2)</p>
<p><b>SW.34.</b> For the land disposal site to be aesthetically acceptable, specific practices should be followed (AFI 32-7042, para 3.4.1).</p>	<p>Verify that blowing litter is controlled through portable litter fences or other devices. (1)(2)</p> <p>Verify that wastes that are easily moved by wind are covered as necessary to prevent their becoming airborne. (1)(2)</p> <p>Verify that onsite vegetation is cleared only as necessary. (1)(2)</p> <p>Verify that natural windbreaks are maintained. (1)(2)</p> <p>Verify that buffer strips and/or berms are used to screen the site from nearby residences and major roadways. (1)(2)</p> <p>Verify that salvage material is removed from the site frequently. (1)(2)</p>

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<b>SW.34. (continued)</b>	(NOTE: AFI 32-7042, para 3.4.1 implements recommendations found in 40 CFR 208-3.)
<b>SW.35.</b> Land disposal site cover material must meet certain criteria (40 CFR 241.209-1).	Verify that cover material is applied as necessary to: (1)(2) <ul style="list-style-type: none"> <li>- minimize fire hazards</li> <li>- minimize infiltration of precipitation</li> <li>- minimize odors</li> <li>- minimize blowing litter</li> <li>- control gas venting</li> <li>- control vectors</li> <li>- discourage scavenging</li> <li>- provide a pleasing appearance.</li> </ul>
<b>SW.36.</b> Installations should place cover material at the end of each operating day (AFI 32-7042, para 3.4.1)	Verify that cover material is put in place daily by arriving at the site before it opens. (1)(2) (NOTE: AFI 32-7042, para 3.4.1 implements recommendations in 40 CFR 241-200-3(a).)
<b>SW.37.</b> Cover material should be applied according to specific recommendations (AFI 32-7042, para 3.4.1).	Verify that cover material is applied daily regardless of weather. (1)(2) Verify that the thickness of the compacted daily cover is no less than 6 in. (1)(2) Verify that intermediate cover is applied on areas where additional cells are not to be constructed for extended periods of time. (1)(2) Verify that final cover is applied on each area as it is completed or if the area is to remain idle for over 1 yr. (1)(2) Verify that the surface grade promotes surface water runoff without erosion to minimize infiltration. (1)(2) Verify that intermediate cover is at least 1 ft [0.30 m] thick and final cover is at least 2 ft [0.6 m] thick. (1)(2) (NOTE: AFI 32-7042, para 3.4.1 implements recommendations found in 40 CFR 209-3.)

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<p><b>SW.38.</b> Municipal solid waste and cover material must be compacted to the smallest practicable volume (40 CFR 241.210-1).</p>	<p>Verify that the solid waste and cover material is compacted to the smallest practicable volume. (1)(2)</p>
<p><b>SW.39.</b> Compaction of wastes and cover materials should be done according to recommended procedures (AFI 32-7042, para 3.4.1).</p>	<p>Verify that on an operating day municipal solid waste handling equipment is capable of performing the following functions: (1)(2)</p> <ul style="list-style-type: none"> <li>- spread solid waste in layers no more than 2 ft thick while confining it to the smallest practicable area</li> <li>- compact the solid wastes to the smallest practicable volume</li> <li>- place, spread, and compact the cover material daily.</li> </ul> <p>(NOTE: AFI 32-7042, para 3.4.1 implements recommendations found in 40 CFR 241.210-2.)</p>
<p><b>SW.40.</b> Land disposal sites are required to be designed, constructed, and operated to protect the health and safety of personnel (40 CFR 241.211-1).</p>	<p>Verify that the health and safety of personnel are a consideration in the design, construction and operation of the site. (1)(2)</p>
<p><b>SW.41.</b> Specific health and safety procedures should be followed in order to protect personnel at land disposal sites (AFI 32-7042, para 3.4.1).</p>	<p>Verify that a safety manual is available to employees. (1)(2)</p> <p>Verify that personal safety devices such as hearing and eye protection, are provided to installation employees. (1)(2)</p> <p>Verify that equipment is provided with safety devices. (1)(2)</p> <p>Verify that provisions to extinguish fires exist. (1)(2)</p> <p>Verify that communications equipment is available onsite. (1)(2)</p> <p>Verify that scavenging is prohibited. (1)(2)</p> <p>Verify that access to the site is controlled. (1)(2)</p> <p>Verify that traffic signs or markers are provided to promote an orderly traffic pattern to and from the discharge area. (1)(2)</p>

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<p><b>SW.41. (continued)</b></p> <p><b>SW.42.</b> Operators of land disposal sites are required to maintain records and monitoring data to be provided, upon request, to the responsible agency (40 CFR 241.212-1).</p> <p><b>SW.43.</b> Records being maintained at land disposal site should cover specific topics (AFI 32-7042, para 3.4.1)</p> <p><b>Closure</b></p> <p><b>SW.44.</b> Upon closure of a site, a detailed description should be recorded with the area's land recording authority (AFI 32-7042, para 3.4.1).</p>	<p>(NOTE: AFI 32-7042, para 3.4.1 implements recommendations found in 40 CFR 241.211-2 and 241.211-3.)</p> <p>Verify that required records are available. (1)(2)</p> <p>Verify that records are maintained and cover at least: (1)(2)</p> <ul style="list-style-type: none"> <li>- major operational problems, complaints, or difficulties</li> <li>- results of leachate sampling and analyses</li> <li>- results of gas sampling and analyses</li> <li>- results of groundwater and surface water quality sampling and analyses upstream and downstream of the site</li> <li>- vector control efforts</li> <li>- dust and litter control efforts</li> <li>- quantitative measurements of the solid wastes handled</li> <li>- description of solid waste materials received.</li> </ul> <p>(NOTE: AFI 32-7042, para 3.4.1 implements recommendations found in 40 CFR 241.212-3(a).)</p> <p>Verify that upon closure of a site a detailed description is recorded with the area's land recording authority. (1)(2)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements recommendations found in 40 CFR 241.212-3(b).)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SITE CRITERIA FOR NEW LANDFILLS</b></p> <p><b>SW.45.</b> Site selection and utilization are required to be consistent with public health and welfare, and air and water quality standards and adaptable to appropriate land use plan (40 CFR 241.202-1).</p> <p><b>SW.46.</b> New landfills should meet certain location and design criteria (AFI 32-7042, para 3.4.1).</p> <p><b>SW.47.</b> Plans for the design, construction, and operation of new sites or modifications to existing sites are required to be prepared or approved by a professional engineer (40 CFR 241.203-1).</p>	<p>Verify that the site and utilization are consistent with public health and welfare other necessary environmental standards. (1)(2)</p> <p>Verify that the hydrogeology of the site has been evaluated. (1)(2)</p> <p>Verify that onsite soil characteristics have been evaluated. (1)(2)</p> <p>Verify that environmental factors, climatological conditions, and socioeconomic factors have been considered in site selection. (1)(2)</p> <p>Verify that the site is easily accessible to vehicles. (1)(2)</p> <p>Verify that the site location will not attract birds and pose a hazard to low-flying aircraft. (1)(2)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements recommendations found in 40 CFR 241.202-2.)</p> <p>Verify that plans have been prepared or approved by a professional engineer. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>MUNICIPAL SOLID WASTE LANDFILLS (MSWLFs):</b></p> <p><b>Location</b></p> <p><b>SW.48.</b> Installations are subject to limitations regarding the location of new, existing, and lateral expansions of MSWLFs within 10,000 ft (3048 m) of any airport runway end used by turbojet aircraft or within 5000 ft (1524 m) of any airport runway end used by only piston-type aircraft (40 CFR 258.10(a) through 258.10(c) and 258.16).</p> <p><b>SW.49.</b> Installations are subject to limitations regarding the location of new, existing, and lateral expansions of MSWLFs in 100-yr floodplains (40 CFR 258.11(a) and 258.16).</p> <p><b>SW.50.</b> Installations are subject to limitations regarding the location of new MSWLFs and lateral expansions in wetland (40 CFR 258.12(a)(1) through 258.12(a)(3), and 258.16).</p>	<p>(NOTE: Please see Table 8-1 for a list of compliance dates for MSWLFs. Also, see Table 8-2 for a list of MSWLFs that are exempt from meeting the standards found in 40 CFR 258, except for the standards for final cover in 40 CFR 258.60(a). see check-list item SW.77.)</p> <p>Verify that the installation has demonstrated that the MSWLF is designed and operated so as to not pose a bird hazard to aircraft. (1)(2)</p> <p>Verify that the installation has notified the Federal Aviation Administration (FAA) and the affected airport as to presence of the MSWLF. (1)(2)</p> <p>Verify that the demonstration has been placed in the operating record and the State Director has been notified that it has been placed in the operating record. (1)(2)</p> <p>Verify that existing MSWLF units that cannot make this demonstration, are closed by 9 October 1996, unless a delay is approved by the Director. (1)(2)</p> <p>Verify that the installation has demonstrated that the MSWLF will not restrict the flow of the 100-yr flood, reduce the temporary water storage capacity of the floodplain, or result in a washout of solid waste. (1)(2)</p> <p>Verify that existing MSWLF units that cannot make this demonstration, are closed by 9 October 1996, unless a delay is approved by the Director. (1)(2)</p> <p>Verify that if the installation is planning to place a MSWLF in a wetlands, it has demonstrated to the Director that the construction of the MSWLF will not: (1)(2)(3)</p> <ul style="list-style-type: none"> <li>- cause or contribute to violations of any applicable State water quality standard</li> <li>- violate any applicable toxic effluent standard or prohibition</li> <li>- jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of a critical protected habitat</li> <li>- violate any requirement under the <i>Marine Protection, Research, and Sanctuaries Act of 1973</i></li> <li>- cause or contribute to significant degradation of wetlands.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.50. (continued)</b></p>	<p>Verify that the installation has demonstrated the integrity of the MSWLF and its ability to protect ecological resources by addressing the following factors: (1)(2)</p> <ul style="list-style-type: none"> <li>- erosion, stability, and migration potential of native wetland soils, muds and deposits used to support the MSWLF unit</li> <li>- erosion, stability, and migration potential of dredged and fill materials used to support the MSWLF unit</li> <li>- the volume and chemical nature of the wastes managed in the MSWLF</li> <li>- impacts on fish, wildlife, and other aquatic resources and their habitat from release of the solid waste</li> <li>- the potential effects of catastrophic release of waste to the wetland and the resulting impacts on the environment</li> <li>- any additional factors, as necessary, to demonstrate that ecological resources in the wetland are sufficiently protected.</li> </ul>
<p><b>SW.51.</b> Installations are subject to limitations regarding the placement of new MSWLFs and lateral expansions in fault areas that have had placement in Holocene time (40 CFR 258.12(a) and 258.16).</p>	<p>Verify that if the installation has, or is planning to construct, MSWLF or lateral expansions within 200 ft (60 m) of a fault that it has demonstrated to the Director that an alternative setback distance of less than 200 ft (60 m) will prevent damage to the structural integrity of the MSWLF unit and will be protective of human health and the environment. (1)(2)</p>
<p><b>SW.52.</b> Installations are subject to limitations regarding the placement of new MSWLFs and lateral expansions in seismic impact zones (40 CFR 258.14(a) and 258.16).</p>	<p>Verify that if the installation has existing, or is planning to construct a MSWLF or lateral expansion in a seismic impact zone, it has demonstrated to the Director that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site. (1)(2)</p> <p>Verify that the demonstration has been placed in the operating record and the State Director has been notified that it has been placed in the operating record. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.53.</b> Installations are subject to limitations regarding the location of new, existing, or lateral expansions of MSWLFs in unstable areas (40 CFR 258.15(a) and 258.16).</p> <p><b>Operations</b></p> <p><b>SW.54.</b> MSWLFs are subject to requirements pertaining to procedures for excluding hazardous wastes from the landfills (40 CFR 258.20(a)).</p> <p><b>SW.55.</b> MSWLFs are subject to requirements pertaining to cover materials (40 CFR 258.21).</p>	<p>Verify that if the installation has or is planning to construct a MSWLF or lateral expansion in an unstable area, it has demonstrated to the Director that engineering measures have been incorporated into the MSWLF unit's design to ensure that the integrity of the structural components will not be disrupted. (1)(2)</p> <p>Verify that the following criteria, at a minimum, are considered in judging whether or not an area is unstable: (1)(2)</p> <ul style="list-style-type: none"> <li>- onsite or local soil conditions that may result in significant differential settling</li> <li>- onsite or local geologic or geomorphic features</li> <li>- onsite or local human-made features or event (both surface and subsurface).</li> </ul> <p>Verify that the demonstration has been placed in the operating record and the State Director has been notified that it has been placed in the operating record. (1)(2)</p> <p>Verify that existing MSWLF units that cannot make this demonstration, are closed by 9 October 1996, unless a delay is approved by the Director. (1)(2)</p> <p>Verify that the MSWLF has a program for detecting and preventing the disposal of regulated hazardous wastes (as defined in 40 CFR 261) and polychlorinated biphenyls wastes that includes the following: (1)(2)</p> <ul style="list-style-type: none"> <li>- random inspections of incoming loads, unless other steps are taken to ensure incoming loads do not contain hazardous wastes or PCB wastes</li> <li>- records of any inspections</li> <li>- training of facility personnel to recognize hazardous wastes and PCB wastes</li> <li>- notification of State Director of authorized states or the USEPA Regional Administrator if a regulated hazardous waste or PCB waste is discovered at the installation.</li> </ul> <p>Verify that all MSWLF units have solid waste covered with 6 in. [15.24 cm] of earthen material, or another approved material at an alternative thickness, at the end of each operating day, or more frequently, if necessary, in order to control disease vectors, fires, odors, blowing litter, and scavenging. (1)(2)</p> <p>(NOTE: Alternative cover material and thickness must be approved by the appropriate authority; and a temporary waiver may be granted by the appropriate authority under particular extreme climatic conditions.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.56.</b> MSWLFs are subject to requirements pertaining to the control of disease vectors (40 CFR 258.22(a)).</p>	<p>Verify that at the MSWLF there is prevention or control of onsite populations of disease vectors using techniques appropriate for the protection of human health and the environment. (1)(2)</p>
<p><b>SW.57.</b> MSWLFs are subject to requirements pertaining to the production and monitoring of methane gases (40 CFR 258.23(a) and 258.23(b)).</p>	<p>Verify that at the MSWLF the concentration of methane gas generated by the facility does not exceed 25 percent of the lower explosive limit for methane in facility structures (excluding gas control or recovery system components). (1)(2)</p> <p>Verify the concentration of methane gas at the facility property boundary does not exceed the lower explosive limit for methane. (1)(2)</p> <p>Verify that the MSWLF implements a routine methane monitoring program according to the following factors: (1)(2)</p> <ul style="list-style-type: none"> <li>- the type and frequency of monitoring is based on:</li> <li>- soil conditions</li> <li>- hydrogeological conditions surrounding the facility</li> <li>- hydraulic conditions surrounding the facility</li> <li>- locations of facility structures and property boundaries.</li> </ul> <p>Verify that monitoring occurs quarterly, at a minimum. (1)(2)</p>
<p><b>SW.58.</b> MSWLFs are subject to notification criteria pertaining to excessive methane gas releases (40 CFR 258.23(c)).</p>	<p>Verify that if methane gas monitoring detect levels of gas exceeding the allowed limits, the following notification measures are taken: (1)(2)</p> <ul style="list-style-type: none"> <li>- all necessary steps are taken to ensure protection of human health</li> <li>- the Director is notified of the protective measures</li> <li>- within 7 days of detection, the level of methane gas detected and the steps taken to protect human health is noted in the operating record</li> <li>- within 60 days of detection, a remediation plan for the methane gas release is placed in the operating record, and the Director is notified that the plan has been implemented.</li> </ul> <p>(NOTE: The Director of an approved state may establish alternative schedules for demonstrating compliance with these requirements.)</p>
<p><b>SW.59.</b> MSWLFs are required to control emissions (40 CFR 258.24).</p>	<p>Verify that there is no open burning of solid waste, except for the infrequent burning of agricultural wastes, silvicultural wastes, landclearing debris, diseased trees, or debris from emergency cleanup operations. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.60.</b> MSWLFs are subject to access limitations (40 CFR 258.25).</p>	<p>Verify that the installation controls public access to the MSWLF and prevents unauthorized vehicular traffic and illegal dumping of wastes through the use of artificial barriers, natural barriers, or both. (1)(2)</p>
<p><b>SW.61.</b> MSWLFs are subject to surface water control requirements (40 CFR 258.27).</p>	<p>Verify that the MSWLF does not cause a discharge of pollutants into waters of the United States, including wetlands, that causes noncompliance with the CWA or NPDES requirements. (1)(2)</p> <p>(NOTE: This includes discharges of a nonpoint source of pollution that violates any approved area wide or State-wide water quality management plan.)</p>
<p><b>SW.62.</b> The disposal of liquids at MSWLF is restricted (40 CFR 258.28).</p>	<p>Verify that bulk or noncontainerized liquid waste is not placed in MSWLF unless: (1)(2)</p> <ul style="list-style-type: none"> <li>- the waste is household waste other than septic waste</li> <li>- the liquid waste is in a small container similar in size to that normally found in household waste</li> <li>- the container holding the waste is designed to hold liquids for use other than storage</li> <li>- the waste is leachate or gas condensate derived from the MSWLF (as long as the MSWLF is designed with a composite liner and leachate collection system).</li> </ul>
<p><b>SW.63.</b> MSWLFs are required to maintain records (40 CFR 258.29(a) through 258.29(c)).</p>	<p>Verify that if the waste is leachate or gas condensate derived from MSWLF designed with composite liner and leachate collection system, the installation demonstrates to the Director that the MSWLF is of such a design, and the demonstration is recorded in the operating record. (1)(2)</p> <p>Verify that the following records are retained in an operating record, near the MSWLF, or at an approved alternate location: (1)(2)</p> <ul style="list-style-type: none"> <li>- any location restriction demonstration</li> <li>- inspection records, training procedures, and notification procedures</li> <li>- gas monitoring results from monitoring and any remediation plans</li> <li>- any MSWLF unit design documentation for placement of leachate or gas condensate in MSWLF</li> <li>- any demonstration, certification, finding, monitoring, testing, or related analytical data</li> <li>- closure and postclosure care plans and any monitoring, testing, or related analytical data</li> <li>- any information demonstrating compliance with small community exemption.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.68.</b> Detection monitoring at MSWLFs is subject to specific requirements (40 CFR 258.54(a) and 258.54(b)).</p>	<p>Verify that, at a minimum, a detection monitoring program, includes the constituents listed in Table 8-3. (1)(2)</p> <p>Verify that monitoring occurs at least semiannually during the active life of the facility (including closure) and during the postclosure period. (1)(2)</p> <p>Verify that a minimum of four independent samples from each well (background and downgradient) are collected and analyzed for the constituents listed in Table 8-3 during the first semiannual sampling event. (1)(2)</p> <p>Verify that at least one sample from each well (background and downgradient) is collected and analyzed during subsequent semiannual sampling events. (1)(2)</p> <p>(NOTE: The Director of an approved state may delete any of the Table 8-3 monitoring parameters if the installation shows that the deleted constituents are not reasonably expected to be in or derived from the waste contained in the MSWLF unit.)</p>
<p><b>SW.69.</b> MSWLFs are subject to requirements pertaining to the detection of groundwater contamination (40 CFR 258.54(c)).</p>	<p>Verify that in the event that there is a statistically significant increase over background levels for one or more of the constituents listed in Table 8-3, the following steps are taken: (1)(2)</p> <ul style="list-style-type: none"> <li>- within 14 days of the finding, the installation places a notice in the operating record indicating which constituents have shown statistically significant change from background levels</li> <li>- the Director is notified that the finding has been placed in the operating record</li> <li>- within 90 days an assessment monitoring program is established.</li> </ul> <p>(NOTE: The installation may demonstrate that a source other than the MSWLF caused the contamination or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. This demonstration report must be certified by a qualified groundwater scientist or approved by the Director and be placed in the operating record.)</p> <p>(NOTE: The Director of an approved state may delete any of the Table 8-3 monitoring parameters if the installation shows that the deleted constituents are not reasonably expected to be in or derived from the waste contained in the MSWLF unit.)</p>
<p><b>SW.70.</b> MSWLFs are subject to requirements pertaining to assessment monitoring programs (40 CFR 258.55(a) through 258.55(c)).</p>	<p>Verify that an assessment monitoring program is established whenever a statistically significant increase over background has been detected for one or more of the constituents listed in Table 8-3. (1)(2)</p> <p>Verify that within 90 days of establishing an assessment monitoring program, and annually thereafter, the installation samples and analyzes the groundwater for all constituents identified in Table 8-4. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.72. (continued)</b></p>	<p>Verify that the installation also takes the following steps: (1)(2)</p> <ul style="list-style-type: none"> <li>- the nature and extent of the release is investigated by installing additional monitoring wells</li> <li>- at least one additional monitoring well is installed at the facility boundary in the direction of contamination migration</li> <li>- notification of all persons who own land or reside on land that directly overlies all or part of the plume of contamination that has migrated offsite</li> <li>- initiation of an assessment of corrective measures within 90 days.</li> </ul> <p>(NOTE: The installation may demonstrate that a source other than the MSWLF caused the contamination or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. This demonstration report must be certified by a qualified groundwater scientist or approved by the Director and be placed in the operating record.)</p>
<p><b>SW.73.</b> MSWLFs are subject to criteria for assessing potential groundwater remediation actions (40 CFR 258.56).</p>	<p>Verify that within 90 days of finding Table 8-4 constituents at significant levels exceeding the groundwater protection standards, an assessment of potential remedial actions is made and includes the following: (1)(2)</p> <ul style="list-style-type: none"> <li>- analysis of effectiveness of potential corrective measures in meeting all the requirements and objectives of the remedy, such as:</li> <li>- the performance, reliability, ease of implementation, and potential impacts of potential remedies</li> <li>- the time required to begin and complete the remedy</li> <li>- the cost of the remedy implementation</li> <li>- state and local requirements affecting remediation</li> <li>- discussion of corrective measures with public, or interested parties.</li> </ul>
<p><b>SW.74.</b> Selection of remedial measures for groundwater contamination is subject to specific criteria (40 CFR 258.57(a) through 258.57(c)).</p>	<p>Verify that corrective measures are selected according to the following criteria: (1)(2)</p> <ul style="list-style-type: none"> <li>- are protective of human health and the environment</li> <li>- attain the groundwater protection standard</li> <li>- control the source(s) of releases so as to reduce or eliminate further release of Table 8-4 constituents into the environment</li> <li>- comply with standards for management of wastes.</li> </ul>

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<p><b>SW.74. (continued)</b></p>	<p>Verify that the following evaluation factors are considered: (1)(2)</p> <ul style="list-style-type: none"> <li>- long and short term practicability, effectiveness, protectiveness, and reliability</li> <li>- magnitude of reduction of existing risks</li> <li>- magnitude of residual risks in terms of further releases of wastes following remediation</li> <li>- type and degree of long-term management (including monitoring, operation, and maintenance)</li> <li>- short term risks to community, workers, or the environment during implementation</li> <li>- time period until full remediation.</li> </ul> <p>Verify that the installation has notified the Director within 14 days of selecting a remedy, and that the selection and the reason for its selection are noted in the operating record. (1)(2)</p> <p>Verify that remedial activities take place within a reasonable period of time. (1)(2)</p>
<p><b>SW.75:</b> Groundwater remediation activities are subject to scheduling requirements (40 CFR 258.57(d)).</p>	<p>Verify that the initiation of remedial activities occurs within a reasonable period of time, depending on: (1)(2)</p> <ul style="list-style-type: none"> <li>- extent and nature of contamination</li> <li>- practical capabilities of remedial technologies</li> <li>- availability of treatment or disposal capacity for wastes managed during the implementation period</li> <li>- desirability of utilizing technologies not currently available, but that may offer significant advantages over existing methods</li> <li>- potential risks to human health and the environment</li> <li>- resource value of the aquifer involved</li> <li>- practicable capability of the installation.</li> </ul>
<p><b>SW.76.</b> Installations are required to implement corrective action programs according to specific parameters (40 CFR 258.58(a) through 258.58(d)).</p>	<p>Verify that, based on the established schedule for initiation and completion of activities, the installation: (1)(2)</p> <ul style="list-style-type: none"> <li>- establishes and implements a corrective action groundwater monitoring program that:             <ul style="list-style-type: none"> <li>- at a minimum meets the assessment monitoring requirements of 40 CFR 258.55)</li> <li>- indicates the effectiveness of the selected corrective action remedy</li> <li>- demonstrates compliance with groundwater protection standards</li> <li>- implements to selected corrective action program</li> <li>- takes any interim measure necessary to ensure the protection of human health and the environment.</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.76. (continued)</b></p>	<p>Verify that if the installation determines that compliance is not being achieved with the selected remedy, it selects another method or technique that can practicably achieve compliance. (1)(2)</p> <p>Verify that if compliance cannot be practicably achieved with currently available methods, the installation: (1)(2)</p> <ul style="list-style-type: none"> <li>- obtains certification of a qualified groundwater scientist or approval of a Director of an approved State substantiating this claim</li> <li>- implements alternate measures to control exposure of humans or the environment to residual contamination as necessary to protect human health and the environment</li> <li>- implements alternate measures for control of the sources of contamination, or for removal of decontamination of equipment, units, devices, or structures that are:               <ul style="list-style-type: none"> <li>- technically practicable</li> <li>- consistent with the overall objective of the remedy</li> <li>- notify the State Director within 14 days that a report justifying the alternative measures prior to implementation has been placed in the operating record.</li> </ul> </li> </ul> <p>Verify that all solid wastes that are managed in relation to a remedy or an interim measure are managed as follows: (1)(2)</p> <ul style="list-style-type: none"> <li>- in a manner that is protective of human health and the environment</li> <li>- in a manner that complies with applicable RCRA requirements.</li> </ul>
<p><b>Closure</b></p> <p><b>SW.77. MSWLFs are subject to final cover design requirements (40 CFR 258.60(a) and 258.60(b)).</b></p>	<p>Determine whether the installation has plans to close a MSWLF. (1)(2)</p> <p>Verify that the final cover is designed to minimize infiltration and erosion, according to the following criteria: (1)(2)</p> <ul style="list-style-type: none"> <li>- it has a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than <math>1 \times 10^{-5}</math> cm/sec, whichever is less</li> <li>- it minimizes infiltrations into the closed municipal solid waste landfill by use of an infiltration layer that contains a minimum 18 in. [45 cm] of earthen material</li> <li>- it minimizes erosion of the final cover by the use of an erosion layer that contains a minimum 6 in. [15 cm] of earthen material that is capable of sustaining native plant growth.</li> </ul>

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<b>SW.77. (continued)</b>	(NOTE: The Director of an approved state may approve of an alternate final cover design.)
<b>SW.78.</b> MSWLFs are subject to closure plan requirements (40 CFR 258.60(c)).	<p>Verify that the installation has prepared a written closure plan that includes the following information: (1)(2)</p> <ul style="list-style-type: none"> <li>- a description of the final cover, methods, and procedures to be used to install the cover</li> <li>- an estimate of the largest area of the MSWLF unit ever requiring a final cover any time during its active life</li> <li>- an estimate of the maximum inventory of wastes ever onsite over its active life</li> <li>- a schedule for completing all activities necessary to satisfy closure requirements.</li> </ul>
<b>SW.79.</b> MSWLFs are subject to closure notification requirements (40 CFR 258.60(d)).	<p>Verify that the installation has notified the Director of the intent to close the MSWLF. (1)(2)</p> <p>Verify that the notice of intent to close has been placed in the operating record. (1)(2)</p>
<b>SW.80.</b> MSWLFs are subject to closure criteria (40 CFR 258.60(f) and 258.60(g)).	<p>Verify that the installation begins closure activities no later than 30 days after the date the MSWLF receives the final receipt of waste, or no later than 1 yr after the most recent receipt of waste (if the unit has remaining capacity). (1)(2)</p> <p>Verify that the installation completes closure activities of each MSWLF unit within 180 days following the beginning of closure. (1)(2)</p>
<b>SW.81.</b> MSWLFs are subject to postclosure notification requirements (40 CFR 258.60(h)).	<p>Verify that the installation notifies the Director that a certification signed by an independent registered professional engineer has been completed and placed in the operating record. (1)(2)</p> <p>Verify that the installation records a notation on the deed to the landfill facility property, (or equivalent instrument examined in a title search), that the property has been used as a landfill, and its use is restricted. (1)(2)</p> <p>Verify that the notation is placed in the operating record, and the Director is notified of its placement. (1)(2)</p> <p>(NOTE: The length of the postclosure care period may be decreased or increased by the Director of an approved state if it is demonstrated that a reduced period sufficiently protects human health and the environment, or it is determined that a lengthened period is necessary to protect human health and the environment.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Postclosure</b></p> <p><b>SW.82.</b> MSWLFs are subject to postclosure care requirements (40 CFR 258.61(a)).</p> <p><b>SW.83.</b> MSWLFs are subject to postclosure plan criteria (40 CFR 258.61(c) and 258.61(d)).</p> <p><b>SW.84.</b> MSWLFs are subject to postclosure certification requirements (40 CFR 258.61(e)).</p>	<p>Verify that the installation conducts postclosure care of its MSWLF in the following manner, for 30 yr: (1)(2)</p> <ul style="list-style-type: none"> <li>- maintains the integrity and effectiveness of any final cover, including making repairs to the cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and to prevent run-on and runoff from eroding or otherwise damaging the final cover</li> <li>- maintains and operates the leachate collection system</li> <li>- monitors the groundwater and maintains the groundwater monitoring system</li> <li>- maintains and operates the gas monitoring system.</li> </ul> <p>Verify that the installation has prepared a postclosure plan that includes the following information: (1)(2)</p> <ul style="list-style-type: none"> <li>- a description of the monitoring and maintenance activities</li> <li>- the name, address, and telephone number of the person or office to contact about the facility during the postclosure period</li> <li>- a description of the planned uses of the property during the postclosure period.</li> </ul> <p>Verify that the postclosure plan has been placed in the operating record and the Director has been notified of its placement. (1)(2)</p> <p>Verify that following completion of the postclosure care period, a certification signed by an independent registered professional engineer is completed, placed in the operating record, and the Director is notified of its placement. (1)(2)</p>
<p><b>Design</b></p> <p><b>SW.85.</b> New MSWLFs and lateral expansions are subject to specific design criteria (40 CFR 258.40(a)).</p>	<p>Verify that the MSWLF is of an approved design that ensures that the concentration values listed in Table 8-5 are not exceeded in the uppermost aquifer at the relevant point of compliance. (1)(2)</p> <p>Verify that the MSWLF has a composite liner and a leachate collection system that is designed and constructed to maintain less than a 30 cm depth of leachate over the liner. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.86.</b> Run-on and runoff control systems at MSWLFs are subject to design requirements (40 CFR 258.26).</p> <p><b>THERMAL PROCESSING FACILITIES</b></p> <p><b>SW.87.</b> Installations with thermal processing facilities designed to process or are processing 50 tons [45,359.24 kg] or more per day of municipal solid wastes are required to determine what wastes shall be accepted (40 CFR 240.100(b) and 240.200-1).</p> <p><b>SW.88.</b> Installations with thermal processing facilities designed to process or are processing 50 tons [45,359.24 kg] or more per day of municipal solid wastes are required to provide specific areas for special wastes while they await processing (AFI 32-7042, para 3.4.1).</p>	<p>Verify that the run-on control system is designed and maintained to prevent flow onto the active portion of the landfill during the peak discharge from a 25 yr storm. (1)(2)</p> <p>Verify that the run-off control system from the active portion of the landfill is designed and maintained to collect and control at least the water volume resulting from a 24-h, 25-yr storm. (1)(2)</p> <p>Verify the run-off does not cause a discharge of pollutants into waters of the United States, including wetlands, that causes noncompliance with the CWA or NPDES requirements. (1)(2)</p> <p>Determine if the installation is operating a thermal processing facility. (1)(2)</p> <p>Verify that the facility has identified what wastes it will and will not accept. (1)(2)</p> <p>(NOTE: This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that storage areas for bulky wastes, digested and dewatered sludges from wastewater treatment facilities, raw sewage sludges, and septic tank pumpings are clearly marked. (1)(2)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements guidelines published in 40 CFR 240.100(a), 240.200-2(b), 240.200-3(a).)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.89.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons [45,359.24 kg] or more per day of municipal solid wastes are required to train personnel in any unusual handling required by acceptance of special wastes (AFI 32-7042, para 3.4.1).</p>	<p>(NOTE: This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that personnel are thoroughly trained to handle bulky wastes, digested and dewatered sludges from wastewater treatment facilities, raw sewage sludges, and septic tank pumpings. (1)(2)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements guidelines published in 40 CFR 240.100(a), 240.200-3(b).)</p>
<p><b>SW.90.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons [45,359.24 kg] or more per day of municipal solid wastes are required to inform regular users about materials which are excluded (AFI 32-7042, para 3.4.1).</p>	<p>(NOTE: This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that regular users are given a list of excluded materials. (1)(2)</p> <p>Verify that a list of excluded materials is posted prominently at the facility. (1)(2)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements guidelines published in 40 CFR 240.100(a), 240.201-3(a).)</p>
<p><b>SW.91.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons or more per day [45,359.24 kg] of municipal solid wastes are required to have certain procedures and precautions to deal with unacceptable wastes which are delivered to or left at the facility (AFI 32-7042, para 3.4.1).</p>	<p>(NOTE: This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that there is an operating plan which specifies procedures and precautions to be taken if unacceptable wastes are delivered to or left at the facility. (1)(2)</p> <p>Verify that operating personnel are thoroughly trained in such procedures. (1)(2)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements guidelines published in 40 CFR 240.100(a), 240.201-3(b).)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.92.</b> Installations building thermal processing facilities designed to process 50 tons [45,359.24 kg] or more per day of municipal solid wastes are required to be located on sites that are consistent with public health and welfare and air and water quality standards (40 CFR 240.100(b) and 240.202-1).</p> <p><b>SW.93.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons or more per day [45,359.24 kg] of municipal solid wastes are required to meet certain site selection criteria (AFI 32-7042, para 3.4.1).</p>	<p>Verify that the site chosen for a thermal processing facility is consistent with public health and environmental standards. (1)(2)</p> <p>(NOTE: This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that the facility is located in an area zoned for industrial use and has adequate utilities to serve it. (1)(2)</p> <p>Verify that the site is accessible by permanent roads leading from the public road system. (1)(2)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements guidelines published in 40 CFR 240.100(a), 240.202-2(a) and 202-2(b).)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.94.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons [45,359.24 kg] or more per day of municipal solid wastes are required to have plans for the design of new facilities or modifications to existing facilities prepared or approved by a professional engineer (40 CFR 240.100(a), 240.203-1).</p> <p><b>SW.95.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons [45,359.24 kg] or more per day of municipal solid wastes are required to sufficiently treat discharged waters to meet the most stringent of applicable water quality and air quality standards (40 CFR 240.100(a), 240.204-1, and 240.205-1).</p>	<p>(NOTE: This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that plans for the design of new facilities or modifications to existing facilities are prepared or approved by a professional engineer. (1)</p> <p>Verify that plans have been approved by the responsible regulatory authorities and that construction was not initiated until approval was received. (1)</p> <p>Determine where the effluent discharges from the facility go. (1)</p> <p>Verify that effluent and emissions discharges are monitored as required. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.96.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons [45,359.24 kg] or more per day of municipal solid wastes are required to control vectors (40 CFR 240.100(a), 240.206-1).</p>	<p>(NOTE: This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that a housekeeping schedule is established and maintained. (2)</p> <p>Verify that solid waste and residue do not accumulate at the facility for more than one week. (2)</p>
<p><b>SW.97.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons [45,359.24 kg] or more per day of municipal solid wastes are required to operate in an aesthetically acceptable manner (40 CFR 240.100(a), 240.207-1).</p>	<p>(NOTE: This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that a routine housekeeping and litter removal schedule is established and implemented. (1)(2)</p> <p>Verify that solid wastes which cannot be processed by the facility are removed on a weekly basis. (1)(2)</p>
<p><b>SW.98.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons [45,359.24 kg] or more per day of municipal solid wastes are required to dispose of residue and other solid waste products resulting from the thermal process in an environmentally acceptable manner (40 CFR 240.100(a) and 240.208-1).</p>	<p>(NOTE: This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that waste is disposed of in an environmental sound manner. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.99.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons [45,359.24 kg] or more per day of municipal solid wastes are required to dispose of residue and other solid waste products resulting from the thermal process in an environmentally acceptable manner (AFI 32-7042, para 3.4.1).</p> <p><b>SW.100.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons [45,359.24 kg] or more per day of municipal solid wastes are required to be designed, operated, and maintained in a manner to protect the health and safety of personnel (40 CFR 240.100(a), 240.209-1).</p>	<p><b>NOTE:</b> This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that the furnace operator records the estimated percentage of unburned combustibles in a log. (1)(2)</p> <p>Verify that if residue or fly ash is collected in a wet condition, it is drained of free moisture. (1)(2)</p> <p>Verify that residue and fly ash are treated by means that prevent the loads from shifting, falling, or blowing from the container. (1)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements guidelines published in 40 CFR 240.100(a), 240.208-1, 202-208-2, and 208-3.)</p> <p>(NOTE: This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that the facility is operated and maintained in a manner to protect the health and safety of personnel. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.101.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons [45,359.24 kg] or more per day of municipal solid wastes are required to be designed, operated, and maintained in a manner to protect the health and safety of personnel (AFI 32-7042, para 3.4.1).</p>	<p>(NOTE: This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that procedures are developed for operation in emergency situations. (2)</p> <p>Verify that approved respirators or self-contained breathing apparatus is available at convenient locations. (2)</p> <p>Verify that training in first aid practices and emergency procedures is given to all personnel. (2)</p> <p>Verify that personal safety devices are provided to all personnel. (2)</p> <p>Verify that any regular user or employee that poses a safety hazard is barred from the facility and reported to the responsible agency. (2)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements guidelines published in 40 CFR 240.100(a), 240.209-1, 202-209-2, and 209-3.)</p>
<p><b>SW.102.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons [45,359.24 kg] or more per day of municipal solid wastes are required to follow certain general operation criteria (40 CFR 240.100(a), 240.210-1).</p>	<p>(NOTE: This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that the facility is maintained and operated so that it meets design requirements. (2)</p> <p>Verify that there is an operations manual for facility personnel to consult. (2)</p>
<p><b>SW.103.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons [45,3359.24 kg] or more per day of municipal solid wastes are required to follow certain general operation criteria (AFI 32-7042, para 3.4.1).</p>	<p>(NOTE: This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that the facility supervisor is experienced in the operation of the type of facility designed. (1)(2)</p> <p>Verify that alternate and standby disposal and operating procedures are established for implementation during emergencies, air pollution episodes, and shutdown periods. (1)(2)</p> <p>Verify that a routine maintenance schedule is established. (1)(2)</p> <p>Verify that engineering drawings are updated as facility is modified. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.104. (continued)</b></p>	<p>Verify that an annual report is prepared and that it includes the following information: (1)(2)</p> <ul style="list-style-type: none"> <li>- minimum, average, and maximum daily volume and weight of waste received and processed, summarized on a monthly basis</li> <li>- a summary of the laboratory analyses including at least monthly averages</li> <li>- number and qualifications of personnel in each job category</li> <li>- total man hours per week</li> <li>- number of state certified or licensed personnel</li> <li>- staffing deficiencies</li> <li>- serious injuries, their cause, and preventive measures instituted</li> <li>- an identification and brief discussion of major operational problems and solutions</li> <li>- adequacy of operation and performance with regard to environmental requirements, the general level of housekeeping and maintenance, testing and reporting proficiency, and recommendations for corrective actions</li> <li>- a copy of all significant correspondence, reports, inspection reports, and any other communications from enforcement agencies.</li> </ul> <p>Verify that a methodology for evaluating the facility's performance has been developed. (1)(2)</p> <p>(NOTE: AFI 32-7042, para 3.4.1 implements guidelines published in 40 CFR 240.100(a), 240.211-2, and 240.211-3.)</p>
<p><b>OFFSITE WASTE DISPOSAL</b></p> <p><b>SW.105.</b> Solid waste which is disposed offsite must be disposed of only at licensed or permitted facilities (AFI 32-7042, para 3.4.3).</p> <p><b>SW.106.</b> Installations should verify with an appropriate regulatory agency that offsite landfills are being operated in general conformance with permit conditions and applicable regulations (MP).</p>	<p>Verify through interview and records search that offsite landfills receiving installation wastes are licensed or permitted. (1)</p> <p>Determine through interviews and records reviews if verification with regulators have been made. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.107.</b> Solid wastes will be disposed of at regional or municipal facilities wherever practical (AFI 32-7042, para 3.4.2).</p> <p><b>REFUSE FROM OUTSIDE THE UNITED STATES</b></p> <p><b>SW.108.</b> Movement of garbage from Hawaii, Puerto Rico, the Virgin Islands of the United States, Guam, and all other Insular Possessions of the United States to other parts of the United States is subject to certain inspection and disposal requirements to prevent dissemination of pests and diseases (7 CFR 330.400).</p>	<p>Verify that proper efforts have been made to use regional waste disposal facilities by interviewing the BCE. (1)(2)</p> <p>(NOTE: Exempted from these requirements is regulated garbage that:</p> <ul style="list-style-type: none"> <li>- is on or removed in the United States from a means of conveyance other than an aircraft if when the garbage is on or removed from the conveyance:               <ul style="list-style-type: none"> <li>- the means of conveyance has a certificate stating that it has been cleared of all garbage</li> <li>- the means of conveyance has been cleaned and disinfected in the presence of the inspector</li> <li>- since being cleaned and disinfected, the means of conveyance has not been in a non-Canadian foreign port.</li> <li>- when on or removed from an aircraft the following are met:                   <ul style="list-style-type: none"> <li>- the aircraft is cleared of all garbage and all stores</li> <li>- the cleared items are properly disposed</li> <li>- after garbage and stores were cleared the aircraft has not been in a non-Canadian foreign port.)</li> </ul> </li> </ul> </li> </ul> <p>Determine if garbage is on or unloaded from vessels or aircraft arriving in the places listed below: (1)(3)</p> <ul style="list-style-type: none"> <li>- the United States from any place outside the United States</li> <li>- the continental United States from Hawaii or any territory or possession</li> <li>- any territory or possession from any other territory or possession or Hawaii</li> <li>- Hawaii from any territory or possession.</li> </ul> <p>Verify that in arriving vessels and aircraft: (1)(3)</p> <ul style="list-style-type: none"> <li>- garbage is contained in tight leakproof covered receptacles inside guardrails on vessels</li> <li>- garbage is removed in tight, leakproof covered containers under direction of USDA inspector to an approved facility for incineration, sterilization, or grinding into an approved sewage system</li> <li>- garbage is removed for other handling and under supervision approved by the USDA.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.108. (continued)</b></p>	<p>Determine if installation has received approval of facility or sewage system used for disposal from Administrator, Animal and Plant Health Inspection Service, USDA. (1)</p>
<p><b>RESOURCE RECOVERY FACILITIES</b></p> <p><b>SW.109.</b> Installations are required to establish or utilize resource recovery facilities (40 CFR 245.200-1).</p>	<p>(NOTE: Federal agencies that make the determination not to establish or utilize a resource recovery facility must make a report to the Administrator fully explaining that determination.)</p> <p>Verify that a resource recovery facility has been established or utilized unless the facility has made a determination not to utilize or establish a resource recovery facility. (1)</p>
<p><b>SW.110.</b> Installations which establish or utilize a resource recovery facility are required to design such facilities to process a standard amount of solid waste (40 CFR 245.200-1(e)).</p>	<p>Verify that the facility is designed to process at least 65 percent by wet weight of the solid waste into recycled material, fuel, or energy. (1)</p>
<p><b>MEDICAL WASTE</b></p> <p><b>SW.111.</b> Contaminated reusable sharps are required to be placed in containers which meet specific requirements as soon as possible after use until properly reprocessed (29 CFR 1910.1030(d)(2)(viii) and 1910.1030(d)(4)(ii)(E)).</p>	<p>Verify that contaminated reusable sharps are placed in containers that are: (1)</p> <ul style="list-style-type: none"> <li>- puncture resistant</li> <li>- labeled or color coded</li> <li>- leakproof on the sides and bottom.</li> </ul> <p>Verify that reusable sharps that are contaminated with blood or other potentially infectious materials are not stored or processed in a manner that required employees to reach by hand into the containers. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.112.</b> Specimens of blood or other potentially infectious material are required to be placed in a container that prevents leakage during collection, handling, processing, storage, transport, or shipping and specific labeling and handling requirements followed (29 CFR 1910.1030(d)(2)(xiii)).</p> <p><b>SW.113.</b> Contaminated sharps are to be discarded immediately in containers meeting specific requirements (29 CFR 1910.1030(d)(4)(iii)(A)).</p>	<p>Verify that containers are: (1)</p> <ul style="list-style-type: none"> <li>- labeled and color coded</li> <li>- closed prior to being stored, transported or shipped.</li> </ul> <p>(NOTE: When the facility utilizes Universal Precautions in the handling of all specimens, the labeling/color coding of specimens is not necessary if the containers are recognizable as containing specimens.)</p> <p>Verify that if outside contamination of the primary container occurs, it is placed in a second container. (1)</p> <p>Verify that if the specimens could puncture the primary container, the primary container is placed in a secondary container which is puncture resistant. (1)</p> <p>Verify that contaminated sharps are placed in containers that are: (1)</p> <ul style="list-style-type: none"> <li>- closeable</li> <li>- puncture resistant</li> <li>- leakproof on sides and bottoms</li> <li>- labeled or color coded.</li> </ul> <p>Verify that during use, containers for contaminated sharps are: (1)</p> <ul style="list-style-type: none"> <li>- easily accessible</li> <li>- maintained upright throughout use</li> <li>- replaced routinely and not be allowed to overfill.</li> </ul> <p>Verify that when the containers of contaminated sharps are being moved from the area of use, the containers: (1)</p> <ul style="list-style-type: none"> <li>- are closed</li> <li>- placed in a secondary container if leakage is possible.</li> </ul> <p>Verify that reusable containers are not opened, emptied, or cleaned manually or handled in any other manner that would expose employees to risk. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SW.114.</b> Regulated wastes (see definitions) are required to be handled and placed in containers that meet specific standards (29 CFR 1910.1030(d)(4)(iii)(B)).</p> <p><b>SW.115.</b> All bins, pails, cans, and similar receptacles intended for reuse, that have the likelihood of becoming contaminated with blood or other potentially infectious materials are required to be inspected and decontaminated on a regularly scheduled basis (29 CFR 1910.1030(d)(4)(ii)(C)).</p> <p><b>SW.116.</b> Labels affixed to containers of regulated wastes, refrigerators and freezers containing blood or other potentially infectious materials, and other containers used to store, transport, or ship blood or other potentially infectious materials must meet specific standards (29 CFR 1910.1030(g)(1)(i)).</p>	<p>Verify that regulated wastes are placed in containers that: (1)</p> <ul style="list-style-type: none"> <li>- are closeable</li> <li>- constructed to contain all contents and prevent leakage of fluids</li> <li>- labeled or color coded</li> <li>- closed prior to removal.</li> </ul> <p>(NOTE: Regulated wastes which have been decontaminated need not be labeled or color coded.)</p> <p>Verify that if outside contamination of the regulated waste occurs, it is placed in a second container. (1)</p> <p>Verify that receptacles with the potential for contamination are regularly inspected and decontaminated. (1)</p> <p>Verify that the labels: (1)</p> <ul style="list-style-type: none"> <li>- include the biohazard symbol</li> <li>- are fluorescent orange or orange-red or predominantly so, with lettering and symbols in contrasting color</li> <li>- are affixed as closely as possible to the container to prevent loss or removal.</li> </ul> <p>(NOTE: Red bags or containers may be used as a substitute for labels.)</p> <p>(NOTE: The following are exempt from labeling requirements:</p> <ul style="list-style-type: none"> <li>- containers of blood, blood components, or blood products that are labeled as to their contents and have been released for transfusion or other clinical use</li> <li>- individual containers of blood or other potentially infectious materials that is placed in a labeled container during storage, transport, shipment, or disposal.)</li> </ul> <p>(NOTE: Regulated waste that has been decontaminated need not be labeled and color coded.)</p>

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## **Table 8-1**

### **Compliance Dates for MSWLFs and 40 CFR 258 (40 CFR 258.1(e))**

In general compliance with 40 CFR 258 is required by 9 October 1993. The following is a list of MSWLFs which have had their compliance deadline with 40 CFR 258 extended.

1. 9 April 1994 for existing MSWLF units or a lateral expansion of an existing MSWLF that meet the following conditions:
  - a. the MSWLF unit disposed of 100 tons/day or less of solid waste during a representative period prior to 9 October 1993;
  - b. the unit does not dispose of more than an average of 100 tons/day of solid waste each month between 9 October 1993 and 9 April 1994
  - c. the MSWLF is located in a state that has submitted an application for permit program approved by the USEPA by 9 October 1993, is located in the state of Iowa, or is located on Indian Lands or Indian Country
  - d. the MSWLF is not on the National Priorities List (NPL).
2. The compliance date has been extended for existing MSWLF unit or lateral expansion if an existing MSWLF unit receiving flood-related waste from the Federally-designated areas within the major disasters declared for the states of Iowa, Illinois, Minnesota, Wisconsin, Missouri, Nebraska, Kansas, North Dakota, and South Dakota by the President during the summer of 1993:
  - a. Until 9 April 1994 if the state in which the MSWLF is located has determined that the MSWLF unit is needed to receive flood-related wastes from a federally designated disaster area.
  - b. Until 9 October 1994 if the state in which the MSWLF is located has determined that the MSWLF unit is needed to receive flood-related wastes from a Federally designated disaster area.
3. 9 October 1995 for new MSWLF units, existing MSWLF units and lateral expansions that dispose of less than 20 tons of municipal solid waste daily, based on an annual average.





**Table 8-2**

**MSWLF Units Exempt From Compliance With 40 CFR 258  
(40 CFR 258.1(c) and 258.1(d))**

1. MSWLFs that did not receive waste after 9 October 1991.
2. Existing MSWLF units or a lateral expansion of an existing MSWLF that receive waste after 9 October 1991 but stop receiving waste before 9 April 1994 that meet the following conditions:
  - a. the MSWLF unit disposed of 100 tons/day or less of solid waste during a representative period prior to 9 October 1993
  - b. the unit does not dispose of more than an average of 100 tons/day of solid waste each month between 9 October 1993 and 9 April 1994
  - c. the MSWLF is located in a state that has submitted an application for permit program approved by the USEPA by 9 October 1993, is located in the state of Iowa, or is located on Indian Lands or Indian Country
  - d. the MSWLF is not on the National Priorities List (NPL).

(NOTE: If these units have not installed a final cover according to the standards in 40 CFR 258.60(a) by 9 October 1994, the unit is required to meet all the requirements found in 40 CFR 258.)

3. Existing MSWLF unit or lateral expansion if an existing MSWLF unit is receiving flood-related waste from the Federally-designated areas within the major disasters declared for the states of Iowa, Illinois, Minnesota, Wisconsin, Missouri, Nebraska, Kansas, North Dakota, and South Dakota by the President during the summer of 1993 and receive waste after 9 October 1991 but stops receiving waste before the date designated by the state.

(NOTE: If these units have not installed a final cover according to the standards in 40 CFR 258.60(a) within 1 yr of the date designated by the state, the unit is required to meet all the requirements in 40 CFR 258.)

4. New MSWLF units, existing MSWLF units and lateral expansions that dispose of less than 20 tons of municipal solid waste daily, based on an annual average that receive waste after 9 October 1991 but stop receiving waste before 9 October 1995.

(NOTE: If these units have not installed a final cover according to the standards in 40 CFR 258.60(a) by 9 October 1996, the unit is required to meet all the requirements of 40 CFR 258.)

5. MSWLF units that receive waste after 9 October 1991 but stop receiving wastes before 9 October 1993.

(NOTE: If these units have not installed a final cover according to the standards in 40 CFR 258.60(a) by 9 October 1994, the unit is required to meet all the requirements of 40 CFR 258.)



**Table 8-3**  
**Constituents for Detection Monitoring<sup>1</sup>**  
**(40 CFR 258, Appendix I)**

Common name <sup>2</sup>	CAS RN <sup>3</sup>
<i>Inorganic Constituents</i>	
(1) Antimony	(Total)
(2) Arsenic	(Total)
(3) Barium	(Total)
(4) Beryllium	(Total)
(5) Cadmium	(Total)
(6) Chromium	(Total)
(7) Cobalt	(Total)
(8) Copper	(Total)
(9) Lead	(Total)
(10) Nickel	(Total)
(11) Selenium	(Total)
(12) Silver	(Total)
(13) Thallium	(Total)
(14) Vanadium	(Total)
(15) Zinc	(Total)
<i>Organic Constituents</i>	
(16) Acetone	67-64-4
(17) Acrylonitrile	107-13-1
(18) Benzene	71-43-1
(19) Bromochloromethane	74-97-5
(20) Bromodichloromethane	75-27-4
(21) Bromoform; Tribromomethane	75-25-2
(22) Carbon disulfide	75-15-0
(23) Carbon tetrachloride	56-23-5
(24) Chlorobenzene	108-90-7
(25) Chloroethane; Ethyl chloride	75-00-3
(26) Chloroform; Trichloromethane	67-66-3
(27) Dibromochloromethane; Chlorodibromomethane	124-48-1
(28) 1,2-Dibromo-3-chloropropane; DBCP	96-12-8
(29) 1,2-Dibromoethane; Ethylene dibromide;	106-93-4
<i>EDB</i>	
(30) o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1
(31) p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7

(continued)

**Table 8-3 (continued)**

<b>Common name<sup>2</sup></b>	<b>CAS RN<sup>3</sup></b>
(32) trans-1,4-Dichloro-2-butene	110-57-6
(33) 1,1-Dichloroethane; Ethylidene chloride	75-34-3
(34) 1,2-Dichloroethane; Ethylene dichloride	107-06-2
(35) 1,1-Dichloroethylene; 1-1-Dichloroethene; Vinylidene chloride	75-35-4
(36) cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2
(37) trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene	156-60-5
(38) 1,2-Dichloropropane; Propylene dichloride	78-87-5
(39) cis-1,3-Dichloropropene	10061-01-5
(40) trans-1,3-Dichloropropene	10061-02-6
(41) Ethylbenzene	100-41-4
(42) 2-hexanone; Methyl butyl ketone	591-78-6
(43) Methyl bromide; Bromomethane	74-83-9
(44) Methyl chloride; Chloromethane	74-87-3
(45) Methylene bromide Dibromomethane	74-95-3
(46) Methylene chloride; Dichloromethane	75-09-2
(47) Methyl ethyl ketone; MEK; 2-Butanone	74-93-3
(48) Methyl iodide; Iodomethane	74-88-4
(49) 4-Methyl-2-pentanone; Methyl isobutyl isobutyl ketone	108-10-1
(50) Styrene	100-42-5
(51) 1,1,1,2-Tetrachloroethane	630-20-6
(52) 1,1,2,2-Tetrachloroethane	79-34-5
(53) Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4
(54) Toluene	108-88-3
(55) 1,1,1-Trichloroethane; Methylchloroform	71-55-6
(56) 1,1,2-Trichloroethane	79-00-5
(57) Trichloroethylene; Trichloroethene	79-01-6
(58) Trichlorofluoromethane; CFC-11	75-69-4
(59) 1,2,3-Trichloropropane	96-18-4
(60) Vinyl acetate	108-05-4
(61) Vinyl chloride	75-01-4
(62) Xylenes	1330-20-7

<sup>1</sup> This list contains 47 volatile organics for which possible analytical procedures provided in USEPA Report SW-846 *Test Methods for Evaluating Solid Waste*, third edition, November 1986, as revised December 1987, includes Method 8260; and 15 metals for which SW-846 provides either Method 6010 or a method from the 7000 series of methods.

<sup>2</sup> Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

<sup>3</sup> Chemical Abstracts Service registry number. Where "Total" is entered, all species in the groundwater that contain this element are included.

**Table 8-4**

**List of Hazardous Inorganic and Organic Constituents  
(40 CFR 258 Appendix II)**

<b>Common Name</b>	<b>CAS RN</b>	<b>Suggested methods</b>	<b>PQL (mg/L)</b>
Acenaphthene	83-32-9	8100	200
		8270	10
Acenaphthylene	208-96-8	8100	200
		8270	10
Acetone	67-64-1	8260	100
Acetonitrile; Methyl cyanide	75-05-8	8015	100
Acetophenone	98-86-2	8270	10
2-Acetylaminofluorene; 2-AAF	53-96-3	8270	20
Acrolein	107-02-8	8030	5
		8260	200
Aldrin	309-00-2	8080	0.05
		8270	10
Allyl chloride	107-05-1	8010	5
		8260	10
4-Aminobiphenyl	92-67-1	8270	20
Anthracene	120-12-7	8100	200
		8270	10
Antimony	(Total)	6010	300
		7040	2000
		7041	30
Barium	(Total)	6010	20
		7080	1000
Benzene	71-43-2	8020	2
		8021	0.1
		8260	5
Benzo[a]anthracene; Benzanthracene	56-55-3	8100	200
		8270	10
Benzo[b]fluoranthene	205-99-2	8100	200
		8270	10
Benzo[k]fluoranthene	207-08-9	8100	200
		8270	10
Benzo[ghi]perylene	191-24-2	8100	200
		8270	10
Benzo[a]pyrene	50-32-8	8100	200
		8270	10
Benyl alcohol	100-51-5	8270	20
Beryllium	(Total)	6010	3
		7090	50
		7091	2

(continued)

**Table 8-4 (continued)**

Common Name	CAS RN	Suggested methods	PQL (mg/L)
alpha-BHC	319-84-6	8080	0.05
		8270	10
beta-BHC	319-85-7	8080	0.05
		8270	20
delta-BHC	319-86-8	8080	0.1
		8270	20
gamma-BHC; Lindane	58-89-9	8080	0.05
		8270	20
Bis(2-chloroethoxy)methane	111-91-1	8110	5
		8270	10
Bis(2-chloroethyl)ether; Dichloroethyl ether	111-44-4	8110	3
		8270	10
		8110	10
Bis-(2-chloro-1-methyl) ether; 2,2-Dichloro-diisopropyl ether; DCIP, See note 7	108-60-1	8110	10
		8270	10
Bis(2-ethylhexyl) phthalate	117-81-7	8060	20
Bromochloromethane; Chlorobromomethane	74-97-5	8021	0.1
		8260	5
Bromodichloromethane; Dibromochloromethane	75-27-4	8010	1
		8021	0.2
		8260	5
Bromoform; Tribromomethane	75-25-2	8010	2
		8021	15
		8260	5
4-Bromophenyl phenyl ether	101-55-3	8110	25
		8270	10
Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7	8060	5
		8270	10
Cadmium	(Total)	6010	40
		7130	50
		7131	1
Carbon disulfide	75-15-0	8260	100
Carbon tetrachloride	56-23-5	8010	1
		8021	0.1
		8260	10
Chlordane	See NOTE 8	8080	0.1
		8270	50
p-Chloroaniline	106-47-8	8270	20
Chlorobenzene	108-90-7	8010	2
		8020	2
		8021	0.1
		8260	5
Chlorobenzilate	510-15-6	8270	10
p-Chloro-m-cresol; 4-Chloro-3-methylphenol	59-50-7	8040	5

(continued)

**Table 8-4 (continued)**

Common Name	CAS RN	Suggested methods	PQL (mg/L)
Chloroethane; Ethyl chloride	75-00-3	8270	20
		8010	5
		8021	1
		8260	5
Chloroform; Trichloromethane	67-66-3	8010	0.5
		8021	0.2
		8250	5
2-Chloronaphthalene	91-58-7	8120	10
		8270	10
2-Chlorophenol	95-57-8	8040	5
		8720	10
4-Chlorophenyl phenyl ether	7005-72-3	8110	40
		8270	10
Chloroprene	126-99-8	8010	50
		8260	20
Chromium	(Total)	6010	70
		7190	500
		7191	10
Chrysene	8100	200	
		8270	10
Cobalt	218-01-9	8100	200
		7200	500
		7201	10
Copper	(Total)	6010	60
		7210	200
		7211	10
m-Cresol; 3-methylphenol	108-39-4	8270	10
o-Cresol; 2-methylphenol	95-48-7	8270	10
p-Cresol; 4-methylphenol	106-44-5	8270	10
Cyanide	57-12-5	9010	200
2,4-D; 2,4-Dichlorophenoxyacetic acid	94-75-7	8150	10
4,4-DDD	72-54-8	8080	0.1
		8270	10
4,4-DDE	72-55-9	8080	0.05
		8270	10
4,4-DDT	50-29-3	8080	0.1
		8270	10
Diallate	2303-16-4	8270	10
aDibenz[a,h]anthracene	53-70-3	8100	200
		8270	10
Dibenzofuran	132-64-9	8270	10
Dibromochloromethane; Chlorodibromomethane	124-48-1	8010	1
		8021	0.3
		8260	5

(continued)



**Table 8-4 (continued)**

Common Name	CAS RN	Suggested methods	PQL (mg/L)
1,2-Dibromo-3-chloropropane; DBCP	96-12-8	8011	0.1
		8021	30
		8260	25
1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4	8011	0.1
		8021	10
		8260	5
Di-n-butyl phthalate	84-74-2	8060	5
		8270	10
		8010	2
o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1	8020	5
		8021	0.5
		8120	10
		8260	5
		8270	10
		8010	5
m-Dichlorobenzene; 1,3-Dichlorobenzene	541-73-1	8020	5
		8021	0.2
		8120	10
		8120	10
		8260	5
		8010	2
p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7	8020	.5
		8021	0.1
		8120	15
		8260	5
		8270	10
		8270	20
3,3-Dichlorobenzidine	91-94-1	8270	20
trans-1,4-Dichloro-2-butene	110-57-6	8260	100
Dichlorodifluoromethane; CFC 12;	75-71-8	8021	0.5
		8260	5
1,1-Dichloroethane chloride	75-34-3	8010	1
		8021	0.5
		8260	5
1,2-Dichloroethane; Ethylene dichloride	107-06-2	8010	0.5
		8021	0.3
		8260	5
1,1-Dichloroethylene; 1,1-Dichloroethane; Vinylidene chloride	75-35-4	8010	1
		8021	0.5
		8260	5
cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2	8021	0.2
		8260	5

(continued)

**Table 8-4 (continued)**

Common Name	CAS RN	Suggested methods	PQL (mg/L)
trans-1,2-Dichloroethylene	156-60-5	8010	1
		8021	0.5
		0260	5
2,4-Dichlorophenol	120-83-2	8040	5
		8270	10
2,6-Dichlorophenol	120-83-2	8040	5
1,2-Dichloropropane; Propylene dichloride	78-87-5	8010	
		8021	0.05
		8260	5
1,3-Dichloropropane; Isopropylidene chloride	594-20-7	8021	0.3
		8260	5
2,2-Dichloropropane; Isopropylidene chloride	594-20-7	8021	0.5
		8260	15
1,1-Dichloropropene	563-58-6	8021	0.2
		8260	5
cis-1,3-Dichloropropene	10061-01-5	8010	5
		8260	10
trans-1,3-Dichloropropene	10061-02-6	8010	5
		8260	10
Dieldrin	60-57-1	8080	0.05
		8270	10
Diethyl phthalate	84-66-2	8060	5
		8270	20
0,0-Diethyl 0-2-pyrazinyl phosphorothioate; Thionazin	297-97-2	8141	5
Dimethoate	60-51-5	8270	20
		8141	3
		8270	20
p-(Dimethylamino)azobenzene	60-11-7	8270	10
7,12-Dimethylbenz[a]anthracene	57-97-6	8270	10
3,3-Dimethylbenzidine	119-93-7	8270	10
2,4-Dimethylphenol; m-Xylenol	105-87-9	5	
		8040	5
Dimethyl phthalate	131-11-3	8060	10
		8270	10
m-Dinitrobenzene	99-65-0	8270	20
4,6-Dinitro-o-cresol	534-52-1	8040	150
		8270	50
2,4-Dinitrophenol	51-28-54	8040	150
		8270	50
2,4-Dinitrotoluene	121-14-2	8090	0.2
		8270	10

(continued)

**Table 8-4 (continued)**

Common Name	CAS RN	Suggested methods	PQL (mg/L)
2,6-Dinitrotoluene	606-20-2	8090	0.1
		8270	10
Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol	88-85-7	8150	1
		8270	20
Di-n-octyl phthalate	117-84-0	8060	30
		8270	10
Diphenylamine	122-39-4	8270	10
Disulfoton	298-04-4	8140	2
		8141	0.5
		8270	10
Endosulfan I	959-98-8	8080	0.1
		8270	20
Endosulfan II	33213-65-9	8080	0.05
		8270	20
Endodulfan sulfate	1031-07-8	8080	0.5
		8270	10
Endrin	72-20-8	8080	0.1
		8270	20
Endrin aldehyde	7421-93-4	8080	0.2
		8270	10
Ethylbenzene	100-41-4	8020	2
		8221	0.05
		8260	5
Ethyl methacrylate	97-63-2	8015	5
		8260	10
		8270	10
Ethyl methanesulfonate	62-50-0	8270	20
Famphur	52-85-7	8270	20
Fluoranthene	206-44-0	8100	200
		8270	10
Fluorene	86-73-7	8100	200
		8270	10
Heptachlor	76-44-8	8080	0.05
		8270	10
Heptachlor epoxide	1024-57-3	8080	1
		8270	10
Hexachlorobenzene	118-74-1	8120	0.5
		8270	10
Hexachlorobutadiene	87-68-3	8120	0.5
		8120	5
		8260	10
		8270	10
Hexachlorocyclopentadiene	77-47-4	8120	5
		8270	10

(continued)

**Table 8-4 (continued)**

Common Name	CAS RN	Suggested methods	PQL (mg/L)
Hexachloroethane	67-72-1	8120	0.5
		8260	10
		8270	10
Hexachloropropene	188-71-7	8270	10
2-Hexanone; Methyl butyl ketone	591-78-6	8260	50
Indenol(1,2,3-cd)pyrene	193-39-5	8100	200
		8270	10
Isopbutyl alcohol	78-83-1	8015	50
		8240	100
Isodrin	465-73-6	8270	20
		8260	10
Isophorone	78-59-1	8090	60
		8270	10
Isosafrole	78-59-1	8090	60
		8270	10
Isosafrole	120-58-1	8270	10
Kepone	143-50-0	8270	20
Lead	(Total)	6010	400
		7420	1000
		7421	10
Mercury	(Total)	7470	2
Methacrylonitrile	126-98-7	8015	5
		8260	100
Methapyrilene	91-80-5	8270	100
Methoxychlor	72-43-5	8080	2
		8270	10
Methyl bromide; Bromomethane	74-83-9	8010	20
		8021	10
Methyl chloride; Chloromethane	74-87-3	8010	20
		8021	0.3
3-Methylcholanthrene	56-49-5	8270	10
Methyl ethyl ketone; MEK; 2-Butanone	78-93-3	8015	10
		8260	100
Methyl iodide; Iodomethane	74-88-4	8010	40
		8260	10
Methyl methacrylate	80-62-6	8015	2
		8260	30
Methyl methanesulfonate	66-27-3	8270	10
2-Methylnaphthalene	91-57-6	8270	10
Methyl parathion; Parathion methyl	298-00-0	8140	0.5
		8141	1
		8270	10
4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1	8015	5
		8260	100

(continued)

**Table 8-4 (continued)**

Common Name	CAS RN	Suggested methods	PQL (mg/L)
Methylene bromide; Dibromomethane	74-95-3	8010	15
		8021	20
		8260	10
Methylene chloride; Dichloromethane	75-09-2	8010	5
		8021	0.2
		8260	10
Naphthalene	91-20-3	8021	0.5
		8100	200
		8260	5
		8270	10
1,4-Naphthoquinone	130-15-4	8270	10
1-Naphthylamine	134-32-7	8270	10
2-Naphthylamine	91-59-8	8270	10
Nickel	(Total)	6010	150
		7520	400
o-Nitroaniline; 2-Nitroaniline	88-74-4	8270	50
m-Nitroaniline; 3-Nitroaniline	99-09-2	8270	50
p-Nitroaniline; 4-Nitroaniline	100-01-6	8270	20
Nitrobenzene	98-95-3	8090	40
		8270	10
o-Nitrophenol; 2-Nitrophenol	88-75-5	8040	5
		8270	10
p-Nitrophenol; 4-Nitrophenol	100-02-7	8040	10
		8270	50
N-Nitrosodi-n-butylamine	924-16-3	8270	10
N-Nitrosodiethylamine	55-18-5	8270	20
N-Nitrosodimethylamine	62-75-9	8070	2
N-Nitrosodiphenylamine	86-30-6	8070	5
N-Nitrosodipropylamine; N-Nitroso-N-dipropylamine;			
Di-n-propylnitrosamine	86-30-6	8070	10
N-Nitrosomethylethylamine	10595-95-6	8070	10
N-Nitrosopiperidine	100-75-4	8270	20
N-Nitrosopyrrolidine	930-55-8	8270	40
5-Nitro-o-toluidine	99-55-8	8270	10
Parathion	56-38-2	8141	0.5
		8270	10
Pentachlorobenzene	608-93-5	8270	10
Pentachloronitrobenzene	82-68-8	8270	20
Pentachlorophenol	87-86-5	8040	5
		8270	50
Phenacetin	62-44-2	8270	20
Phenanthrene	85-01-8	8100	200
		8270	10

(continued)

**Table 8-4 (continued)**

Common Name	CAS RN	Suggested methods	PQL (mg/L)
Phenol	108-95-2	8040	1
p-Phenylenediamine	106-50-3	8270	10
Phorate	298-02-2	8140	2
		8141	0.5
		8270	10
Polychlorinated biphenyls (PCBs); Aroclors	see NOTE 9	8080	50
		8270	200
Pronamide	23950-58-5	8270	10
Propionitrile; Ethyl cyanide	107-12-0	8015	60
		8260	150
Pyrene	129-00-0	8100	200
		8270	10
Safrole	94-59-1	8270	10
Selenium	(Total)	6010	750
		7740	20
		7741	20
Silver	(Total)	6010	70
		7760	100
		7761	10
Silvex; 2,4,5-TP	93-72-1	8150	2
Styrene	100-42-5	8020	1
		8021	0.1
		8260	10
Sulfide	18496-25-8	9030	4000
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid	93-76-5	8150	2
1,2,4,5-Tetrachlorobenzene	95-94-3	8270	10
1,1,1,2-Tetrachloroethane	630-20-6	8010	5
		8021	0.05
		8260	5
1,1,2,2-Tetrachloroethane	79-34-5	8010	0.5
		8021	0.5
		8260	5
Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-8	8010	0.5
		8021	0.5
		8260	5
2,3,4,6-Tetrachlorophenol	58-90-2	8270	10
Thallium	(Total)	6010	40
		7840	1000
		7841	10
Tin	(Total)	6010	40
Toluene	108-88-3	8020	2
		8021	0.1
		8260	5

(continued)

**Table 8-4 (continued)**

Common Name	CAS RN	Suggested methods	PQL (mg/L)
o-Toluidine	95-53-4	8270	10
Toxaphene	See NOTE 10	8080	2
1,2,4-Trichlorobenzene	120-82-1	8021	0.3
		8120	0.5
		8260	10
		8270	10
1,1,1-Trichloroethane; Methylchloroform	71-55-6	8010	0.3
		8021	0.3
		8260	5
1,1,2-Trichloroethane	79-00-5	8010	0.3
		8260	5
Trichloroethylene; Trichloroethene	79-01-6	8010	1
		8021	0.2
		8260	5
Trichlorofluoromethane; CFC-11	75-69-4	8010	10
		8021	0.3
		8260	5
2,4,5-Trichlorophenol	95-95-4	8270	10
2,4,6-Trichlorophenol	88-06-2	8040	5
		8270	10
1,2,3-Trichloropropane	96-18-4	8010	10
		8021	5
		8260	15
0,0,0-Triethyl phosphorothioate	126-68-1	8270	10
sym-Trinitrobenzene	99-35-4	8270	10
Vanadium	(Total)	6010	80
		7910	2000
		7911	40
Vinyl acetate	106-05-4	8260	50
Vinyl chloride; Chloroethene	75-01-4	8010	2
		8021	0.4
		8260	10
		8020	5
Xylene (total)	See NOTE 11	8021	0.2
		8260	5
		6010	20
Zinc	(Total)	7950	50
		7951	0.5

(continued)

**Table 8-4 (continued)**

**NOTES:**

1. The regulatory requirements pertain only to the list of substances; the right hand columns (Methods and Practical Quantitation Limits (PQL)) are given for informational purposes only. See also footnotes 5 and 6.
2. Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.
3. Chemical Abstracts Service registry number. Where "Total" is entered, all species in the ground water that contain this element are included.
4. CAS index are those used in the 9th Collective Index.
5. Suggested Methods refer to analytical procedure numbers used in USEPA Report SW-846 *Test Methods for Evaluating Solid Waste*, Third edition, November 1986, as revised, December 1987. Analytical details can be found in SW-846 and in documentation on file at the agency. CAUTION: The methods listed are representative SW-846 procedures and may not always be the most suitable method(s) for monitoring an analyte under the regulations.
6. PQLs are the lowest concentrations of analytes in groundwaters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. PQLs are based on 5 mL samples for volatile organics and 1 L samples for semivolatile organics. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.
7. This substance is often called Bis(2-chloroisopropyl) ether, the name Chemical Abstracts Service (CAS) applies to its noncommercial isomer, Propane, 2,2"-oxybis[2-chloro-(CAS RN 39638-32-9).
8. Chlordane: This entry includes alpha-chlordane (CAS RN 5103-71-9), beta-chlordane (CAS RN 5103-74-2), gamma-chlordane (CAS RN 5566-34-7), and constituents of chlordane (CAS RN 57-74-9 and CAS RN 12789-03-6). PQL shown is for technical chlordane. PQLs of specific isomers are about 20 mg/L by method 8270.
9. Polychlorinated biphenyls (CAS RN 1336-36-3): This category contains congener chemicals, including constituents of Aroclor 1016 (CAS RN 12674-11-2), Aroclor 1221 (CAS RN 11104-28-2), Aroclor 1232 (CAS RN 11141-16-5), Aroclor 1242 (CAS RN 53469-21-9), Aroclor 1248 (CAS RN 12672-29-6), Aroclor 1254 (CAS RN 11097-69-1), and Aroclor 1260 (CAS RN 11096-82-5). The PQL shown is an average value for polychlorinated biphenyl (PCB) congeners.
10. Toxaphene: This entry includes congener chemicals contained in technical toxaphene (CAS RN 8001-35-2), i.e., chlorinated camphene.
11. Xylene (total): This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7). PQLs for method 8021 are 0.2 for o-xylene and 0.1 for m- or p-xylene. The PQL for m-xylene is 2.0 mg/L by method 8020 or 8260.





**Table 8-5**  
**Design Criteria Concentration Values**  
**(40 CFR 258.40)**

<b>Chemical</b>	<b>MCL (mg/L)</b>
Arsenic	0.50
Barium	1.0
Benzene	0.005
Cadmium	0.01
Carbon tetrachloride	0.005
Chromium (hexavalent)	0.05
2,4-Dichlorophenoxy acetic acid	0.1
1,4-Dichlorobenzene	0.075
1,2-Dichloroethand	0.005
1,1-Dichloroethylene	0.007
Endrin	0.0002
Fluoride	4.0
Lindane	0.004
Lead	0.05
Mercury	0.002
Methoxychlor	0.1
Nitrate	10.0
Sclnium	0.01
Silver	0.05
Toxaphene	0.005
1,1,1-Trichloromethane	0.2
Thrichloroethylene	0.005
2,4,5-Trichlorophenoxy acetic acid	0.01
Vinyl Chloride	0.002



<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>SOLID WASTE MANAGEMENT</b> <b>U.S. ECAMP</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA    C    RMA	<b>REVIEWER COMMENTS:</b>		

**Section 9**

**SPECIAL PROGRAMS MANAGEMENT**

## SECTION 9

### SPECIAL POLLUTANTS MANAGEMENT

#### A. Applicability

This section is used to determine the compliance status of the management activities associated with:

1. PCBs and in-service and out-of-service PCB items
2. the removal of asbestos from buildings and its ultimate disposal.
3. testing for potential radon exposure
4. Installation Restoration Program (IRP) management
5. the Environmental Impact Analysis Process (EIAP)
6. the A-106 pollution abatement plan
7. management of environmental data through WIMS-ES.
8. lead-based paint.

#### B. Federal Legislation

- *The Toxic Substances Control Act (TSCA)*. This Act, as last amended in 1986, 15 U.S. Code (USC) 2601-2671, is the Federal legislation which deals with the control of toxic substances. The Act consists of three subchapters, one of which regulates the control of toxic substances, another governs asbestos hazard emergency response, and another subchapter regulates indoor radon abatement. The policy developed in TSCA on chemical substances is as follows (15 USC 2601(b)):

1. adequate data should be developed with respect to the effect of chemical substances and mixtures on health and the environment and that the development of such data should be the responsibility of those who manufacture and those who process such chemical substances and mixtures
2. adequate authority should exist to regulate chemical substances and mixtures which present an unreasonable risk of injury to health or the environment, and to take action regarding chemical substances and mixtures
3. authority over chemical substances and mixtures should be exercised in such a manner as not to impede unduly or create unnecessary economic barriers to technological innovation while fulfilling the primary purpose of this Act to assure that such innovation and commerce in such chemical substances and mixtures do not present an unreasonable risk of injury to health or the environment.

Upon request by the U.S. Environmental Protection Agency (USEPA), each Federal department and agency is authorized to (15 USC 2625(a)):

1. make its services, personnel, and facilities available (with or without reimbursement) to the USEPA to assist the USEPA in the administration of this Act
2. furnish the USEPA with information, data, estimates, and statistics, and allow the USEPA access to all information in its possession as the USEPA may reasonably determine to be necessary for the administration of this Act.

The purpose of the Act regarding asbestos hazard is to (15 USC 2641(b)):

1. provide for the establishment of Federal regulations which require inspection for asbestos-containing material (ACM) and implementation of appropriate response actions with respect to ACM in the nation's schools in a safe and complete manner

2. mandate safe and complete periodic reinspection of school buildings following response actions, where appropriate
3. require the USEPA to conduct a study to find out the extent of the danger to human health posed by asbestos in public and commercial buildings and the means to respond to any such danger.

The Secretary of Defense, in cooperation with the USEPA, must, to the extent feasible and consistent with the national security, take such action as may be necessary to provide for the identification, inspection, and management (including abatement) of asbestos in any building used by the Department of Defense (DOD) as an overseas school for dependents of members of the Armed Forces. Such identification, inspection, and management (including abatement) must, subject to the preceding sentence, be carried out in a manner comparable to the manner in which a local educational agency is required to carry out such activities with respect to a school building under this Act (15 USC 2643(L)(2)).

Under TSCA the national long-term goal of the United States with respect to radon levels in building is that the air within buildings in the United States should be as free of radon as the ambient air outside of buildings (15 USC 2661). The head of each Federal Department or agency that owns a Federal building must conduct a study for the purpose of determining the extent of radon contamination in such buildings. Such study must include, in the case of a Federal building using a nonpublic water source (such as a well or other groundwater), radon contamination of the water. Such a study must be based on design criteria specified by the USEPA (15 USC 2669(a)(c)(e)).

A recent Amendment of TSCA requires the creation of regulations governing lead-based paint activities to ensure that individuals engaged in such activities are properly trained; that training programs are accredited; and that contractors engaged in such activities are certified. As of the publication of this manual, these regulations have not been finalized (15 USC 2681 through 2692).

- *The Asbestos Hazard Emergency Response Act (AHERA) of 1986.* This Act, last amended in November 1990, 15 USC 2641-2656, et. al., and 20 USC 4014, et. al., is the Federal legislation which governs the control and abatement of asbestos hazard present in school buildings. The purpose of this Act is (15 USC 2641(b)):
  1. to provide for the establishment of Federal regulations which require inspection for asbestos-containing material and implementation of appropriate response actions with respect to asbestos-containing material in the Nation's schools in a safe and complete manner
  2. to mandate safe and complete periodic reinspection of school buildings following response actions, where appropriate
  3. to require the USEPA to conduct a study to find out the extent of the danger to human health posed by asbestos in public and commercial buildings and the means to respond to any such danger.
- *The Hazardous Materials Transportation Act.* This Act was amended in 1978 to regulate the transport of asbestos materials. The regulations are contained in 49 CFR 172-177. In particular 49 CFR 177 requires that asbestos must be loaded, handled, and unloaded in a manner that will minimize occupational exposure to airborne asbestos. Asbestos wastes which are transported for disposal at a landfill or other disposal facility must meet all applicable requirements.
- *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980.* This Act was amended by the *Superfund Amendments and Reauthorization Act (SARA) of 1986*, 42 USC 9601-11050, 10 USC 2701-2810 et. al. CERCLA/SARA regulates the prevention, control, and compensation relating to environmental pollution. CERCLA addresses past, present, and threatened

releases of hazardous substances, pollutants, and contaminants that "may pose an imminent and substantial danger to the public health or welfare" (CERCLA, S.104(a)(1)). Notification and response procedures and authorities for these releases are established in the law, with the provision that they are subject to the more detailed regulatory descriptions provided in the National Contingency Plan.

- *Superfund Amendments And Reauthorization Act Of 1986 (SARA)*. SARA was passed in October of 1986 to reauthorize the funding provisions, and to amend the authorities and requirements of CERCLA and associated laws. SARA is divided into five major titles, the first two of which are of importance to the IRP.

Title I - *Provisions Relating Primarily to Response and Liability* contains most of the amendments to CERCLA. Of particular interest to the IRP is Section 120 in which response actions at Federal facilities are addressed. The Defense Environmental Restoration Program (DERP) and the IRP are subject to and must be consistent with Section 120.

Title II - *Miscellaneous Provisions* includes additional amendments to CERCLA and to other associated laws. DERP is codified into law (as Section 211 of SARA) and amended as Chapter 160 of Title 10 of United States Code. DERP is thus not a component of CERCLA, though it is subject to and must be consistent with CERCLA.

- *The National Environmental Policy Act (NEPA) of 1970*. The purpose of this Act, 42 USC 4321-4370c, as last amended in November 1990, was to declare a national policy which will encourage productive and enjoyable harmony between man and his environment. Additionally it provides for the promotion of efforts which will prevent, eliminate damage to the environment and biosphere and stimulate the health and welfare of man (42 USC 4321). Under NEPA, the continuing policy of the Federal government is to use all practicable means and measures in a manner calculated to foster and promote the general welfare, and to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (42 USC 4331(a)). It is the continuing responsibility of the Federal government to use practicable means and resources to the end that the Nation may preserve important historic, cultural, and natural aspects of our national heritage (42 USC 4331(b)(4)).
- *The Environmental Quality Improvement Act of 1970*. This Act, last amended in October 1984, 42 USC 4371-4374, is a Federal law regarding the establishment of the Office of Environmental Quality in the executive branch of the Federal government. Congress declares that there is a national policy for the environment which provides for the enhancement of environmental quality. This policy is evidenced by statutes enacted relating to the prevention, abatement, and control of environmental pollution, water and land resources, transportation, and economic and regional development (42 USC 4371(b)(1)).
- Executive Order (EO) 11514. This EO, issued on 5 March 1970, 35 F.R. 4247, as amended by EO 11991, issued on 24 May 1977, is a Presidential order which implements the *National Environmental Policy Act* of 1969. Under this EO, *Protection and Enhancement of Environmental Quality*, the Federal Government must provide leadership in protecting and enhancing the quality of the Nation's environment to sustain and enrich human life. Federal agencies must initiate measures needed to direct their policies, plans and programs so as to meet national environmental goals.
- EO 12088. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities it funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements.



In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

- Office of Management and Budget (OMB) Circular A-106. OMB Circular A-106 implements the requirement in EO 12088, *Federal Compliance with Pollution Standards*, for assuring that Federal agencies, facilities, programs, and activities meet Federal, state, and local environmental requirements, or correct situations that are not in compliance with such regulations.
- Interagency Agreements (IAG). IAGs are Federal facilities agreements required by law for facilities listed by USEPA on the National Priorities List (NPL). SARA requires that USEPA and DOD reach an IAG within 180 days after Remedial Investigation or Feasibility Study (RI/FS) decision documents for each NPL-listed facility.
- Defense and State Memoranda of Agreement (DSMOA). The DSMOA program was developed to facilitate state participation in the clean up process. A model agreement was published in the July 1989, *Federal Register* (54 FR 31358, 29 July 1989). The DSMOA not only addresses state agency subparts at NPL sites, but also outlines the process for work at non-NPL sites.

### C. State/Local Regulations

#### *PCBs*

According to the general structure of Federal regulatory programs, any state regulations must adopt the Federal regulations as a minimum set of requirements. In some cases, state regulations have been developed which regulate PCBs more stringently than the Federal program. State PCB regulations may provide additional regulatory requirements beyond the Federal program to address a specific concern or activity sensitive in that state. State regulations may supersede the Federal regulations in areas including the following:

1. PCBs may be regulated as a hazardous waste
2. PCBs may be regulated to a lower concentration. For example, regulated PCBs in one state are defined to be materials and fluids which contain PCBs at a concentration greater than 7 ppm
3. shipments of PCBs may require manifest documents
4. analysis may be required to quantify the PCB concentration in all PCB items
5. additional inspections of select PCB items and specific disposal requirements for PCBs and PCB items may also be required
6. generators of PCBs and PCB items may be required to obtain disposal permits.

#### *Asbestos*

Many state and local governments have enacted standards more stringent than the Federal requirements concerning certification of asbestos workers and disposal of asbestos waste. If the installation is engaging in asbestos removal or disposal, contact the appropriate state and local agencies.

#### *Radon*

State and local governments may enact radon control standards.

## *IRP*

SARA requires for Federal facilities that "State laws concerning removal and remedial action, including state laws regarding enforcement, shall apply to removal and remedial actions at facilities owned or operated by a department, agency, or instrumentality of the United States when such facilities are not included on the National Priorities List (NPL)" (Section 120(a)(4)). Only a few states at the time of publication of this pamphlet have CERCLA-like laws. These laws apply to non-NPL sites, and consequently certain authorities and requirements will vary from state to state. Variations between actions required at NPL sites, but only recommended at non-NPL sites, are covered in the Air Force IRP Management Guidance. However, in order to maintain program consistency for the IRP throughout the Air Force, the procedures established within the NCP and AF IRP guidance documents are to be used for all IRP sites, regardless of NPL status. State (and local) Applicable or Relevant and Appropriate Requirements (ARARs) will be considered during an IRP response action whether the site is on the NPL or not. ARARs are used for establishing the standards for clean up as a function of the chemicals involved, the location, the suspected health impacts, or the response action technologies proposed at the site.

## *EIAP*

Some states have enacted state regulations similar to NEPA that require environmental analysis of certain types of actions. Air Force actions which require permits from state or local environmental agencies may also be subject to requirements for environmental impact analysis under state regulations. In many cases, an environmental analysis under the Air Force EIAP process may be used to satisfy the state requirements. If preparation of an environmental impact statement is required, coordination with appropriate state agencies should be established to assure that applicable state requirements are also satisfied.

## *A-106 and WIMS-ES*

A-106 Pollution Abatement Plan. There are no state or local specific requirements applicable to the A-106 Pollution Abatement Plan or WIMS-ES.

## **D. Department of Defense (DOD) Regulations**

None that have not been implemented/superseded by Air Force regulations.

## **E. U.S. Air Force Regulations (AFRs)**

### *PCBs*

- HQ USAF/CEV Letter, 29 April 1986. The letter, *Removal of Polychlorinated Biphenyl (PCB) Equipment from Air Force Installations* required all major commands to draft management plans for removing all PCB equipment from AF installations by FY 92.
- HQ USAF/CEV Letter, 5 April 1988. The letter *Removal of Polychlorinated Biphenyls (PCB) Items from Air Force Installations*, required an update on major command plan to remove all PCB items by FY 92 including:
  1. All PCB items (greater than 500 ppm)
  2. All PCB contaminated items (50 to 499 ppm)

3. Reclassifications (retrofilling, filtering, and treatment processes)
  4. Funding requirements and program approach, A-106 report inputs.
- HQ USAF/CE/SGP Letter, 24 July 1987. The letter, *Polychlorinated Biphenyls (PCBs) Spill Clean-up Policy* requires clean up of PCBs to different levels, depending on release location, potential for exposure after clean up, concentration of PCB released, and the nature and size of population at risk. For PCB releases occurring after 4 May 1987, it establishes reporting requirements in addition to those in AFR 19-8.
  - HQ USAF/CE Letter, 1 March 1990 and 19 July 1990. The letter *New Polychlorinated Biphenyls (PCBs) Notification, Recordkeeping, and Manifest Requirement* summarizes new requirements of 40 CFR 761.205(b)-(c), 207-215.

#### *Asbestos*

- AFR 91-42, *Facility Asbestos Management*. This regulation outlines procedures for developing an installation asbestos management program. It also contains optional guidance to help the BCE administer plans to incorporate installation asbestos management procedures and practices into Air Force Military Construction Program (MCP) and Operations and Maintenance (O&M) Projects.

#### *Radon*

- Radon Assessment And Mitigation Program (RAMP). RAMP was initiated by the Assistant Vice Chief of staff of the Air Force (USAF/CV) by policy letter on 23 October 1987. This letter transmitted the RAMP Implementation Plan to Air Force activities for implementation.

#### *IRP*

- HQ USAF/CEVR Letter. The letter titled *Fiscal Year XX Defense Environmental Restoration Account (DERA) Eligibility / Programming Guidance, United States Air Force* is issued yearly by HQ USAF/CEV and presents key guidelines and authorities for the IRP.
- Air Force Installation Restoration Program (IRP). A biannual publication, *Air Force Installation Restoration Program Management Guidance*, addresses the requirements of the laws, regulations, policies, and procedures concerning the Air Force IRP.
- Air Force Instruction (AFI) 32-7020, *The Environmental Restoration Program*. This instruction, dated 15 March 1994, provides guidance and procedures for executing the Air force Environmental Restoration Program.

#### *EIAP*

- AFR 19-2, *Environmental Impact Analysis Process*. This regulation implements NEPA, CEQ's regulations (40 CFR parts 1500-1508) and DOD Directive 6050.1, 30 July 1979. This directive contains policies, responsibilities, and procedures for conducting the EIAP within the United States and in the areas outside of the continental United States: Guam, US Virgin Islands, Puerto Rico, American Samoa, Johnston Island, and the Trust Territories of the Pacific.

Air Force Policy Letter, *Federal Register Publication Information*. This letter, dated 2 November 1993, requires that Notices of Intent (NOI) for preparation of an EIS be sent in draft to AF/CEVP.

Air Force Policy Letter, *Environmental Impact Analysis Process (EIAP) and Related Compliance Documents*. This letter, dated 3 January 1994, lists documents which must be submitted to HQ USAF/CEV that are related to EIAP.

#### *A-106*

- AFR 19-8, *Environmental Protection Committee and Environmental Reporting*. This regulation briefly outlines the A-106 procedure. The report is due to HQ USAF/CEV in June and November. HQ USAF/CEV gives detailed instructions in a semiannual call that includes the "Instruction Kit for Completing USEPA Form 3500-7 for New Pollution Abatement and Prevention Projects."
- AFI 32-7001, *Environmental Budgeting*. This AFI provides guidance on identifying, developing, and processing requirements to meet environmental standards at Air Force installations.

#### *WIMS-ES*

- AFI 32-7002, *Environmental Information Management System*. This instruction, dated 31 January 1994, provides guidance and procedures to standardize the use of the Work Information Management System - Environmental Subsystems (WIMS-ES).

#### *Lead Based Paint*

- HQ USAF Policy Letter, *Air Force Policy and Guidance on Lead Based Paint in Facilities*. This policy letter, dated 24 May 1993, specified actions required to protect facility occupants and workers and the environment from hazardous exposure to lead in lead-based paints. Table 9-1 summarizes the likelihood of lead based paint being present and the regulations/guidelines which normally must be followed.

### **E. Key Compliance Requirements**

- Personnel and PCBs - Certain regulations and practices should be followed to ensure the health of personnel who come in contact with PCBs. These include provision of protective work-clothing, shower facilities, and facilities for washing hands during shift. Airborne contaminations of PCBs should be assessed and certain precautionary practices followed to protect personnel, which include the wearing of respirators if contamination is above a certain level. Certain records and practices should be maintained for employees exposed to PCBs, including medical histories and physical examinations emphasizing liver and skin condition.
- PCB Equipment Marking - The following equipment is required to be marked indicating that they contain PCBs:
  1. PCB Containers with PCBs in concentrations of 50 to 500 ppm
  2. PCB Transformers (500 ppm or greater)
  3. PCB Large High Voltage Capacitors
  4. equipment containing a PCB Transformer (500 ppm or greater) or a PCB Large High Voltage Capacitor at the time of removal from service
  5. PCB Large Low Voltage Capacitors at the time of removal from service
  6. electric motors using PCB coolants with a concentration of 50 to 500 ppm
  7. hydraulic systems using PCB hydraulic fluid with concentrations of 50 to 500 ppm

8. heat transfer systems (other than PCB Transformers) using PCB concentrations of 50 to 500 ppm
  9. PCB Article Containers containing any of the above
  10. each storage area used to store PCBs and PCB Transformers for disposal
  11. transport vehicles loaded with PCB Containers that contain more than 45 kg (99.4 lb) of PCBs in the liquid phase with PCB concentrations of 50 to 500 ppm or one or more PCB Transformers with PCB concentrations of greater than 500 ppm: mark on each end and side
  12. vault doors, machinery room doors, fences, hallways, or means of access, other than a man-hole or grate cover, to a PCB Transformer (500 ppm or greater (40 CFR 761.40 and 761.45).
- **Records for PCBs** - A written annual document log must be prepared by 1 July of each calendar year, covering the previous year for all installations that use or store at any time at least 45 kg (99.4 lb) of PCBs contained in PCB Containers, or one or more PCB Transformers. Owners and operators of PCB chemical waste landfills shall keep records on water analysis and operational records, including burial coordinates for 20 yr after disposal has ceased. Storage and disposal facilities for PCBs shall maintain records for 3 yr (40 CFR 761.180(a), 761.180(d), and 761.180(f)).
  - **PCB Transformers** - PCB Transformers with PCBs of 500 ppm or greater that are in use or in storage for reuse, must not pose an exposure risk to food and feed and are subject to registration requirements. Combustible materials, including, but not limited to, paints, solvents, plastics, paper, and sawn wood, must not be stored by a PCB Transformer. PCB transformers are required to be properly serviced, and inspections must be performed once every 3 mo for all in-service transformers. If the transformer is found to be leaking, it must be repaired or replaced to eliminate the source of the leak. When a PCB transformer is involved in a fire, the installation is required to immediately report the incident to the National Response Center (NRC) (40 CFR 761.120(a), 761.120(b), 761.120(c), 761.123(d)(2), and 761.125).
  - **PCB Spills** - Installations are required to report spills of more than 10 lb [4.56 kg] of PCBs of concentrations of 50 ppm to the USEPA regional office. Spills of greater than 1 lb [0.45 kg] must be cleaned up. The criteria for cleanup is based on whether the spill is of high or low concentration of PCBs (40 CFR 761.120, 761.123, and 761.125).
  - **PCB Items** - The use of PCBs in electromagnetic switches, voltage regulators, capacitors, heat transfer and hydraulic systems, circuit breakers, reclosers, and cable is allowed if applicable restrictions are met and precautions taken (40 CFR 761.30).
  - **PCB Storage** - PCBs and PCB Items at concentrations greater than 50 ppm that are to be stored before disposal must be stored in a facility that will assure the containment of PCBs. Storage prior to disposal is not to exceed 1 yr. Nonleaking and structurally undamaged PCB Large, High-Voltage Capacitors and PCB Contaminated Electric Equipment that have not been drained of freeflowing dielectric fluid may be stored on pallets next to a storage area that complies with the storage area requirements. Containers used for the storage of PCBs must comply with the shipping container specification of the Department of Transportation (DOT) (40 CFR 761.65; ER 1130-2-423).
  - **PCB Transportation** - A generator who offers a PCB waste for transport to commercial offsite storage or offsite disposal must prepare a manifest. If the generator does not receive a signed copy of the manifest with 35 days from the date the waste was accepted by the initial transporter, the generator must immediately contact the transporter and/or owner or operator of the designated facility to determine the status of the PCB waste (40 CFR 761.207 through 761.210, and 761.215).

- **PCB Disposal** - For each shipment of manifested PCB waste that a disposal facility accepts, the owner or operator of the disposal facility must prepare a Certificate of Disposal. PCB contaminated fluids of concentrations greater than 50 ppm, but less than 500 ppm, are required to be disposed of in a USEPA approved incinerator or chemical waste landfill, or a high efficiency boiler. PCB liquids and Transformers with concentrations of 500 ppm or greater must be disposed of in a USEPA approved PCB incinerator. PCB Capacitors must be disposed in either a solid waste landfill or an approved incinerator depending on the concentration of PCBs. PCB hydraulic machines containing PCBs at concentrations greater than 50 ppm may be disposed of as municipal solid waste when drained. PCB-contaminated Electrical Equipment, except capacitors, shall be disposed of by draining off the free-flowing liquid. PCB Articles and Containers shall be disposed of in a USEPA approved incinerator or chemical waste landfill if all free-flowing liquids have been removed (40 CFR 761.60 and 761.218).
- **Asbestos Identification** - Installation buildings with the potential to be contaminated with asbestos should be tested and surveyed for asbestos and friable materials.
- **Renovation and Demolition of Asbestos-Containing Structures** - Installations that demolish structures containing asbestos above certain limits, must meet notification requirements, emission control requirements and wetting requirements. If the concentration of asbestos is less than this level, then the installation must submit notification of demolition. Facilities being demolished under state or local governmental agency orders shall have the portion of the facility containing friable asbestos adequately wetted during the wrecking operation. When a facility is demolished by intentional burning, all regulated asbestos containing materials (RACM) must be removed. No RACM shall be stripped, removed, or otherwise handled or distributed unless at least one onsite representative trained in asbestos removal is present. When air cleaning is used as a method of controlling emissions of asbestos to the outside air, the fabric filter collection systems are required to meet specific standards, unless alternative equipment is authorized for use by the USEPA (40 CFR 61.145 and 61.152).
- **Asbestos Disposal** - Asbestos containing waste must be wetted or bagged to prevent emissions to the air. Asbestos waste has to be disposed of in landfills that have been approved for the acceptance of asbestos containing waste (40 CFR 61.150, 61.151, and 61.154).
- **Asbestos in Schools** - School buildings are required to be inspected for asbestos. An asbestos management plan is required and response action must be done in a timely manner. If there is friable asbestos in the school, there must be an O&M and repair program that limits the asbestos from becoming airborne and personnel exposure. Warning label will be attached immediately adjacent to any friable and nonfriable asbestos containing building material (ACBM) and suspected ACBM assumed to be ACM. Staff at the school must receive training on the hazards involved (40 CFR 763).

- Radon

#### MITIGATION TIME FRAME

Radon Level (pCi/L) <sup>4</sup>	Mitigate
Greater than 200 <sup>1</sup>	1 mo or move the occupants
200-20 <sup>1</sup>	6 mo
20-8 <sup>2</sup>	1-4 yr <sup>3</sup>
8-4 <sup>2</sup>	5 yr
4 or less <sup>1</sup>	No action required

<sup>1</sup>Determine by 90-day screen or a 1-yr measurement in the case of Priority 2 and 3 structures.

<sup>2</sup>Annual average determined by 1-yr measurement. Screening measurements in this range will not be used as the basis for initiating mitigation actions.

<sup>3</sup>Depending on the level of the measurement.

<sup>4</sup>pCi = picoCurie; L = liters; mo = months.

- IRP - The legal mandates for the Air Force Installation Restoration Program are CERCLA and SARA. Objectives of the program are to identify, investigate, cleanup, and close IRP sites. IRP sites may also be subject to corrective action requirements under RCRA.
- EIAP - The EIAP consists of the initial review of the proposed action to determine the magnitude and significance of the anticipated environmental impacts. This review determines whether a proposed action can be exempted from further review (categorical exclusion) or whether an environmental assessment (EA) or environmental impact statement (EIS) must be prepared. AFR 19-2 lists those types of actions that may be categorically excluded. An EA is prepared to determine whether the proposed action will have significant environmental impacts. If the analyses indicate that no significant impacts are anticipated, a Finding of No Significant Impact (FONSI) can be issued. If significant impacts are possible, an EIS must be prepared, filed with the USEPA, and made available to the public.
- A-106 Report - The A-106 report is required for all Air Force installations and starting in February 1992, will be maintained in a customized database within the WIMS-ES. The report should include all recurring and nonrecurring environmental requirements for the installation. The installation must budget for the requirements recorded in the report through the installation EPC and accounting and finance office. The installation must address environmental priorities that are outlined USAF policy (OPs and Services, Level I, Level II, and Level III) and must ensure that each program year recorded in the A-106 is *executable*.

#### F. Responsibility for Compliance

##### PCBs

- Base Civil Engineering (BCE). The BCE through the Exterior Electrical Shop and the Base Environmental Coordinator, is responsible for identifying, inspecting, marking (labeling), and properly servicing PCB electrical equipment (transformers and capacitors).

- **Base Environmental Coordinator.** The Base Environmental Coordinator is responsible for ensuring that out-of-service items are stored in a technically adequate PCB storage facility. Normally, such facilities are located at a DRMO and the DRMO is responsible for storage, disposal, transportation, and contracting for disposal.
- **Bioenvironmental Engineer (BEE).** The BEE is responsible for arranging for chemical analytical support in screening electrical equipment or PCBs and for cleanup verification.

#### *Asbestos*

- **Asbestos Operations Officer.** Asbestos Operations Officer prepares and implements the Asbestos Operating Plan.
- **Asbestos Program Officer.** Asbestos Program Officer prepares the Asbestos Management Plan that contains documentation on all asbestos management efforts and the mechanism for oversight of the
- **The BCE.** The BCE appoints an Asbestos Program Officer to prepare the Asbestos Management Plan and an Asbestos Operations Officer to prepare the Asbestos Operating Plan. He also ensures a sufficient number of in-house technicians and supervisors are trained and equipped to remove, repair, and control ACM.
- **Base Environmental Coordinator.** The Base Environmental Coordinator is responsible for ensuring proper disposal of friable asbestos. DRMO is responsible for contracting for disposal of friable asbestos.
- **The BEE.** The BEE takes air samples, evaluates friable materials for the presence of asbestos, and assigns Risk Assessment Codes (RAC) so the situation can be treated as a hazard.

#### *Radon*

- **The BCE.** The BCE is responsible for reviewing radon assessments and implementation of radon mitigation activities in accordance with Air Force RAMP.
- **The BEE.** The BEE is responsible for radon sampling and assessments at installation offices, housing, day care facilities, etc. The BEE provides these sample results to the BCE. The BEE is also responsible for post mitigation monitoring to determine the adequacy of mitigation measures.

#### *IRP*

- **The BCE.** The BCE normally is responsible for IRP execution. However, this responsibility may be assigned to the installation's Environmental Management Office if one has been established.
- **The BEE.** The BEE is responsible for providing technical support in RI/FS, risk Analysis, Quality Assurance or Quality Control (QA/QC), worker health and safety, and other areas.
- **Judge Advocate (JA).** The JA is responsible for providing legal and negotiation support.
- **On-Scene Coordinator Or Remedial Project Manager (OSC/RPM).** The OSC/RPM is responsible for managing response actions and coordinating all other IRP efforts on the installation. Actual exe-



cution of these responsibilities can be performed by others (AF personnel, technical support center, contractors, etc.). However, the OSC/RPM must retain overall management oversight responsibility for IRP actions.

- **Public Affairs Officer (PAO).** The PAO is responsible for dissemination of reports providing information to the public and the media, and helping in the preparation of Community Relation Plans.

#### *EIAP*

- **The BCE.** The BCE provides Environmental Planning Functions (EPF), including managing and getting the technical analyses necessary to support the EIAP.
- **The BEE.** The BEE provides technical assistance to EPF concerning environmental quality standards, effects, and monitoring capabilities relating to the action(s) being assessed.
- **The EPC.** The EPC reviews and approves or disapproves environmental documents prepared by the EPF during the EIAP.
- **The JA.** The JA advises EPF and EPC of legal issues regarding environmental documents, conducts public hearings, and advises EPF during the scoping process of issues to be addressed in EISs.
- **The PAO.** The PAO reviews environmental documents for public affair sufficiency and advises EPF on issues to be addressed in EISs.
- **Proponent Activity.** Proponent Activity is responsible for providing a complete description of the proposed action and alternatives (DOPAA) and for identifying key decision points and assisting in making sure that the EIAP is properly phased so that the environmental documents are available to the decisionmaker.
- **Air Force Center for Environmental Excellence (AFCEE).** AFCEE assists in the scoping process and in all phases of coordination with Federal, state, regional, and local government agencies.

#### *A-106*

- **Base Environmental Coordinator.** Base Environmental Coordinator is responsible for managing the A-106 program, including updating the current plan, inputting new projects, and coordinating with the Civil Engineering Programmer to ensure projects are included in the Civil Engineering Contract Reporting System (CECORS) or the Programming Design and Construction (PDC) System.
- **Civil Engineering Programmer.** Civil Engineering Programmer is responsible for getting projects into the CECORS or the PDC.
- **The EPC.** The EPC is responsible for coordinating and approving the A-106 plan.

#### *WIMS-ES*

- **The BCE.** The BCE or the Environmental Manager will coordinate the input of data into WIMS-ES.

### *Lead Based Paint*

- The BCE. The BCE will participate in developing and implementing the management plan for identifying, evaluating, managing, and abating lead based paint. Additionally they train personnel and maintain records of activities.
- Chief, Aerospace Medicine. The Chief, Aerospace Medicine will ensure a coordinated epidemiological analysis of facility lead sampling results and positive pediatric lead analysis is accomplished.
- The BEE. The BEE will conduct testing and sampling of paint to determine the lead content. They will participate in inspections and training activities as well.

### **G. Key Compliance Definitions**

- *Active Waste Disposal Site* - any disposal site other than an inactive site (40 CFR 61.14).
- *Adequately Wetted* - sufficiently mixed or penetrated with liquid to prevent the release of particulates (40 CFR 61.14).
- *Asbestos* - substances comprised of or derived from actinolite, amosite, anthophyllite, chrysotile, crocidolite, or tremolite (40 CFR 61.14).
- *Asbestos-Containing Waste Materials* - means mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of 40 CFR 141. This term also includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. However, as applied to demolition and renovation operations, this term includes regulated ACM waste and materials contaminated with asbestos including disposable equipment and clothing (40 CFR 61.141).
- *Asbestos Material* - asbestos or any material containing asbestos (40 CFR 61.141).
- *Asbestos Waste from Control Devices* - any waste material that contains asbestos and is collected by a pollution control device (40 CFR 61.141).
- *Capacitor* - a device for accumulating and holding a charge of electricity and consisting of conducting surfaces separated by a dielectric. Types of capacitors are as follows (40 CFR 761.3):
  1. *Small Capacitor* - a capacitor which contains less than 1.36 kg (3 lb) of dielectric fluid.
  2. *Large High-voltage Capacitor* - a capacitor which contains 1.36 kg (3 lb) or more of dielectric fluid and which operates at 2000 volts (a.c. or d.c.) or above.
  3. *Large Low-voltage Capacitor* - a capacitor which contains 1.36 kg (3 lb) or more of dielectric fluid and which operates below 2000 volts (a.c. or d.c.).
- *Category I Nonfriable Asbestos-Containing Material (ACM)* - asbestos-containing packing, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos (40 CFR 61.141).
- *Category II Nonfriable ACM* - any material including Category I nonfriable ACM containing more than 1 percent asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure (40 CFR 61.141).

- *Chemical Waste Landfill* - landfill at which protection against risk of injury to health or the environment from migration of PCBs to land, water, or the atmosphere is provided from PCBs and PCB Items deposited therein by locating engineering, and operations, the landfill as required (40 CFR 761.3).
- *Commercial Asbestos* - any material containing asbestos that is extracted from ore and has value because of its asbestos content (40 CFR 61.141).
- *Commercial Storer of PCB Waste* - the owner or operator of each facility that is subject to the PCB storage facility standards of 40 CFR 761.65, and who engages in storage activities involving PCB waste generated by others, or PCB waste that was removed while servicing the equipment owned by others and brokered for disposal. The receipt of a fee or any other forms of compensation for services is not necessary to qualify as a commercial storer of PCB waste. It is sufficient under this definition that the facility stores PCB waste generated by others or the facility removed the PCB waste while servicing equipment owned by others. If a facility's storage of PCB waste at no time exceeds 500 gal [1892.71 L] of PCBs, the owner or operator is not required to seek approval as a commercial storer of PCB waste (40 CFR 761.3).
- *Cutting* - to penetrate with a sharp-edged instrument and includes sawing, but does not include shearing, slicing, or punching (40 CFR 61.141).
- *Demolition* - the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of a facility (40 CFR 61.141).
- *Disposal* - intentionally or accidentally to discard, throw away, or otherwise complete or terminate the useful life of PCBs and PCB Items (40 CFR 761.3).
- *Double Wash/Rinse* - a minimum requirement to cleanse solid surfaces (both impervious and non-impervious) two times with an appropriate solvent or other material in which PCBs are at least 5 percent soluble (by weight) (40 CFR 761.123).
- *Emergency Renovation Operation* - a renovation operation that was not planned but results from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, is necessary to protect equipment from damage or is necessary to avoid imposing an unreasonable financial burden. This term includes operations necessitated by nonroutine failures of equipment (40 CFR 61.141).
- *Emergency Situations* - for continuing use of a PCB transformer exists when (40 CFR 761.3):
  1. neither a non-PCB transformer nor a non-PCB contaminated transformer is currently in storage for reuse or readily available within 24 h for installation, or
  2. immediate replacement is necessary to continue service for power users.
- *Environmental Assessment* - a concise public document for which a Federal agency is responsible that serves to briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a finding of no significant impact (FNSI) (40 CFR 1508.9).

- **EIS (Environmental Impact Statement)** - a detailed statement by the responsible official on (40 CFR 1508.11):
  1. the environmental impact of the proposed action
  2. any adverse environmental effects which cannot be avoided should the proposal be implemented
  3. alternatives to the proposed action
  4. the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
  5. any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.
  
- **Facility Component** - any part of any facility, including equipment (40 CFR 61.141).
  
- **FNSI (Finding of No Significant Impact)** - a document that briefly presents the reasons why an action, not otherwise excluded, does not need an EIS (40 CFR 1508.13).
  
- **Friable Asbestos Material** - any material that contains more than 1 percent asbestos by weight and can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure (40 CFR 61.141).
  
- **Fugitive Source** - any source of emissions not controlled by an air pollution control device (40 CFR 61.141).
  
- **Glove Bag** - a sealed compartment with attached inner gloves used for the handling of ACM (40 CFR 61.141).
  
- **High Concentration PCBs** - PCBs that contain 500 ppm or greater PCBs, or those materials which the USEPA requires to be assumed to contain 500 ppm or greater PCBs in the absence of testing (40 CFR 761.123).
  
- **In or Near Commercial Buildings** - within the interior of, on the roof of, attached to the exterior wall of, in the parking area serving, or within 30 m of a nonindustrial, nonsubstation building (40 CFR 761.3).
  
- **In Poor Condition** - the binding of the materials is losing its integrity as indicated by peeling, cracking, or crumbling of the material (40 CFR 61.141).
  
- **Inactive Waste Disposal Site** - any disposal site or portion of it where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic (40 CFR 61.141).
  
- **Industrial Building** - a building directly used in manufacturing or technically productive enterprises (40 CFR 761.3).
  
- **Leak or Leaking** - any instance in which a PCB article, PCB container, or PCB equipment has any PCBs on any portion of its external surface (40 CFR 761.3).
  
- **Low Concentration PCBs** - PCBs that are tested and found to contain less than 500 ppm PCBs or those PCB-containing materials which USEPA requires to be assumed to be at concentrations below 500 ppm (i.e., untested mineral oil dielectric fluid) (40 CFR 761.123).

- **Management Practice (MP)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- **Mark** - the descriptive name, instructions, cautions, or other information applied to PCBs and PCB items, or other objects subject to these regulations (40 CFR 761.3)
- **Marking** - the marking of PCB items and PCB storage areas and transport vehicles by means of applying a legible mark by painting, fixation of an adhesive label, or by any other method that meets the requirements of these regulations (40 CFR 761.3).
- **Mineral Oil PCB Transformers** - any transformer originally designed to contain mineral oil as the dielectric fluid and which has been tested and found to contain 500 ppm or greater PCBs (40 CFR 761.3).
- **NOI (Notice Of Intent)** - a notice that an EIS will be prepared and considered. It should contain (40 CFR 1508.22):
  1. a description of the proposed action and possible alternatives
  2. the proposed scoping process and schedule,
  3. the name and address of the person who can give more information.
- **Non-PCB Transformers** - any transformer that contains less than 50 ppm PCB except that any transformer that has been converted from a PCB transformer or a PCB-contaminated transformer cannot be classified as a non-PCB transformer until reclassification has occurred in accordance with the requirements of 40 CFR 761.30(a)(2)(v) (40 CFR 761.3).
- **Non-scheduled Renovation** - a renovation operation necessitated by the routine failure of equipment, which is expected to occur within a given period based on past operating experience, but for which an exact date cannot be predicted (40 CFR 61.141).
- **Outside Air** - the air outside buildings and structures, including but not limited to, air under a bridge or an open ferry dock (40 CFR 61,141).
- **Particulate Asbestos Material** - finely divided particles of asbestos or material containing asbestos (40 CFR 61.141).
- **PCB or PCBs** - an chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contains such substance (40 CFR 761.3).
- **PCB Article** - any manufactured article, other than a PCB container, that contains PCBs and whose surface(s) has been in direct contact with PCBs. This includes capacitors, transformers, electric motors, pumps, and pipes (40 CFR 761.3).
- **PCB Article Container** - any package, can, bottle, bag, barrel, drum, tank, or other device used to contain PCB articles or PCB equipment, and whose surface(s) has not been in direct contact with PCBs (40 CFR 761.3).
- **PCB-Contaminated Electrical Equipment** - any electrical equipment, including but not limited to transformers, capacitors, circuit breakers, reclosers, voltage regulators, switches, electromagnets, and cable, that contain 50 ppm or greater PCB, but less than 500 ppm PCB (40 CFR 761.3).

- *PCB Equipment* - any manufactured item, other than a PCB container or a PCB article container, which contains a PCB article or other PCB equipment, and includes microwave ovens, electronic equipment, and fluorescent light ballasts and fixtures (40 CFR 761.3).
- *PCB Item* - any PCB Article, PCB Article Container, PCB Container, or PCB Equipment, that deliberately or unintentionally contains or has as a part of it any PCB or PCBs (40 CFR 761.3).
- *PCB Transformer* - any transformer that contains 500 ppm PCB or greater (40 CFR 761.3).
- *PCB Waste* - those PCBs and PCB Items that are subject to the disposal requirements of Subpart D of 761 (40 CFR 761.3).
- *Planned Renovation Operations* - a renovation operation, or a number of such operations, in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time based on operating experience (40 CFR 61.141).
- *Posing an Exposure Risk to Food or Feed* - being in any location where human food or animal feed products could be exposed to PCBs released from a PCB item (40 CFR 761.3).
- *Radon-222* - a naturally occurring, inert, radioactive gas that is formed from the radioactive decay of uranium.
- *Regulated Asbestos-Containing Material (RACM)* - includes friable asbestos material; Category I nonfriable ACM that has become friable; Category I nonfriable ACM that has been subjected to grinding, casting, cutting, or abrading; and Category II nonfriable ACM that has a high probability of becoming crumbled, crushed, or pulverized (40 CFR 61.141).
- *Remove* - to take out RACM from any structure (40 CFR 61.141).
- *Renovation* - altering in any way one or more structure components. Operations in which load-supporting structural members are wrecked or taken out are excluded (40 CFR 61.141).
- *Retrofill* - to remove PCB or PCB contaminated dielectric fluid and replace it with either PCB, PCB contaminated, or non-PCB dielectric fluid (40 CFR 761.3).
- *Rupture of a PCB Transformer* - a violent or nonviolent break in the integrity of a PCB Transformer caused by an overtemperature and/or overpressure condition that results in the release of PCBs (40 CFR 761.3).
- *Strip* - to take off RACM from any part of a facility (40 CFR 61.141).

- *Structural Member* - any load-supporting member of a structure, such as beams and load-supporting walls; or any nonload-supporting member, such as ceilings and nonload-supporting walls (40 CFR 61.141).
- *Visible Emissions* - any emissions which are visually detectable without the aid of instruments, coming from RACM or asbestos containing waste material, or from any asbestos milling, manufacturing, or fabricating operation. This does not include condensed water vapor (40 CFR 61.141).

## SPECIAL PROGRAMS MANAGEMENT

### GUIDANCE FOR CHECKLIST USERS

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	<b>REFER TO CHECKLIST ITEMS:</b>	<b>CONTACT THESE PERSONS OR GROUPS:(a)</b>	<b>REFER TO PAGE NUMBER:</b>
<b>PCB Management</b>			
All Installations	S1.1 through S1.9	(1)(3)(4)	9-23
PCB Transformers	S1.10 through S1.20	(1)(3)	9-27
PCB Heat Transfer/ Hydraulic Systems	S1.21	(1)(3)	9-32
PCB Electromagnets/ Switches/Voltage Regulators	S1.22	(1)(2)(3)	9-32
PCB Capacitors	S1.23	(1)(3)(6)	9-33
PCB Circuit Breakers/ Reclosers/Cables	S1.24	(1)(3)	9-33
PCB Pigments	S1.25	(1)(3)	9-33
PCB Storage	S1.26 through S1.31	(1)(3)(4)	9-34
PCB Transport, Storage, or Disposal	S1.32 through S1.44	(1)(2)(4)(9)	9-36
PCB Spills	S1.45 through S1.47	(1)(2)(3)(7)	9-42
<b>Asbestos Management</b>			
All Installations	S2.1 through S2.9	(1)(2)(9)(10)	9-45
Asbestos in Schools	S2.10 through S2.17	(9)(10)	9-48
Personnel Safety	S2.18	(1)(9)	9-53
Renovation and Demolition	S2.19 through S2.27	(1)(9)(10)	9-54
Disposal	S2.28 through S2.31	(1)(4)(9)(10)	9-58

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**(a) CONTACT/LOCATION CODE**

- (1) Environmental Planning (BCE)
- (2) Bioenvironmental Engineer (BEE)
- (3) Exterior Electric Shop (BCE)
- (4) DRMO
- (5) Contract Programmer (BCE)
- (6) Contract Management (BCE)
- (7) Chief of Operations and Management (BCE)
- (8) School Principal
- (9) Asbestos Program Officer
- (10) Asbestos Operations Officer
- (11) Judge Advocate



**GUIDANCE FOR CHECKLIST USERS (continued)**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>CONTACT THESE PERSONS OR GROUPS:(a)</b>	<b>REFER TO PAGE NUMBER:</b>
<b>Radon Management All Installations</b>	S3.1 through S3.5	(1)(2)(7)	9-61
<b>Installation Restoration Program Management (IRP) All Installations</b>	S4.1 through S4.16	(1)(2)(11)	9-63
<b>Environmental Impact Analysis Process (EIAP) All Installations</b>	S5.1 through S5.29	(1)(2)(11)	9-69
<b>A-106 Pollution Abatement Plan All Installations</b>	S6.1 through S6.5	(1)(5)	9-81
<b>WIMS-ES Management All Installations</b>	S7.1 through S7.5	(1)	9-83
<b>Lead Based Paint All Installations</b>	S8.1 through S8.10	(1)(2)	9-85

**(a) CONTACT/LOCATION CODE**

- (1) Environmental Planning (BCE)
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- (5) Contract Programmer (BCE)
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- (7) Chief of Operations and Management (BCE)
- (8) School Principal
- (9) Asbestos Program Officer
- (10) Asbestos Operations Officer
- (11) Judge Advocate

## **SPECIAL PROGRAMS MANAGEMENT**

### **Records to Review During an ECAMP Assessment**

- Inspection, storage, maintenance and disposal records for PCBs or PCB items
- PCB equipment inventory and sampling results
- Correspondence with regulatory agencies concerning PCB noncompliance situations
- Annual documentation logs
- Asbestos management plan and operating plan
- Notifications to regulators concerning asbestos disposal
- Records of onsite disposal and transportation and offsite disposal of asbestos
- Regulatory inspection reports
- Documentation of asbestos sampling and analytical results
- Documentation of preventive measure or action
- Results of air sampling at the conclusion of response action
- Records of asbestos training program
- List of buildings insulated with asbestos or housing ACM
- Record of demolition or renovation projects completed in the past 5 yr that involve friable asbestos
- Decision documents and records of decision
- Administrative Record
- Interagency Agreements
- A-106 Pollution Abatement Plan

### **Physical Features to Inspect During an ECAMP Assessment**

- PCB Storage areas
- Equipment, fluids, and other items used or stored at the installation containing PCBs
- Ceiling and floor tiles

### **People to Interview During An ECAMP Assessment**

- Base Civil Engineering (Environmental Planning)
- Base Bioenvironmental Engineer (BEE)
- Base Civil Engineering (Exterior Electric Shop)
- Defense Reutilization and Marketing Office (DRMO)
- On-Scene Coordinator or Remedial Project Manager (OSC/RPM)
- Engineering Programmer (DEP)
- Base Environmental Coordinator (For AFLC, this is the EM Shop)
- Judge Advocate



**COMPLIANCE CATEGORY:  
SPECIAL PROGRAMS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PCB MANAGEMENT</b></p> <p><b>All Installations</b></p> <p><b>S1.1.</b> Actions or changes since previous review of PCB management should be examined (MP).</p> <p><b>S1.2.</b> Copies of all relevant Federal, state, and local regulations on PCBs are required to be maintained at the installation (AFR 19-1, para 11f).</p> <p><b>S1.3.</b> Copies of all relevant DOD and U.S. Air Force directives, and guidance documents on PCBs should be maintained at the installation (MP).</p> <p><b>S1.4.</b> Installations are required to comply with state and local regulations and compliance agreements negotiated with Federal, state, and local governments concerning PCBs (EO 12088, Section 1-1).</p>	<p>Obtain copy of previous review report and determine if noncompliance issues have been resolved. (1)</p> <p>Determine whether installation changes relative to PCB equipment have occurred since previous review which would affect the scope of the review. (1)</p> <p>Determine if copies of the following are maintained on the installation: (1)</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance with Pollution Standards.</i></li> <li>- 40 CFR 761, <i>PCB Regulations.</i></li> <li>- applicable state and local regulations.</li> </ul> <p>Verify that the Base Staff Judge Advocate reviews Federal, state, and local regulations that may affect ongoing and proposed activities and keeps the EPC informed as needed. (1)</p> <p>Determine if copies of the following are maintained on the installation: (1)</p> <ul style="list-style-type: none"> <li>- HQ USAF/CEV Policy Letter 29 April 1986, <i>Removal of Polychlorinated Biphenyl (PCB) Equipment from Air Force Installations.</i></li> <li>- HQ USAF/CEV/SGP Policy Letter 24 July 1987, <i>Polychlorinated Biphenyls (PCB) Spill Cleanup Policy.</i></li> <li>- HQ USAF/CEV Policy Letter 5 April 1988, <i>Removal of Polychlorinated Biphenyl (PCB) Equipment from Air Force Installations (Update).</i></li> </ul> <p>Verify that the installation is complying with state and local requirements concerning PCBs. (1)</p> <p>Verify that the installation is operating according permits issued by state or local agencies. (1)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- definitions of PCB-contaminated</li> <li>- storage, labeling and disposal practices</li> <li>- whether or not it is a hazardous waste.)</li> </ul> <p>Verify that actions detailed in compliance agreements are being taken according to the schedule established in the agreement. (1)</p>

(1) Environmental Planning (BCE) (2) Bioenvironmental Engineer (BEE) (3) Exterior Electric Shop (BCE) (4) DRMO (5) Contract Programmer (BCE) (6) Contract Management (BCE) (7) Chief of Operations and Management (BCE) (8) School Principal (9) Asbestos Program Officer (10) Asbestos Operations Officer (11) Judge Advocate

**COMPLIANCE CATEGORY:  
SPECIAL PROGRAMS MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.5.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if any new regulations concerning PCBs have been issued since the finalization of the manual. (1)(3)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)(3)</p>
<p><b>S1.6.</b> Certain equipment containing PCBs must be marked with the large (M<sub>L</sub>) PCB marking (40 CFR 761.40 and 761.45).</p>	<p>Inspect equipment which contains PCBs and verify that the following are marked with an M<sub>L</sub> marking (see Table 9-2) so as to be easily read by any person inspecting or servicing the equipment: (1)(3)</p> <ul style="list-style-type: none"> <li>- PCB Containers with PCBs in concentrations of 50 to 500 ppm</li> <li>- PCB Transformers (500 ppm or greater)</li> <li>- PCB Large High Voltage Capacitors</li> <li>- equipment containing a PCB Transformer (500 ppm or greater) or a PCB Large High Voltage Capacitor at the time of removal from service</li> <li>- PCB Large Low Voltage Capacitors at the time of removal from service</li> <li>- electric motors using PCB coolants with a concentration of 50 to 500 ppm</li> <li>- hydraulic systems using PCB hydraulic fluid with concentrations of 50 to 500 ppm</li> <li>- heat transfer systems (other than PCB Transformers) using PCB concentrations of 50 to 500 ppm</li> <li>- PCB Article Containers containing any of the above</li> <li>- each storage area used to store PCBs and PCB Items for disposal</li> <li>- transport vehicles loaded with PCB Containers that contain more than 45 kg (99.4 lb) of PCBs in the liquid phase with PCB concentrations of 50 to 500 ppm or one or more PCB Transformers with PCB concentrations of greater than 500 ppm are marked on each end and side</li> <li>- vault doors, machinery room doors, fences, hallways, or means of access, other than a manhole or grate cover, to a PCB Transformer (500 ppm or greater).</li> </ul> <p>Verify that if one or more PCB Large High Voltage Capacitors is installed in a protected location such as a pole, structure, or behind a fence, the pole, structure, or fence is marked and a record or procedure identifying the PCB Capacitor is maintained by the installation. (1)(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.7. (continued)</b></p>	<p>Verify that the document log contains the following for each manifest, any stored manifested waste, and any PCBs or PCB items received from or shipped from another installation owned or operated by the generator: (1)(4)</p> <ul style="list-style-type: none"> <li>- date removed from service for disposal (the first date material was placed in PCB container)</li> <li>- date placed into transport for offsite storage/disposal</li> <li>- date of disposal (if known)</li> <li>- weight of PCB wastes:               <ul style="list-style-type: none"> <li>- total</li> <li>- bulk PCB wastes in each article</li> <li>- PCB transformers or capacitors</li> <li>- total in each container -PCB containers</li> <li>- total weight of contents and of the PCB article (in kilograms) in each PCB article container</li> </ul> </li> <li>- serial number or other unique identification number (except for bulk wastes)</li> <li>- description of the contents for PCB containers and article containers</li> </ul> <p>(NOTE: All weights are to be documented in kilograms.)</p> <p>Review the annual records and determine if the following information is provided: (1)(4)</p> <ul style="list-style-type: none"> <li>- all signed manifests generated or received at the installation during the calendar year</li> <li>- all Certificates of Disposal that have been generated or received during the calendar year.</li> </ul>
<p><b>S1.8.</b> Storage and disposal facilities for PCBs shall maintain specific records for 3 yr (40 CFR 761.180(f)).</p>	<p>Verify that installations which store or dispose of PCBs, collect and maintain the following records for 3 yr: (1)(4)</p> <ul style="list-style-type: none"> <li>- all documents and correspondence and data that have been provided by any state or local government</li> <li>- all documents, correspondence, and data provided to the state or local governments by the installation</li> <li>- any applications and related correspondence concerning wastewater discharge permits, solid waste permits, building permits, or other permits and authorizations.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.9.</b> All generators, commercial storers, transporters, and disposers of PCB waste are required to obtain an USEPA identification number (40 CFR 761.202 through 761.205).</p> <p><b>PCB Transformers</b></p> <p><b>S1.10.</b> A base-wide inventory must be conducted to identify the location and PCB concentrations for all PCB Transformers (500 ppm or greater), Capacitors, Items, and Containers to provide a basis for an annual report (40 CFR 761.180(a)(2)(iv) through 761.180(a)(2)(vi)).</p>	<p>Determine whether the installation is required to obtain an identification number. (1)(4)</p> <p>Verify that installations which generate PCB waste have an USEPA identification number before processing, storing, dispensing, transporting, or offering for transport PCB waste. (1)(4)</p> <p>Verify that installations which transport or dispose of PCB wastes have an USEPA identification number.(1)(4)</p> <p>Verify that if installations must file, Form 7710-53, <i>Notification of PCB Waste Activity</i>, was filed with USEPA by 4 April 1990 and an USEPA identification number was obtained. (1)(4)</p> <p>Verify that installations that accept PCB waste for storage from other installations have a USEPA identification number. (1)(4)</p> <p>(NOTE: Most bases will have already received an USEPA identification number for hazardous waste generation and storage. The number will be the same, but the notification should still have been filed if the installation generated PCB waste prior to 5 February 90.)</p> <p>Verify that the following are inventoried each year: (1)(3)</p> <ul style="list-style-type: none"> <li>- the total number of PCB Transformers (500 ppm or greater) and total weight in kilograms of PCBs contained in the transformers remaining in service at the end of each calendar year</li> <li>- the total weight in kilograms of any PCBs or PCB Items in PCB Containers, including the identification of the container contents, remaining in service at the end of the calendar year.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.11.</b> Combustible materials, including but not limited to paints, solvents, plastics, paper, and sawn wood, must not be stored by a PCB Transformer with 500 ppm PCB or greater (40 CFR 761.30(a)(1)(viii)).</p>	<p>Verify that all combustible materials have been removed from the area within a PCB transformer enclosure (i.e., vault or partitioned area) and the area within 5 m of a PCB transformer or PCB transformer enclosure. (3)</p>
<p><b>S1.12.</b> Inspections must be performed once every 3 mo for all in service PCB Transformers (greater than 500 ppm PCB) (40 CFR 761.30(a)(1)(ix), 761.30(a)(1)(xii), 761.30(a)(1)(xiii), and 761.30(a)(1)(xiv)).</p>	<p>(NOTE: A reduced visual inspection frequency of at least once every 12 mo is permitted for PCB Transformers which have impervious, untrained secondary containment capacity of 100 percent of the dielectric fluid and for PCB transformers which have been tested and found to contain less than 60,000 ppm PCBs.)</p> <p>(NOTE: Increased visual inspection of once a week is required for any PCB Transformer in use or stored for reuse which poses an exposure risk to food or feed.)</p> <p>Review inspection records to verify that applicable transformers are inspected at least once every 3 mo. (1)(3)</p> <p>Determine whether any PCB transformers have been found to be leaking. (1)(3)</p>
<p><b>S1.13.</b> PCB Transformers with PCB concentrations of 500 ppm or greater which are found to be leaking during an inspection must be repaired or replaced to eliminate the source of the leak (40 CFR 761.30(a)(1)(x)).</p>	<p>Determine if cleanup and/or containment of released PCBs has been initiated within 48 h of its detection or as soon as possible. (3)</p> <p>Determine if leaking PCB transformers are inspected daily. (3)</p> <p>Determine if plans exist to repair or replace transformers to eliminate the source of the leak. (3)</p> <p>Verify that cleaned up material is disposed of according to appropriate requirements. (3)</p>
<p><b>S1.14.</b> PCB Transformer (500 ppm or greater) inspection records shall be maintained for at least 3 yr after disposing of a transformer (40 CFR 761.30(a)(1)(xii)).</p>	<p>Verify that PCB Transformer inspection records are retained for regulatory inspections made during the periods of useful life and storage for disposal, and at least 3 yr after disposal. (1)(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.15.</b> PCB Transformer inspection records are required to include certain information (40 CFR 761.30 (a)(1)(xii)).</p>	<p>Determine if the following information is recorded for each PCB transformer inspection: (1)(3)</p> <ul style="list-style-type: none"> <li>- location of transformer</li> <li>- date of inspection</li> <li>- date when any leak was discovered</li> <li>- name of person conducting inspection</li> <li>- location and estimate of the dielectric fluid quantity for any leaks</li> <li>- date and description of any cleanup, containment, or repair</li> <li>- results of any daily inspections for transformers with uncorrected active leaks.</li> </ul>
<p><b>S1.16.</b> PCB Transformers with PCBs of concentrations of 500 ppm or greater that are in use or in storage for reuse which pose an exposure risk to food and feed are prohibited (40 CFR 761.30 (a)(1)(i)).</p>	<p>Review the inventory of PCB transformers and verify that no PCB transformers exist on base, in use, or storage for reuse, which pose an exposure to food and feed. (1)(3)</p>
<p><b>S1.17.</b> PCB Transformers with concentrations of 500 ppm or greater of PCB which are in use in or near commercial buildings are subject to certain requirements (40 CFR 761.30(a)(1)(ii) through 761.30(a)(1)(v) and 761.30(a)(1)(vii)).</p>	<p>Review the inventory of PCB transformers and determine if any PCB transformers are located on base in or near commercial buildings. (1)(3)</p> <p>Verify that procedure/policy exists prohibiting installation of PCB Transformers which have been placed into storage for reuse or which have been removed from another location. (1)(3)</p> <p>Verify that there are no network PCB Transformers with higher secondary voltages (equal to or greater than 430 V, including 480/277 V systems), in or near commercial buildings. (1)(3)</p> <p>Determine if any of the following PCB transformers are in use in or near commercial buildings or located in sidewalk vaults and if plans exist to equip such PCB Transformers with electrical protection to avoid transformer failure which would result in the release of PCBs: (1)(3)</p> <ul style="list-style-type: none"> <li>- Radial PCB Transformers and lower secondary voltage network PCB transformers (voltage less than 480 V)</li> <li>- Radial PCB Transformers with higher secondary voltages (greater than or equal to 480 V including 480/277 V system).</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.17. (continued)</b></p>	<p>Determine if lower secondary voltage network PCB Transformers which have not been electrically protected are registered with the USEPA regional administrator and plans are being made to remove them from service by 1 October 1993. (1)(3)</p> <p>Verify that all higher secondary voltage radial PCB Transformers in use in or near commercial buildings, and lower secondary voltage network PCB Transformers not located in sidewalk vaults in or near commercial buildings are equipped with: (1)(3)</p> <ul style="list-style-type: none"> <li>- electrical protection such as current limiting fuses to avoid transformer ruptures</li> <li>- disconnect equipment to insure complete de-energization of the transformer in case of a sensed abnormal condition.</li> </ul> <p>Verify that all lower secondary voltage radial PCB Transformers in use in or near a commercial building are equipped with electrical protection such as current limiting fuses or equivalent technology and provide for the complete deenergization of the transformer or complete deenergization of the faulted phase of the transformer within several hundredths of a second. (1)(3)</p> <p>Verify that PCB transformers in use in or near commercial buildings have been registered with the BCE. Verify that the following registration information has been provided: (1)(3)</p> <ul style="list-style-type: none"> <li>- specific location of PCB transformer(s)</li> <li>- principal constituent dielectric fluid (i.e., PCBs, mineral oil, silicone oil, etc.)</li> <li>- type of transformer, i.e.             <ul style="list-style-type: none"> <li>- 208/120 V network</li> <li>- 280/120 V radial</li> <li>- 208 V radial</li> <li>- 480 V network</li> <li>- 480/277 V network</li> <li>- 480 V radial</li> <li>- 480/277 V radial.</li> </ul> </li> </ul>
<p><b>S1.18. PCB Transformers with PCB concentrations of 500 ppm or greater are subject to certain registration requirements (40 CFR 761.30(a) (1)(vi)).</b></p>	<p>Determine if all PCB transformers, including those in storage for reuse, have been registered with the base fire department, and verify that the following registration information has been provided: (1)(3)</p> <ul style="list-style-type: none"> <li>- physical location of PCB Transformer(s)</li> <li>- principal constituent of the dielectric fluid (i.e., PCBs, mineral oil, silicone oil, etc.)</li> <li>- name and telephone number of contact person knowledgeable of the PCB Transformer(s).</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.19.</b> PCB Transformers are subject to certain servicing requirements (40 CFR 761.30(a)(2)).</p>	<p>Interview persons performing transformer servicing and verify that servicing activities are conducted as follows: (3)</p> <ul style="list-style-type: none"> <li>- transformers classified as PCB-contaminated electrical equipment (50 to 500 ppm PCB) are only serviced with dielectric fluid containing less than 500 ppm PCB</li> <li>- the transformer coil is not removed during servicing of PCB transformers with PCB concentrations 500 ppm or greater</li> <li>- PCBs removed during servicing are captured and are either reused as dielectric fluid or disposed of properly</li> <li>- the PCBs from a PCB transformer (500 ppm or greater) are not mixed with or added to dielectric fluid from PCB-contaminated electrical equipment (50 to 500 ppm PCB)</li> <li>- dielectric fluids containing less than 500 ppm PCB that are mixed with fluids containing 500 ppm or greater are not used as dielectric fluid in any transformers classified as PCB-contaminated electrical equipment (50 to 500 ppm).</li> </ul> <p>(NOTE: PCB Transformers (500 ppm or greater) may be serviced with dielectric fluid at any concentration.)</p>
<p><b>S1.20.</b> When a PCB Transformer with concentration of 500 ppm PCB or greater is involved in a fire, the installation shall immediately report the incident to the NRC (40 CFR 761.30(a)(1)(xi)).</p>	<p>Determine if any PCB Transformers have been involved in any incident where sufficient heat and/or pressure was generated to result in the violent or nonviolent rupture of a PCB Transformer and the release of PCBs. (1)(3)</p> <p>Verify that the NRC was notified and the following measures were taken: (1)(3)</p> <ul style="list-style-type: none"> <li>- floor drains were blocked</li> <li>- water runoff was contained.</li> </ul>
<p><b>PCB Heat Transfer/ Hydraulic Systems</b></p> <p><b>S1.21.</b> Heat transfer and hydraulic systems can only contain PCBs in a manner other than a totally enclosed manner at concentrations less than 50 ppm (40 CFR 761.30(d) through 761.30(e)).</p>	<p>Determine if testing has been conducted to demonstrate that heat transfer or hydraulic systems that formerly contained PCBs at a concentration greater than 50 ppm, now contain less than 50 ppm PCBs. (1)(3)</p> <p>Verify that no fluid containing greater than 50 ppm PCB is added to heat transfer or hydraulic systems. (1)(3)</p> <p>Verify that results from analyses which are performed to demonstrate the presence of less than 50 ppm PCB are retained for at least 5 yr after confirmation. (1)(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.21. (continued)</b></p> <p><b>PCB Electromagnets/ Switches/Voltage Regulators</b></p> <p><b>S1.22.</b> Electromagnets, switches, and voltage regulators may contain PCBs at any concentrations if certain requirements are met (40 CFR 761.30(h)).</p> <p><b>PCB Capacitors</b></p> <p><b>S1.23.</b> Capacitors may contain PCBs at any concentration subject to certain requirements (40 CFR 761.30(l)).</p>	<p>Confirm that heat transfer or hydraulic systems are free from leaks of dielectric PCBs. (1)(3)</p> <p>Determine if any electromagnets, switches, and voltage regulators are present on-base which contain PCBs. (1)(3)</p> <p>Verify that no electromagnets are present onbase which contain greater than 500 ppm PCB and pose an exposure risk to food or feed. (1)(3)</p> <p>Verify that all electromagnets which contain greater than 500 ppm PCB are inspected at least weekly to determine if they are leaking. (1)(3)</p> <p>Verify that electromagnets, switches, and voltage regulators, which contain 500 ppm or greater PCB are not rebuilt and no removal or reworking of internal components is done during servicing. (1)(3)</p> <p>Verify that electromagnets, switches, and voltage regulators which contain between 50 and 500 ppm PCB (PCB-Contaminated Electrical Equipment) are only serviced with dielectric fluid which contains less than 500 ppm PCB. (1)(3)</p> <p>Verify that PCBs removed or captured are either reused as dielectric fluid or disposed of properly. (1)(3)</p> <p>Verify that dielectric fluid containing a mixture of fluids with less than 500 ppm PCBs are not used as dielectric fluid in any electrical equipment. (1)(2)</p> <p>Determine if any capacitors exist onbase which contain PCBs. (1)(3)</p> <p>Verify that PCB Large High-, and Low-Voltage capacitors which pose an exposure risk to food and feed have been removed. (1)(3)(6)</p> <p>Verify that all PCB Large High-, and Low-voltage capacitors are in use only in restricted-access electrical substations, or in a contained and restricted access indoor area. (1)(3)(6)</p> <p>Verify that Capacitors have been free from leaks of dielectrical PCBs. (1)(3)(6)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PCB Circuit Breakers/ Reclosers/ Cables</b></p> <p><b>S1.24.</b> Circuit breakers, reclosers, and cables may contain PCBs at any concentration for the remainder of their useful lives, subject to certain conditions (40 CFR 761.30(m)).</p> <p><b>PCB Pigments</b></p> <p><b>S1.25.</b> Use of pigments containing PCBs are subject to certain conditions (40 CFR 761.30(g)).</p> <p><b>PCB Storage</b></p> <p><b>S1.26.</b> PCBs and PCB Items at concentrations greater than 50 ppm that are to be stored prior to disposal must be stored in a facility which will assure the containment of PCBs (40 CFR 761.65(a) through 761.65(b) and 761.65(c)(8) through 761.65(c)(9)).</p>	<p>Determine if any circuit breakers, reclosers, or cable onbase contain PCBs. (1)(3)</p> <p>Verify that circuit breakers, reclosers, and cable are serviced using only dielectric fluid which contains less than 50 ppm PCB and have been free from leaks. (3)</p> <p>Verify that pigments are handled in a totally enclosed area. (1)(3)</p> <p>Confirm that pigments used contain PCBs in concentrations less than 50 ppm. (1)(3)</p> <p>Inspect the PCB storage area and verify that the following provisions are present: (1)(3)(4)</p> <ul style="list-style-type: none"> <li>- the roof and walls of the building in which the PCBs are stored is constructed so as to exclude rainfall from contacting PCBs and PCB items</li> <li>- a 6-in [15.24 cm] tall containment curb circumscribes the entire area in which any PCBs or PCB Items are stored. Such curbing shall effectively provide containment for twice the internal volume of the Large PCB Articles or Containers or 25 percent of the total internal volume of the PCB Articles or Containers stored, whichever is greater</li> <li>- drains, valves, floor drains, expansion joints, sewer lines, or other openings which would allow liquids to flow from the curbed area, are not be present.</li> <li>- floors and curbing are constructed of continuous smooth and impervious material</li> <li>- location is not below a 100-yr flood water elevation.</li> </ul> <p>Verify that PCB Articles or PCB containers are removed from storage and disposed of within 1 yr from the date they were placed into storage. (1)(3)(4)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.27.</b> PCB items may also be stored in other areas which do not comply with the storage area requirements when such storage is for a period of less than 30 days and when any such PCB items are marked with the date of removal from service (40 CFR 761.65(c)(1)).</p> <p><b>S1.28.</b> Nonleaking and structurally undamaged PCB Large High-Voltage Capacitors and PCB Contaminated Electric Equipment (50 to 500 ppm PCB) that have not been drained of free-flowing dielectric fluid may be stored on pallets next to a storage area which complies with the storage area requirements (40 CFR 761.65(c)(2)).</p>	<p>Inspect areas used as a 30 day storage area and verify that only the following Items are stored and are properly marked: (1)(3)(4)</p> <ul style="list-style-type: none"> <li>- nonleaking PCB Articles and PCB Equipment</li> <li>- leaking PCB Articles and PCB Equipment when placed in a nonleaking PCB container which contains sufficient absorbent material to absorb the liquid contained in the PCB Article or Equipment</li> <li>- PCB Containers in which nonliquid PCBs have been placed</li> <li>- PCB Containers in which liquid PCBs at a concentration between 50 and 500 ppm have been placed when such Containers are marked to indicate less than 500 ppm PCB.</li> </ul> <p>Verify that the area has been included in the Base's Spill Prevention, Control, and Countermeasure (SPCC) Plan. (1)(3)(4)</p> <p>Ascertain whether the capacitors and equipment stored outside the storage facility is on pallets and inspected at least weekly. (1)(3)(4)</p> <p>Verify that the available unfilled storage space in the storage area is equal to at least 10 percent of the volume of capacitors and electrical equipment stored outside. (1)(3)(4)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.29.</b> Specific operational procedures are required at PCB storage areas (40 CFR 761.65(c)(4), 761.65(c)(5), and 761.65(c)(8)).</p>	<p>Verify that the following practices are conducted at any areas where PCBs or PCB Items are stored: (1)(3)(4)</p> <ul style="list-style-type: none"> <li>- movable equipment used for handling PCBs and PCB Items that directly contact PCBs is not removed from the storage area unless decontaminated</li> <li>- inspections for leaks is done every 30 days for all PCB Articles and PCB Containers in storage</li> <li>- any leaked PCBs are immediately cleaned up and spill absorbent material is properly disposed</li> <li>- PCB Articles and Containers are marked with the date when placed into storage</li> <li>- PCB Articles and PCB Containers are positioned so that they can be located by the date they were placed into storage</li> <li>- containers in which PCBs are accumulated have a record that includes the quantity and date of each batch.</li> </ul>
<p><b>S1.30.</b> Containers used for the storage of PCBs are required to comply with the Shipping Container Specifications of the Department of Transportation (DOT) (40 CFR 761.65(c)(6) through 761.65(c)(7)).</p>	<p>Inspect PCB storage area for containers. (1)(3)(4)</p> <p>Verify that DOT Specifications are on the drums/containers. Typical specifications are 5, 5B, 17C. (1)(3)(4)</p> <p>Verify that containers used for storage of liquid PCBs are containers without removable heads. (1)(3)(4)</p> <p>(NOTE: Containers larger than those specified in DOT Specs 5, 5B, or 17C may be used for nonliquid PCBs when such containers will provide as much protection against leaking and exposure to the environment as the DOT specified containers.)</p> <p>Verify that if the installation uses containers larger DOT approved containers, it has prepared a SPCC Plan covering the containers storing PCBs. (1)(3)</p>
<p><b>S1.31.</b> Commercial storers of PCB waste must have final storage approval (40 CFR 761.65(d)).</p>	<p>Determine if the installation is a commercial storer of PCB or has a commercial storer of PCB waste such as DRMO at the installation. (1)(3)(4)</p> <p>Verify that the commercial storer has final storage approval from the USEPA Regional Administrator for PCB waste. (1)(3)(4)</p> <p>(NOTE: Commercial storers were required to file for final storage approval by 2 August 1990. After filing for final approval, they will operate under interim approval until the a final decision is made on approval.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.31. (continued)</b></p> <p><b>PCB Transport, Storage, or Disposal</b></p> <p><b>S1.32.</b> A generator who offers a PCB waste for transport to a commercial offsite storage or offsite disposal must prepare a manifest (40 CFR 761.207 through 761.215).</p>	<p>(NOTE: The following facilities may be exempt from this requirements for storage approval:</p> <ul style="list-style-type: none"> <li>- storage areas at transfer facilities unless the PCB waste is stored at the installation for more than 10 consecutive days between destinations</li> <li>- storage areas at RCRA-permitted facilities if the facility proves to the Regional Administrator that the facilities existing RCRA closure plan substantially meets the requirements for a TSCA closure plan</li> <li>- storage areas ancillary to a TSCA approved disposal facility if the disposal approval contain an expiration date and the current disposal approval's closure and financial responsibility conditions specifically extend to storage areas ancillary to disposal.)</li> </ul> <p>(NOTE: This applies to PCB wastes as defined in 40 CFR 761.3, and that contain greater than 50 ppm PCB.)</p> <p>Verify that a manifest has been prepared when needed and that it contains (use USEPA Form 8700-22): (4)</p> <ul style="list-style-type: none"> <li>- the identity of PCB waste, the earliest date of removal from service for disposal, and the weight in kg of the waste for bulk load of PCBs</li> <li>- the unique identifying number of each PCB Article Container, or PCB container, the date of removal from service, and the weight of PCB waste contained</li> <li>- the serial number if available or other identification for each PCB Article not in a PCB Container or PCB Article Container, the date of removal from service for disposal, and weight in kilograms of the PCB waste in each PCB Article.</li> </ul> <p>Verify that sufficient copies are prepared to supply the generator, the initial transporter, each subsequent transporter, and the owner or operator of the disposal facility with one legible copy each for their records, and one additional copy to be signed and returned to the generator by the owner or operator of the disposal facility. (4)</p> <p>Verify that generator maintains a copy of the signed manifest for at least 3 yr after receipt of waste by the initial transporter. (4)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.33.</b> If the generator does not receive a signed copy of the manifest within 35 days of the date the waste was accepted by the initial transporter, the generator is required to immediately contact the transporter and/or owner or operator of the designated facility to determine the status of the PCB waste (40 CFR 761.215(a) and 761.215 (b)).</p>	<p>Verify that a procedure is in place so that if the generator does not receive a copy within 35 days of the date the waste was accepted by the initial transporter, an Exception Report is filed with the USEPA containing the following information: (4)</p> <ul style="list-style-type: none"> <li>- a legible copy of the manifest for which the generator does not have confirmation of delivery</li> <li>- a cover letter signed by the generator or authorized representative explaining the efforts taken to locate the PCB waste and the results of those efforts.</li> </ul>
<p><b>S1.34.</b> For each shipment of manifested waste that a disposal facility accepts, the owner or operator of the disposal facility must prepare a Certificate of Disposal (40 CFR 761.218).</p>	<p>Verify that the base has received a Certificate of Disposal for each waste shipment, containing the following information: (4)</p> <ul style="list-style-type: none"> <li>- the identity of the disposal facility: by name, address, and USEPA identification number</li> <li>- the identity of the PCB waste affected by the Certificate including reference to the manifest number for the shipment</li> <li>- a certification as defined in 40 CFR 761.3</li> <li>- a statement certifying the disposal of the identified PCB waste, including the dates of disposal and identifying the disposal process used.</li> </ul> <p>Verify that a copy of the Certificate was: (4)</p> <ul style="list-style-type: none"> <li>- sent to the generator identified on the manifest within 30 days of the date that disposal of the PCB waste was completed</li> <li>- retained at the installation as part of the annual records required by 40 CFR 760.180.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.35.</b> PCB liquids greater than 50 ppm must be disposed of in an incinerator which is approved by USEPA to incinerate PCBs except as provided in 40 CFR 761.60(a)(2) and 761.60(a)(3) (see check-list items S1.37 and S1.38) (40 CFR 761.60(a)(1)).</p>	<p>Review DRMO manifests for all PCB shipments over the past 3 yr and ensure that all shipments were made to USEPA licensed PCB incinerators. (4)</p>
<p><b>S1.36.</b> Mineral oil dielectric fluid from PCB-Contaminated Electrical Equipment containing a PCB concentration greater than 50 ppm but less than 500 ppm is required to be disposed of according to specific methods (40 CFR 761.60(a)(2)).</p>	<p>Verify that mineral oil dielectric fluid as described is disposed of in one of the following: (4)</p> <ul style="list-style-type: none"> <li>- an USEPA approved incinerator</li> <li>- an approved chemical waste landfill if written information proves that the fluid is not contaminated at greater than 500 ppm and is not an ignitable waste</li> <li>- an approved high efficiency boiler.</li> </ul> <p>Verify that if the fluid is burned in an high efficiency boiler: (4)</p> <ul style="list-style-type: none"> <li>- the boiler is rated at a minimum of 50 MBtu/h [14.65 MW]</li> <li>- the CO concentration in the stack is 10 ppm or less and the excess oxygen is at least 3 percent when PCBs are being burned and the boiler uses natural gas or oil as the primary fuel</li> <li>- the CO concentration in the stack is 100 ppm or less and the oxygen content is at least 3 percent when PCBs are being burned and the boiler uses coal as the primary fuel</li> <li>- the mineral oil dielectric fluid does not compromise more than 10 percent (on a volume basis), of the total fuel feed rate.</li> <li>- the mineral oil dielectric fluid is not fed into the boiler unless the boiler is operating at its normal operating temperature</li> <li>- the operator of the boiler does one of the following:               <ul style="list-style-type: none"> <li>- continuously monitors and records the CO concentrations and excess oxygen percentages in the stack gas while burning mineral oil dielectric fluid</li> <li>- measure and records the CO concentration and excess oxygen percentage in the stack gas at regular intervals of no longer than 60 min if the boiler will burn less than 30,000 gal [113,562.36 L/yr] of mineral oil dielectric fluid per year</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.37. (continued)</b></p>	<ul style="list-style-type: none"> <li>- measure and records the carbon monoxide concentration and excess oxygen percentage in the stack gas at regular intervals of no longer than 60 min if the boiler will burn less than 30,000 gal/yr [113,562.36 L/yr] of waste fluid</li> <li>- the primary fuel feed rates, the waste fluid feed rates, and total quantities of both primary fuel and waste fluid fed to the boiler are measured and recorded at regular intervals of no longer than 15 min</li> <li>- the carbon monoxide concentration and the excess oxygen percentage are checked at least once every hour and if either measurement falls below the specified levels, the flow of the waste fluid to the boiler stops immediately.</li> </ul> <p>Verify that before burning waste fluid, approval has been obtained from the USEPA Regional Administrator. (4)</p> <p>Verify that the following information is obtained by persons burning waste fluid in a boiler and kept at the boiler location for 5 yr: (4)</p> <ul style="list-style-type: none"> <li>- emissions data</li> <li>- the quantity of waste fluid burned in the boiler each month</li> <li>- a waste analysis.</li> </ul> <p>Verify that disposal was done at a licensed facility. (4)</p>
<p><b>S1.38.</b> Rags, soils, and other debris contaminated with PCBs at concentrations greater than 50 ppm must be disposed of in a PCB incinerator or in a chemical waste landfill (40 CFR 761.60(a)(4)).</p>	<p>Determine if any contaminated soil or debris has been disposed of and that disposal was conducted at a properly licensed facility. (4)</p>
<p><b>S1.39.</b> PCB Transformers with concentrations of 500 ppm or greater are required to be disposed of in either an USEPA approved incinerator or a chemical waste landfill (40 CFR 761.60(b)(1)).</p>	<p>Verify that if disposal is being done at a chemical waste landfill, the transformer is drained of all free-flowing liquids, filled with solvent, allowed to stand for at least 18 h, and then drained thoroughly. (4)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.40.</b> PCB capacitors must be disposed of in accordance with certain facility regulations (40 CFR 761.60(b)(2)).</p>	<p>Verify that disposal of PCB capacitors was done as follows: (4)</p> <ul style="list-style-type: none"> <li>- PCB Small Capacitors (less than 1.36 kg (3 lb) of PCBs) disposed of in a solid waste landfill</li> <li>- PCB Large High- or Low-Voltage Capacitors (greater than 1.36 kg (3 lb) of PCBs) containing more than 500 ppm are incinerated or disposed of in a chemical waste landfill.</li> </ul> <p>(NOTE: The Large, High, or Low-Voltage capacitors may be disposed of in chemical waste landfill upon approval of the USEPA.)</p> <p>Check capacitors in storage to ensure that they are placed in DOT containers with absorbent material. (4)</p>
<p><b>S1.41.</b> PCB hydraulic machines containing PCBs at concentrations greater than 50 ppm may be disposed of as municipal solid waste if specific conditions are met (40 CFR 761.60(b)(3)).</p>	<p>Verify that the machines are drained of all free-flowing liquid. (4)</p> <p>Verify that if the machine contained PCB liquid of 1000 ppm PCB or greater, it is flushed prior to disposal with a solvent containing less than 50 ppm PCB. (4)</p>
<p><b>S1.42.</b> PCB contaminated electrical equipment (50 to 500 ppm PCB), except capacitors, shall be disposed of by draining off the free-flowing liquid (40 CFR 761.60(b)(4)).</p>	<p>Verify that the free-flowing liquid is drained from electrical equipment prior to disposal. (4)</p>
<p><b>S1.43.</b> PCB Articles are required to be disposed of according to specific parameters (40 CFR 761.60(b)(5)).</p>	<p>Verify that PCB Articles with concentrations at 500 ppm or greater are disposed of in either: (4)</p> <ul style="list-style-type: none"> <li>- a USEPA-approved incinerator</li> <li>- a chemical waste landfill if all free-flowing liquids have been removed.</li> </ul> <p>Verify that PCB Articles with PCB concentration between 50 and 500 ppm are drained of all free-flowing liquid. (4)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.44.</b> PCB Containers are required to be disposed of according to specific parameters (40 CFR 761.60(c)).</p> <p><b>PCB Spills</b></p> <p><b>S1.45.</b> Installations are required to report spills of more than 10 lb [4.53 kg] of PCBs of concentrations of 50 ppm or greater to the USEPA Regional Office (40 CFR 761.120(a)(1), 761.123(d)(2), and 761.125(a)).</p> <p><b>S1.46.</b> Cleanup of low concentration spills of less than 1 lb [0.45 kg] of PCBs (less than 270 gal [1022.26 L] of untested mineral oil) must be done according to specific requirements (40 CFR 761.120(a)(2), 761.120(b), 761.120(c), and 761.125(b)).</p>	<p>Verify that PCB Containers with concentrations of 500 ppm or greater is disposed of in one of the following ways: (1)(2)(9)</p> <ul style="list-style-type: none"> <li>- in a USEPA-approved incinerator</li> <li>- in a chemical waste landfill if first the container is drained of any.</li> </ul> <p>Verify that PCB Containers used to contain only PCBs at concentrations less than 500 ppm are drained of PCB liquid prior to disposal as municipal solid waste. (4)</p> <p>Verify that when a spill of 10 lb [4.53 kg] or more directly contaminates surface water, sewers, or drinking water supplies the installation notifies the regional USEPA office within 24 h after discovery of the spill and acts on the guidance given by the USEPA. (1)(2)</p> <p>Verify that if a spill of 10 lb [4.53 kg] or more directly contaminates grazing land or a vegetable garden the installation notifies the USEPA regional office within 24 h after discovery and begins the cleanup of the spill. (1)(2)</p> <p>Verify that when a spill of 10 lb [4.53 kg] or more occurs which does not directly contaminate surface waters, sewers, drinking water supplies, grazing land, or a vegetable garden the installation notifies the USEPA Regional office within 24 h after discovery of the spill and begins decontamination of the spill area. (1)(2)</p> <p>(NOTE: Spills greater than 1 lb [0.45 kg] are required to be reported to the NRC under 40 CFR 302.1 through 302.6.)</p> <p>Verify that solid surfaces are double washed/rinsed and all indoor, residential surfaces other than vault areas are cleaned to 10 µg/100 cm<sup>2</sup> by standard commercial wipe tests. (1)(7)</p> <p>Verify that all soil within the spill area (visible traces of soil and buffer of 1 lateral foot [3.28 lateral meters] around the visible traces) is excavated and the ground restored to its original status by backfilling with clean soil (soil with less than 1 ppm PCBs). (1)(2)(7)</p> <p>Verify that the above cleanup requirements are done within 48 h after identifying the spill unless an emergency or adverse weather delays the process. (1)(2)</p> <p>Verify that the cleanup is documented with records and certification of decontamination and the records are maintained for 6 yr. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S1.47. (continued)</b></p>	<p>Verify that spills in nonrestricted access locations are decontaminated as follows: (1)(3)</p> <ul style="list-style-type: none"> <li>- furnishings, toys, and other easily replaceable household items are disposed of and replaced</li> <li>- indoor solid surfaces and high-contact outdoor solid surfaces are cleaned to 10 <math>\mu\text{g}/100 \text{ cm}^2</math> (as measured by standard wipe tests)</li> <li>- indoor vault areas and low-contact, outdoor, impervious solid surfaces are decontaminated to 10 <math>\mu\text{g}/100 \text{ cm}^2</math></li> <li>- at the option of the installation, low-contact, outdoor, nonimpervious solid surfaces are cleaned to either 10 or 100 <math>\mu\text{g}/100 \text{ cm}^2</math> and encapsulated</li> <li>- soil is decontaminated to 10 ppm PCBs by weight provided that the soil is excavated to a minimum depth of 10 inches and replaced with clean soil</li> <li>- post-cleanup sampling is done.</li> </ul> <p>Verify that records documenting all cleanup and decontamination are maintained for 5 yr. (1)(2)</p> <p>(NOTE: The occurrence/discovery of the spill on the weekend or overtime costs are not considered acceptable reasons to delay response.)</p> <p>(NOTE: The final numerical cleanup standards do not apply to spills directly into surface waters, drinking water, sewers, grazing lands, and vegetable gardens.)</p> <p>(NOTE: The USEPA may impose more stringent or less stringent cleanup requirements on a case by case basis depending on conditions such as possibility of ground-water contamination.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ASBESTOS MANAGEMENT</b></p> <p><b>All Installations</b></p> <p><b>S2.1.</b> Actions or changes since previous review of asbestos management should be examined (MP).</p> <p><b>S2.2.</b> Copies of all relevant Federal, state, and local regulations on asbestos are required to be maintained at the installation (AFR 19-1, para 11f).</p> <p><b>S2.3.</b> Copies of all relevant DOD, and U.S. Air Force directives, and guidance documents on asbestos should be maintained at the installation (MP).</p> <p><b>S2.4.</b> Installations are required to abide by state and local regulations and compliance agreements negotiated with Federal, state, and local governments concerning asbestos (EO 12088, Section 1-1).</p>	<p>Obtain a copy of previous report and determine if noncompliance issues have been resolved. (1)</p> <p>Determine whether copies of the following regulations are maintained and kept current at the installation: (1)</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance with Pollution Standards.</i></li> <li>- 40 CFR 61, Subpart M, <i>National Emission Standards for Asbestos.</i></li> <li>- 40 CFR 763, <i>Asbestos in Schools.</i></li> <li>- 49 CFR 172-177, <i>Transportation of Hazardous Materials.</i></li> </ul> <p>(NOTE: OSHA regulations designed to protect workers handling asbestos (29 CFR 1910) are not in this protocol.)</p> <p>Verify that the Base Staff Judge Advocate reviews Federal, state, and local regulations that may affect ongoing or proposed activities and keep the EPC informed as needed. (1)</p> <p>Determine whether copies of the following documents are maintained and kept current at the installation: (1)</p> <ul style="list-style-type: none"> <li>- AFOSH Standard 161-4, <i>Exposure to Asbestos.</i></li> <li>- AFR 91-42, <i>Air Force Facility Asbestos Management.</i></li> </ul> <p>Verify that the installation is complying with state and local requirements. (1)</p> <p>Verify that the installation is operating according to permits issued by the state or local agencies. (1)(2)</p> <p>(NOTE: Issues that are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- certification of individuals sampling and/or working with asbestos</li> <li>- renovation and demolition procedures</li> <li>- handling and disposal procedures.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S2.4. (continued)</b></p> <p><b>S2.5.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p><b>S2.6.</b> Installation are required to perform a complete, installation wide survey for asbestos (AFR 91-42, para 7a).</p> <p><b>S2.7.</b> Installations with maintenance responsibility are required to have a written asbestos operation and management plan (AFR 91-42, paras 2d, 7, and 8)</p>	<p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreement. (1)</p> <p>Determine if any new regulations concerning asbestos management have been issued since the finalization of the manual. (1)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)</p> <p>Verify that the installation has completed an asbestos survey. (10)</p> <p>Verify that each installation having maintenance responsibility has developed a written management plan and operating plan to carry out facility asbestos management. (10)</p> <p>(NOTE: The MAJCOM can exempt small installations from in-house training and equipment requirements. In such cases, the asbestos management plan and asbestos operations plans must contain a viable alternate program (such as contract or other government support) for the satisfactory removal, repair, and control of ACM in facilities.)</p> <p>Review the Asbestos Management Plan to determine if the plan contains a current permanent record on the status and condition of all ACM in the installations' facilities and that: (10)</p> <ul style="list-style-type: none"> <li>- it is updated continually, including recording of changes due to removal projects</li> <li>- plan is based on a complete installation-wide asbestos facility survey</li> <li>- the survey was used to prepare an asbestos register which indicates the location, type, condition, and all events affecting the ACM</li> <li>- corrective actions have been initiated by preparation of AF Form 332 or DD Form 1391 for each facility where damaged friable asbestos material has been identified</li> <li>- the plan contains a priority listing of all asbestos projects identified in the survey.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Asbestos in Schools</b></p> <p><b>S2.10.</b> Each building that is leased, owned, or otherwise used as a school building is required to be inspected for asbestos and a report of the inspection generated (40 CFR 763.85).</p> <p><b>S2.11.</b> Each inspection or reinspection is required to result in a written assessment of all friable known or assumed ACBM in the school building (40 CFR 763.88(a) through 763.88(c)).</p>	<p>Determine which buildings at the installation are used as school buildings. (10)</p> <p>Verify that the buildings have been inspected for asbestos, including sampling, by an accredited inspector. (10)</p> <p>Verify that reinspection of all friable and nonfriable unknown or assumed ACBM occurs every 3 yr after a management plan is in place. (10)</p> <p>Verify that each inspection and reinspection is documented in a report that is included in the management plan. (10)</p> <p>(NOTE: Any building that is leased or acquired on or after 12 October 1988 that is to be used as a school building must be inspected prior to use as a school building. If emergency use of a building is required, inspection will occur within 30 days.)</p> <p>Verify that the assessment classifies the ACBM and suspected ACBM assumed to be ACM into one of the following categories: (10)</p> <ul style="list-style-type: none"> <li>- damaged or significantly damaged thermal system insulation ACM</li> <li>- damaged friable surfacing ACM</li> <li>- significantly damaged friable surfacing ACM</li> <li>- damaged or significantly damaged friable miscellaneous ACM</li> <li>- ACBM with potential for damage</li> <li>- ACBM with potential for significant damage</li> <li>- any remaining friable ACBM or friable suspected ACBM</li> </ul> <p>Verify that the designated person reviews the results of the inspections, reinspections, and assessments and recommend a course of action to the local education agency. (10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S2.12.</b> An asbestos management plan is required for each school building and submitted to the Agency designated by the Governor of the state (40 CFR 763.93).</p>	<p>Determine if there is a plan. (10)</p> <p>Verify that plans have been submitted. (10)</p> <p>Verify that the plan is kept current and up-to-date with on-going operational and maintenance activities. (10)</p> <p>Verify that the plan was developed by an accredited management planner and includes: (10)</p> <ul style="list-style-type: none"> <li>- a list of the names and addresses of each school building and whether the building contains friable ACBM, nonfriable ACBM, and friable and nonfriable suspected ACBM assumed to be ACM</li> <li>- dates of inspections</li> <li>- a blueprint, diagram or written description of the school building identifying where samples were taken</li> <li>- description of sampling methodologies</li> <li>- analysis results</li> <li>- descriptions of any assessments made</li> <li>- name address and telephone number of the designated asbestos manager</li> <li>- detailed description of preventative measures and response actions taken</li> <li>- statements of accreditation</li> <li>- description in the form of a blueprint, diagram, or writing of any ACBM or suspected ACBM assumed to be ACM which remains in the school after response actions are taken</li> <li>- a plan for reinspection</li> <li>- a description of the steps taken to inform workers, building occupants, and/or their legal occupants about asbestos related activities</li> <li>- an evaluation of the resources needed to complete response actions and carry out reinspection, operations and maintenance activities, periodic surveillance and training activities.</li> </ul> <p>Verify that a copy of the plan is on file in the school administrative office and available to workers before work beginning in any area of the building. (10)</p> <p>Verify that a copy of the plan is available for inspection by representatives of the USEPA, the state, and the public within 5 working days after receiving a request for inspection. (10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S2.13.</b> Response actions are required to be selected and implemented in a timely manner and according to specific guidelines (40 CFR 763.90(a) through 763.90(f)).</p>	<p>Verify that if damaged or significantly damaged thermal system insulation ACM is present in the building, the installation will: (10)</p> <ul style="list-style-type: none"> <li>- at least repair the damaged area</li> <li>- remove the damaged material if it is not feasible, due to technological difficulties, to repair the damage</li> <li>- maintain all thermal system insulation ACM and its coverings in an intact state and undamaged condition.</li> </ul> <p>Verify that if damaged friable surfacing ACM or damaged friable miscellaneous ACM is present, the installation uses one of the following response actions: (10)</p> <ul style="list-style-type: none"> <li>- encapsulation</li> <li>- enclosure</li> <li>- removal</li> <li>- repair.</li> </ul> <p>Verify that if significantly damaged friable surfacing ACM or significantly damaged friable miscellaneous ACM is present in a building the installation: (10)</p> <ul style="list-style-type: none"> <li>- immediately isolates the functional space and restricts access unless isolation is not needed to protect human health</li> <li>- remove the material in the functional space or, depending on whether enclosure or encapsulation is sufficient to protect human health and the environment, enclose or encapsulate.</li> </ul> <p>Verify that if any friable surfacing ACM, thermal system insulation ACM, or friable miscellaneous ACM that has potential for damage is present in the building, an appropriate operations and maintenance (O&amp;M) program is implemented. (10)</p> <p>Verify that if any friable surfacing ACM, thermal insulation ACM, or friable miscellaneous ACM that has potential for significant damage is present, the installation. (10)</p> <ul style="list-style-type: none"> <li>- implements an appropriate O&amp;M program</li> <li>- institute preventative measures to eliminate the reasonable likelihood that the ACM will become significantly damaged, deteriorated, or delaminated</li> <li>- remove the material as soon as possible is appropriate preventative measures cannot be implemented.</li> </ul>

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**COMPLIANCE CATEGORY:  
SPECIAL PROGRAMS MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S2.14.</b> An accredited person must be designated by the local education agency to perform specific tasks and functions (40 CFR 763.84(g) and 763.88(d).</p> <p><b>S2.15.</b> An operations, maintenance and repair (O&amp;M) program is required to be developed whenever any friable ACBM is present or assumed to be present in a building that is used as a school building (40 CFR 763.91(a) through 763.91(e)).</p>	<p>Verify that the person designated to ensure that requirements concerning asbestos in school are implemented correctly is trained in the following: (10)</p> <ul style="list-style-type: none"> <li>- health effects of asbestos</li> <li>- detection, identification, and assessment of ACM</li> <li>- options for controlling ACM</li> <li>- asbestos management programs</li> <li>- relevant state and federal regulations.</li> </ul> <p>(NOTE: Any material identified as nonfriable ACBM or nonfriable assumed ACBM must be treated as friable ACBM when the material is about to become friable as a result of activities performed in the school building.)</p> <p>Verify that the following actions are taken during small scale, short duration O&amp;M operations: (10)</p> <ul style="list-style-type: none"> <li>- entry is restricted into the area by persons other than those needed to perform the maintenance project (this can be done by isolating the area or by scheduling)</li> <li>- signs are posted to prevent entry by unauthorized persons</li> <li>- air-handling systems are shut-off or temporarily modified and other sources of air movement are restricted</li> <li>- whatever work practices are required to prohibit the spread of any released fibers are used</li> <li>- all fixtures or other components are cleaned in the immediate work area</li> <li>- the asbestos debris and other cleaning materials are placed in a sealed, leak-tight container.</li> </ul> <p>Verify that response actions for any maintenance activities disturbing friable ACBM, other than small-scale, short-duration maintenance is designed by persons accredited to design response actions and conducted by persons accredited to conduct response actions. (10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S2.16.</b> Warning labels are required to be attached immediately adjacent to any friable and nonfriable ACBM and suspected ACBM assumed to be ACM located in routine maintenance areas (such as boiler rooms) at each school building (40 CFR 763.95).</p> <p><b>S2.17.</b> All members of the school maintenance and custodial staff who might work in a building that contains ACBM are required to receive at least 2 h of awareness training whether or not they are required to work with ACBM (40 CFR 763.92(a)(1)).</p>	<p>Verify that label are in place in the following areas: (10)</p> <ul style="list-style-type: none"> <li>- where friable ACBM was responded to by any means other than removal</li> <li>- where there is ACBM for which no response action was carried out.</li> </ul> <p>Verify that labels are displayed in highly visible places and remain posted until the ACBM that is labeled is removed. (10)</p> <p>Verify that the label reads <b>CAUTION: ASBESTOS. HAZARDOUS. DO NOT DISTURB WITHOUT PROPER TRAINING AND EQUIPMENT.</b> (10)</p> <p>Verify that the school maintenance and custodial staff has been trained. (9)(10)</p> <p>Verify that new personnel are trained within 60 days after start of employment. (9)(10)</p> <p>Verify that the training has included (40 CFR 763.92(a)(2)): (9)(10)</p> <ul style="list-style-type: none"> <li>- information regarding asbestos and the various uses and forms</li> <li>- information on the health effects associated with asbestos exposure</li> <li>- locations of all ACBM identified throughout each school building in which they work</li> <li>- recognition of damaged, deterioration and location of the management plan.</li> <li>- name and telephone number of the person designated to carry out responsibilities for asbestos management. School maintenance and custodial staff that conduct any activities that will result in the disturbance are required to received an additional 14 h of training.</li> </ul> <p>Verify that staff has received additional training that includes (40 CFR 763.94): (9)(10)</p> <ul style="list-style-type: none"> <li>- descriptions of the proper methods of handling ACBM</li> <li>- information on the use of respiratory protection and other personal protective measures</li> <li>- the requirements found in 40 CFR 763</li> <li>- hands-on training in the use of respiratory protection, other personal protection measures and good work practices. Records pertaining to asbestos in schools are required to be maintained in a central location in the administration office of the school.</li> </ul> <p>Verify that records concerning removal of ACBM are retained for 3 yr after the next reinspection. (9)(10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Renovation and Demolition</b></p> <p><b>S2.19.</b> Installations that demolish facilities containing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM on other facility components or at least 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility components, and installations renovating structures and stripping or removing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of friable asbestos on other facility components and at least 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility components must meet certain notification requirements (40 CFR 61.145(a)(1) 61.145(a)(3), and 61.145(b)).</p> <p><b>S2.20.</b> Installations demolishing a facility with RACM of less than 80 linear meters (260 linear feet) on pipes and less than 15 m<sup>2</sup> (160 ft<sup>2</sup>) on other facility components and less than 1 m<sup>3</sup> off facility components shall submit notification of demolition (40 CFR 61.145(a)(2) and 61.145(b)).</p>	<p>Determine whether USEPA has been provided with written notice of intent to demolish or renovate at least 10 days before demolition begins and as early as possible before renovation begins. (1)(10)</p> <p>Examine written notice for the following information: (1)</p> <ul style="list-style-type: none"> <li>- name and address of installation</li> <li>- description of facility being renovated or demolished (size, age, prior use)</li> <li>- estimates of approximate amount (linear ft or surface area) of asbestos present in the facility</li> <li>- location of the facility</li> <li>- scheduled start and completion dates of renovation or demolition</li> <li>- nature of planned demolition or renovation methods to be used</li> <li>- procedures for asbestos emissions control</li> <li>- name and location of waste disposal site where asbestos will be disposed)</li> <li>- whether or not it is a revised notification</li> <li>- after 20 November 1991, certification that at least one trained person will supervise.</li> </ul> <p>(NOTE: Installations are also required to submit notifications following these guidelines for facilities being demolished under an order of a state or local governmental agency because the facility is structurally unsound and in danger of imminent collapse.)</p> <p>Verify that a written notice of intent to demolish has been submitted to the Administrator at least 10 days before demolition and includes: (1)(10)</p> <ul style="list-style-type: none"> <li>- the name and address of owner and operator</li> <li>- description of the facility being demolished including the size, age, and prior use</li> <li>- estimate of the approximate amount of friable asbestos present</li> <li>- location of the facility</li> <li>- schedule</li> <li>- procedures to be used.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S2.21.</b> Installations that demolish facilities which contain at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM on other facility components and installations renovating structures and stripping or removing at least 80 linear meters (260 linear feet) of friable asbestos on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of friable asbestos on other facility components or 1 m<sup>3</sup> (35 ft<sup>3</sup>) or more off facility component must meet certain emission control requirements (40 CFR 61.145(a)(1) through 61.145(a)(3) and 61.145(c)(1) through 61.145(c)(3)).</p>	<p>Inspect facility during demolition or renovation operations for procedures to prevent emissions of particulate asbestos to outside air. (9)</p> <p>Verify that all RACM are removed from facilities being demolished or renovated before any wrecking or dismantling: (9)</p> <ul style="list-style-type: none"> <li>- it is a Category 1 nonfriable ACM that is not in poor condition and is not friable</li> <li>- the RACM is on a facility component that is encased in concrete or other similar material and is adequately wetted whenever exposed during demolition</li> <li>- it was not accessible for testing and is not discovered until after demolition began and, as a result of demolition, the materials cannot be safely removed</li> <li>- it is Category 2 nonfriable ACM and the probability is low that the materials will become crumbled, pulverized, or reduced to powder, during demolition.</li> </ul> <p>Verify that when a facility component that contains or is covered or coated with RACM is being taken out of the facility in units or sections: (1)(9)</p> <ul style="list-style-type: none"> <li>- they are adequately wetted when RACM are exposed during cutting and dis-jointing operations, and</li> <li>- the units or sections are carefully lowered to ground level.</li> </ul> <p>Verify that RACM is adequately wetted when it is being stripped from facility components while it remains in place in the facility except in renovation operation where wetting would unavoidably damage equipment and the installation: (1)(9)</p> <ul style="list-style-type: none"> <li>- request a determination from the Administrator as to whether unavoidable damage would occur and supply Administrator with the information needed to make the decision</li> <li>- uses one of the following emission control methods:             <ul style="list-style-type: none"> <li>- a local exhaust ventilation and collection system</li> <li>- a glove bag system</li> <li>- leak tight wrapping to contain all RACM.</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S2.22.</b> Emissions from facility components that have been taken out in units or in sections from facilities being demolished under state or local orders or facilities being demolished or renovated with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM on other facility components or at least 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility component must be controlled (40 CFR 61.145(c)(4) and 61.145 (c)(5)).</p>	<p>Verify that facility components are either stripped or contained in leak tight wrappings. (1)(9)</p> <p>Inspect facility components removed from facility as units or in sections for stripping to observe that: (1)(9)</p> <ul style="list-style-type: none"> <li>- RACM is adequately wet during stripping operations</li> <li>- a local exhaust ventilation and collection system designed and operated to capture emissions is in use</li> <li>- the exhaust system exhibits no visible emissions to outside air.</li> </ul> <p>Verify that when wetting operations are stopped because of the temperature, a record of the temperature is made and kept on file for 2 yr. (1)(9)</p> <p>(NOTE: For large facility components such as reactor vessels, large tanks, and steam generators, but not beams, stripping is not required if the following are met:</p> <ul style="list-style-type: none"> <li>- the component is removed, transported, stored, disposed of, or reused without disturbing the RACM</li> <li>- the component is encased in leaktight wrapping and labelled.)</li> </ul>
<p><b>S2.23.</b> Emissions from RACM that has been removed or stripped from facilities being demolished under state or local orders or facilities being demolished or renovated with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM on other facility components or 1 m<sup>3</sup> (35 ft<sup>3</sup>) or greater off facility components must be controlled (40 CFR 61.145(c)(6)).</p>	<p>Inspect asbestos materials that have been removed or stripped to see that: (1)(9)(10)</p> <ul style="list-style-type: none"> <li>- materials are adequately wet, and remain wet until collected for disposal</li> <li>- materials are carefully lowered to the ground or lower floor (not dropped or thrown)</li> <li>- materials not removed as units or in sections are transported to the ground via dust-tight chutes or containers if they are removed more than 50 ft above ground level.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S2.24.</b> When the temperature at the point of wetting is below 0°C and facilities are being demolished under state or local orders or facilities with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM other facility components or at least 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility components are being demolished or renovated specific exemptions and requirements apply (40 CFR 61.145(c)(7)).</p>	<p>Verify that facility components coated or covered with friable asbestos materials are removed as units or in sections to the maximum extent possible. (1)(9)(10)</p> <p>(NOTE: Wetting is not required at this temperature.)</p> <p>Verify that when wetting is stopped because of freezing temperatures, the temperature is recorded in the areas containing the facility components at the beginning, middle, and end of each work day. (1)(9)</p> <p>Verify that the temperature log is kept for 2 yr. (1)(9)</p>
<p><b>S2.25.</b> Facilities being demolished under state or local governmental agency orders shall have the portion of the facility containing friable asbestos adequately wetted during the wrecking operation (40 CFR 61.145(c)(9)).</p>	<p>Verify that in facilities being demolished under state or local governmental agency orders the portion of the facility that contains friable asbestos materials is adequately wetted during the wrecking operation. (1)(9)(10)</p>
<p><b>S2.26.</b> When a facility is demolished by intentional burning, all RACM, including Category 1 and 2 nonfriable ACM must be removed (40 CFR 61.145(c)(10)).</p>	<p>Verify that complex removal is done before burning. (1)(9)(10)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S2.27.</b> As of 20 November 1991, no RACM shall be stripped, removed, or otherwise handled or distributed unless at least one onsite representative trained in asbestos removal is present (40 CFR 61.145 (c)(8)).</p> <p><b>Disposal</b></p> <p><b>S2.28.</b> Asbestos-containing waste materials are required to be disposed of properly (40 CFR 61.150(a) and 61.150(b)).</p>	<p>Verify that trained person is present. (9)(10)</p> <p>Verify that the individual receives refresher training every 2 yr. (9)(10)</p> <p>(NOTE: These requirements do not apply to Categories 1 or 2 nonfriable ACM that did not become crumbled, pulverized, or reduced to powder.)</p> <p>Verify that no visible emissions are discharged to the outside air during the collection, processing, packaging, transporting, or depositing of asbestos-containing waste material, or that the facility uses one of the following methods: (9)(10)</p> <ul style="list-style-type: none"> <li>- the asbestos containing waste is adequately wetted</li> <li>- the asbestos containing waste is processed into nonfriable forms</li> <li>- an alternative method approved by the USEPA.</li> </ul> <p>Verify that if the waste is wetted: (9)(10)</p> <ul style="list-style-type: none"> <li>- asbestos waste from control devices is mixed with water to form a slurry and the other materials are adequately wetted</li> <li>- no visible emissions are discharged or air cleaning is used to control the emissions</li> <li>- the wetted materials are sealed in leak tight containers while wet and labeled with the phrase "CAUTION, Contains Asbestos Avoid Opening or Breaking Container, Breathing Asbestos is Hazardous to Your Health" or a label approved by OSHA</li> <li>- materials that don't fit in containers are put into leak tight wrapping.</li> </ul> <p>Verify that the waste generator deposits all ACM as soon as practical at one of the following: (4)(9)(10)</p> <ul style="list-style-type: none"> <li>- a properly operated waste disposal site</li> <li>- a USEPA approved site that converts RACM and asbestos-containing waste material into asbestos-free material.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S2.29.</b> Asbestos-containing waste must be properly transported (40 CFR 61.150 (c) through 61.150(e)).</p> <p><b>S2.30.</b> Active waste disposal sites where asbestos-containing material is being disposed are required to meet specific standards (40 CFR 61.154(a) through 61.154(e), 61.154(i), and 61.154(j)).</p>	<p>Verify that vehicles used to transport asbestos-containing waste material are marked indicating an asbestos dust hazard. (10)</p> <p>Verify that for all ACM transported off the facility, waste shipment records are maintained for at least 2 yr and a copy is provided to the waste disposal site. (10)</p> <p>Verify that a procedure is in place to notify the local, state, or USEPA regional office if a copy of the waste shipment record is not returned to the waste generator within 45 days after the waste was accepted by the initial transporter. (1)(9)(10)</p> <p>Determine if the installation is operating a landfill where asbestos is being disposed. (1)</p> <p>Verify that there are no visible emissions from active asbestos-containing waste disposal sites, or that: (1)(9)</p> <ul style="list-style-type: none"> <li>- at the end of each operating day, or once in a 24-h period, the waste material is covered with either at least 15 cm (6 in.) of compacted nonasbestos-containing material, or</li> <li>- a resinous or petroleum based dust suppression agent is applied, waste crank-case oil is not suitable for this purpose</li> <li>- an alternative method of control approved by the USEPA is used.</li> </ul> <p>Verify that unless a natural barrier exists deterring access by the general public that either the waste is properly covered by non-ACM daily or proper warning signs and fences are installed and maintained as follows: (1)(9)</p> <ul style="list-style-type: none"> <li>- warning signs are displayed at all entrances at intervals of 100 m (330 ft) or less along property line of the site or the perimeter of the section of the site where ACMs are disposed and state that the site contains asbestos and warns against creating dust</li> <li>- the area is adequately fenced.</li> </ul> <p>Verify that a copy of waste shipment records are maintained for 2 yr. (1)</p> <p>Verify that until closure, a record is kept of the location, depth, and area of asbestos-containing waste on a map or diagram of the disposal area. (1)</p> <p>Verify that upon closure, the administration receives a copy of all records. (1)</p> <p>Verify that a procedure is in place to notify the administration in at least 45 days prior to excavating or disturbing deposited asbestos-containing waste material. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S2.31.</b> Inactive waste disposal sites are required to meet specific standards (40 CFR 61.154(f) through 61.154(h) and 61.151).</p>	<p>Verify that inactive waste disposal sites meet one of the following: (1)(9)</p> <ul style="list-style-type: none"> <li>- no visible emissions are discharged</li> <li>- cover the asbestos-containing waste material with at least 60 cm (2 ft) of non-ACM and maintain the cover to prevent exposure</li> <li>- asbestos-containing waste material is covered with at least 15 cm (6 in.) of compacted non-ACM, and a vegetation cover is grown and maintained.</li> </ul> <p>(NOTE: In desert areas where vegetation is difficult to maintain at least 8 cm (3 in.) additional of well-graded nonasbestos-containing crushed rock may be used instead.)</p> <p>Verify that unless a natural barrier exists, warning signs and a fence are installed to deter public access. (1)(9)</p> <p>Verify that warning signs are displayed at all entrances and at intervals of 100 m (328 ft) or less and are easily read indicating the area is an asbestos waste disposal site. (1)(9)</p> <p>Verify that a procedure is in place to notify the administrator in writing at least 45 days prior to excavating or disturbing any asbestos-contaminated waste material at an inactive waste disposal site. (1)(9)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>RADON MANAGEMENT</b></p> <p><b>All Installations</b></p> <p><b>S3.1.</b> Actions or changes since last review of radon management should be examined (MP).</p> <p><b>S3.2.</b> The installation should have current policy letters on radon management (MP).</p> <p><b>S3.3.</b> Installations are required to comply with state and local radon management regulations and compliance agreements negotiated with Federal state and local governments (EO 12088, Section 1-1).</p> <p><b>S3.4.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Obtain copy of previous review report and determine if noncompliance issues have been resolved. (1)(2)</p> <p>Determine facility changes relative to radon monitoring which have occurred since previous review and would impact the scope of the current review. (1)(2)</p> <p>Determine if the installation has a copy of Policy letter from USAF/CV dated 23 October 1987, and any relevant updates. (1)(2)</p> <p>Verify that the installation is meeting state and local requirements concerning radon management. (1)(2)</p> <p>Verify that the installation is operating according to permits issued by the state or local agencies. (1)(2)</p> <p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreements. (1)(2)</p> <p>Determine if any new regulations concerning radon management have been issued since the finalization of the manual. (1)(2)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S3.5.</b> Air Force policy requires sampling for and mitigation of radon in certain structures at radon concentrations above 4 pCi/L (HQ USAF/CV Policy letter 23 October 1987).</p>	<p>Determine if any mitigation actions are required by reviewing sampling records. (2)</p> <p>Verify that initial sample results were completed in May 1988. (2)</p> <p>Verify that detailed assessment results were completed in May 1990, for high- and some medium-risk bases. (2)</p> <p>Verify that detailed assessment results will be completed by mid 1992 for the rest of the medium-risk bases. (2)</p> <p>Review any needed radon mitigation projects with the contract programmer in Civil Engineering and verify that all mitigation projects are prioritized according to their radon level (pCi/L) as shown on page 9-10. (7)</p> <p>Determine if the programmed mitigation projects meet the goals listed above. (2)</p> <p>Determine if Civil Engineering Staff have received radon diagnostic and mitigation training. (2)</p> <p>Check if residents were informed of the radon levels in their residences and measures being taken for correction. (2)</p>

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**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>INSTALLATION RESTORATION PROGRAM (IRP)</b></p> <p><b>All Installations</b></p> <p><b>S4.1.</b> Actions or changes since last review of the IRP should be examined (MP).</p> <p><b>S4.2.</b> Copies of all relevant Federal, state, and local regulations, on the IRP are required to be maintained at the installation (AFR 19-1, para 11f).</p> <p><b>S4.3.</b> Copies of all relevant DOD and U.S. Air Force directives, and guidance documents on the IRP should be maintained at the installation (MP).</p>	<p>Obtain a copy of previous review report and determine if noncompliance issues have been resolved. (1)</p> <p>Determine whether copies of the following regulations and policy letters are maintained and kept current at the installation: (1)(2)(11)</p> <ul style="list-style-type: none"> <li>- 40 CFR 300.810, <i>Contents of the Administrative Record File.</i></li> <li>- SARA Section 120, <i>Federal Facilities.</i></li> <li>- SARA Section 211, <i>DOD Environmental Restoration Program.</i></li> <li>- applicable state and local requirements.</li> </ul> <p>Verify that the Base Staff Judge Advocate reviews Federal, state, and local regulations that may affect ongoing and proposed activities and keeps the EPC informed as needed. (1)</p> <p>Determine whether copies of the following documents and policy letters are maintained and kept current at the installation: (1)(2)(11)</p> <ul style="list-style-type: none"> <li>- AFI 32-7020, <i>The Environmental Restoration Program.</i></li> <li>- AF/CEV Letter, <i>Fiscal Year XX Defense Environmental Restoration Account (DERA) Eligibility/ Programming Guidance.</i></li> <li>- <i>Air Force Installation Restoration Program Management Guidance</i>, current year.</li> <li>- HQ USAF/CEV Letter, 12 January 88, <i>Administrative Records for the Installation Restoration Program.</i></li> <li>- HQ USAF/CEVR Letter, 19 January 88, <i>Installation Restoration Program (IRP) Decision Documentation.</i></li> <li>- HQ USAF/CE Letter, 15 Jun 1993, <i>Air Force Policy on Signing Interagency Agreements for the Environmental Restoration of Air Force Installations.</i></li> <li>- HQ USAF/CE Letter, 8 December 1993., <i>Delegation of Validation Authority for Defense Environmental Restoration Account (DERA) Projects.</i></li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S4.4.</b> Installations are required to comply with state and local regulations and compliance agreements negotiated with Federal, state, and local governments impacting the IRP (AFR 19-1, para 2a).</p>	<p>Verify that the installation is complying with state and local requirements impacting the IRP. (1)</p> <p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreement. (1)</p>
<p><b>S4.5.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if any new regulations concerning the IRP have been issued since the finalization of the manual. (1)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)</p>
<p><b>S4.6.</b> All properties which, due to past activities have the potential for contamination, are required to be evaluated in a systematic and comprehensive manner (Yearly Defense DERA Eligibility and Programming Guidance).</p>	<p>Determine if the installation has had previous spills or actions occur that could lead to possible facility contamination. (1)</p> <p>Verify that actions have been taken to ascertain the extent of contamination. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S4.7.</b> Significant decisions in the IRP process (such as taking no further action at a site, selecting a remedial action, implementing long term monitoring, and reactivating IRP work at a previously excluded site) must be documented (HQ USAF/LEEV Letter, 19 Jan 88, <i>Installation Restoration Program (IRP) Decision Documentation</i> and AFI 32-7020, para 2.2.10).</p> <p><b>S4.8.</b> Each installation which has conducted or is currently conducting IRP activities must establish an Administrative Record which contains all the information used by the base in selection of a response action for each IRP site (Yearly DERA Eligibility and Programming Guidance and HQ USAF/CEVR Letter, 12 Jan 88, <i>Administrative Records for the Installation Restoration Program</i>).</p>	<p>Determine if all site closeouts and interim and final remedial actions have been fully documented in a decision document/record of decision. (1)</p> <p>Verify that the Assistant Secretary of the Air Force (Manpower, Reserve Affairs, Installations, and Environment) signs Record of Decision documents for NPL sites. (1)</p> <p>Determine if the document has been signed by the installation commander or MAJ-COM/DCS for engineering and services and forwarded to the USEPA and state regulatory agency. (1)</p> <p>Verify that the decision document for site closeout has been signed by the installation commander or MAJCOMM/DCS for engineering and services and forwarded to the USEPA and state agencies, as appropriate, for signature. (1)</p> <p>Determine if the installation maintains an Administrative Record. If so, determine that it is kept in a location normally frequented or found by the public (such as the Base Library, Base Pass and Identification Office, Public Affairs, etc.). (1)(2)(11)</p> <p>Determine if the table of contents is posted conspicuously near the Record. Determine if the table shows the date each document was placed into the Record. (1)(2)(11)</p> <p>Determine if the following documents are included in the Record: (1)(2)(11)</p> <ul style="list-style-type: none"> <li>- Final Reports</li> <li>- Final Remedial Action Plans</li> <li>- Final reports of Preliminary Assessments, Site Investigations, Remedial Investigations, Feasibility Studies, Risk Assessments, Endangerment Assessments, etc.</li> <li>- Site Decision Papers, Decision Documents, or Records of Decisions</li> <li>- final EAs or other documentation prepared to comply with NEPA which pertains to the base IRP and site evaluations or engineering studies or memoranda from consultants who add information or make recommendations about a site</li> <li>- final correspondence sent to or received from environmental regulatory agencies pertaining to the IRP</li> <li>- copies of all Community Relations Documents pertaining to the base IRP (plans, press releases, records of public meetings, hearings, etc.)</li> <li>- documentation of meetings which contain relevant or significant information concerning the status of a site</li> <li>- any other information that formed the basis of decisions made regarding an IRP action.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>S4.8. (continued)</b>	<p>Determine if the public is periodically informed of the Record's availability through bulletin notices or local newspaper articles. (1)(2)(11)</p> <p>Verify that the Administrative Record is maintained at the installation for as long as IRP activities are underway (including long-term monitoring). (1)(2)(11)</p>
<p><b>S4.9.</b> Installations must screen all IRP requirements for Defense Environmental Restoration Account (DERA) funding eligibility before they are submitted to the MAJCOM (Yearly Defense Environmental Restoration Account (DERA) Eligibility/Programming Guidance, U.S. Air Force).</p>	<p>Determine if the installations screens their IRP requirements for DERA funding eligibility, using the yearly DERA Eligibility/Programming Guidance. (1)</p> <p>(NOTE: Evidence of this screening will be in the site folder with the site history.)</p>
<p><b>S4.10.</b> Each installation must have a Technical Review Committee which includes representatives from the USEPA, state and local regulatory agencies, and the public (SARA Section 211; 10 USC 2705).</p>	<p>Determine if the installation has formed and implemented a technical review committee. (1)(11)</p> <p>Determine if the committee includes representatives from the USEPA, state and local regulatory agencies, and the public. (1)(11)</p> <p>(NOTE: Suggested local community representatives include college professors in technical fields.)</p>
<p><b>S4.11.</b> Installations with IRP sites must appoint a remedial project manager (EO 12580; National Contingency Plan).</p>	<p>Determine if the installation's commander has appointed a remedial project manager for all IRP sites. (1)(11)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S4.12.</b> Installations with known contaminated sites must establish goals and milestones for expeditious cleanup of these sites. (Yearly DERA Eligibility/ Programming Guidance, United States Air Force).</p>	<p>Determine if the installation has established goals and milestones for expeditious cleanup of known contaminated sites by reviewing the Management Plan. (1)</p> <p>Determine if the installation has been meeting these goals. (1)</p> <p>Verify that these goals and milestones are consistent with Air Force and MAJCOMM goals of reducing human exposure to contaminants, assessing long-term risk to human health and the environment, and applying the most effective and efficient actions necessary to contain and reduce contamination to agreeable risk levels. (1)</p>
<p><b>S4.13.</b> Each installation is required to maintain copies of agreements with Regulatory Agencies (Yearly DERA Eligibility and Programming Guidance).</p>	<p>Determine if the installation has a Federal Facilities Agreement, Federal Facility Compliance Agreement, Consent Orders, Consent Decree, or RCRA Permit. (1)</p> <p>Determine if the facility has entered into any other agreement with regulatory agencies with binding schedules. (1)</p> <p>Verify that copies of all such documents are easily located by CEV personnel. (1)</p> <p>Verify that schedules outlined in these documents are being met by the installation. (1)</p>
<p><b>S4.14.</b> Each installation must establish a Community Relations Plan (Yearly DERA Eligibility and Programming Guidance).</p>	<p>Determine if the installation has developed a formal written plan and submitted copies of the plan to HQ USAF/LEEV and HQ ACC/LEEV. (1)</p> <p>Verify that the installation conducts open meetings for the public. (1)</p>
<p><b>S4.15.</b> Installations must maintain training records for IRP Personnel (Yearly DERA Eligibility and Programming Guidance).</p>	<p>Determine if IRP personnel have completed required Training. (1)(2)</p> <p>Verify that the training attendance/completion is documented. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S4.16.</b> Each installation must develop and maintain a Management Action Plan (MAP) (Yearly DERA Eligibility and Programming Guidance and AFI 32-7020. para 2.2.11).</p>	<p>Determine if the installation has developed a MAP. (1)</p> <p>Verify that the MAP contains the following: (1)</p> <ul style="list-style-type: none"> <li>- a Community Disposal and Reuse Plan</li> <li>- the Basewide Environmental Program Status</li> <li>- the Basewide Strategy for Environmental Restoration</li> <li>- the Environmental Restoration/Compliance Program Master Schedule</li> <li>- the Budget for Restoration.</li> </ul> <p>Verify that the MAP schedules are updated every 6 mo. (1)</p> <p>Verify that the MAP is reviewed yearly and revised accordingly. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ENVIRONMENTAL IMPACT ANALYSIS PROCESS (EIAP)</b></p> <p><b>All Installations</b></p> <p><b>S5.1.</b> Actions or changes since previous review of the EIAP process should be examined (MP).</p> <p><b>S5.2.</b> Copies of all relevant Federal, state, and local regulations on the EIAP process are required to be maintained at the installation (AFR 19-1, para 11f).</p> <p><b>S5.3.</b> Copies of all relevant DOD and U.S. Air Force directives, and guidance documents on the EIAP process should be maintained at the installation (MP).</p> <p><b>S5.4.</b> Installations are required to comply with state and local regulations and compliance agreements negotiated with Federal, state, and local governments concerning the EIAP (AFR 19-1, para 2a).</p>	<p>Obtain a copy of previous report and determine if compliance issues have been resolved. (1)</p> <p>Verify that the following documents are maintained: (1)</p> <ul style="list-style-type: none"> <li>- 32 CFR 989, <i>Environmental Impact Analysis Process.</i></li> <li>- 40 CFR 1500 - 1500, <i>Regulations for the Implementation of NEPA.</i></li> <li>- applicable state and local regulations.</li> </ul> <p>Verify that the Base Staff Judge Advocate reviews the documents annually for currency and completeness and submits the findings of the review to the Base Environmental Protection Committee (ECP). (1)</p> <p>Verify that the following documents are maintained: (1)</p> <ul style="list-style-type: none"> <li>- AFI 32-7061, <i>The Environmental Impact Analysis Process.</i></li> <li>- AFR 19-2, <i>Environmental Impact Analysis Process.</i></li> <li>- Air Force Policy Letter 2 November 1993, <i>Federal Register Publication Information.</i></li> <li>- Air Force Policy Letter 3 January 1994. <i>Environmental Impact Analysis Process (EIAP) and Related Compliance Documents.</i></li> </ul> <p>Verify that the installation is complying with state and local requirements concerning the EIAP. (1)</p> <p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreement. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S5.5.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis for finding).</p>	<p>Determine if any new regulations related to the EIAP have been issued since the finalization of the manual. (1)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)</p>
<p><b>S5.6.</b> Installations are required to have an Environmental Planning Function (EPF) which is an interdisciplinary staff, at any level of command, which is responsible for the EIAP (AFI 32-7061, para 3.6).</p>	<p>Determine who at the installation participates in the EPF. (1)(2)(11)</p> <p>Verify that the EPF: (1)(2)(11)</p> <ul style="list-style-type: none"> <li>- assists the proponent in preparing a Description of the Proposed Action and Alternatives (DOPAAs)</li> <li>- evaluates proposed actions and completes Sections II and III of AF Form 813, <i>Request for Environmental Impact Analysis</i> subsequent to submissions by the proponent and makes categorical exclusion (CATEX) determinations.</li> <li>- manages the EIAP, including preparation and approval of environmental assessments (EA) and findings of no significant impact (FONSI)</li> <li>- identifies and documents, with technical advice from the BEE and other staff members, environmental quality standards that relate to the action under evaluation</li> <li>- prepares environmental documents, or obtains technical assistance through the Air Force channels or contract support, and adopts the documents as official Air Force papers when completed and approved</li> <li>- ensures the EIAP is conducted on base and MAJCOM-level plans, including contingency plans for the training, movement, and operation of Air Force personnel and equipment</li> <li>- prepares Notices of Intent (NOI) to prepare an environmental impact statement (EIS) with assistance from the proponent and the PAO</li> <li>- ensures that the environmental documents submitted to HQ UASF and the Secretariat for review and approval include the completed AF Form 813</li> <li>- responds to enquiries from higher headquarters for information or status reports on environmental documents and EIAP milestones</li> <li>- prepares applicable portions of Certificates of Compliance for each military construction project according to AFI 32-1021.</li> </ul> <p>Verify that the EPF responsible official signs the AF Form 813 certification. (1)(2)(11)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S5.7.</b> The NEPA process must be integrated into planning for projects at the installation as early as possible in order to prevent delays in project implementation (40 CFR 1501.1 and 1501.2).</p>	<p>Verify that the NEPA process is routinely reviewed as a part of new project development and potentially significant issues identified. (1)(2)</p> <p>Verify that early cooperative consultation among agencies is also a part of new project development. (1)(2)</p> <p>Verify that the installation identifies environmental effects and values in adequate detail so they can be compared to economic and technical analysis. (1)(2)(11)</p> <p>Verify that the installation develops and describes appropriate alternatives to recommended actions in any proposal which involve unresolved conflicts concerning alternative uses of available resources. (1)(2)</p>
<p><b>S5.8.</b> Each office, unit, or activity at any level that initiates Air Force actions (the proponent) is responsible to perform specific functions in the EIAP process (AFI 32-7061, para 1.3.7).</p>	<p>Verify that the proponent of an activity does the following: (1)(2)(11)</p> <ul style="list-style-type: none"> <li>- notifies the EPF of pending actions and completes Section I of AF Form 813, including a DOPAA for submittal to the EPF</li> <li>- identifies the earliest program-need data for document completion to facilitate the decisions making process</li> <li>- identifies key decision points and coordinates the EPF on EIAP phasing to ensure that environmental documents are available to the decision maker before the final decision is made and activities associated with the proposal are not implemented until the EIAP is complete</li> <li>- integrates the EIAP into the planning stage of a proposed program or action and, with the EPF, determines as early as possible whether to prepare an EIS</li> <li>- presents the DOPAA to the EPC for review and comment</li> <li>- coordinates with the EPF prior to organizing public or interagency meetings which deal with EIAP elements of a proposed action and involve persons or agencies outside the Air Force</li> <li>- assists the EPF and PAO in preparing a draft NOI when a decision is made to prepare an EIS.</li> </ul>
<p><b>S5.9.</b> The SJA, PAO, BEE, and Safety Office are required to perform specific functions in the EIAP process (AFI 32-7061, para 1.3.9 through 1.3.12).</p>	<p>Verify that the Staff Judge Advocate does the following: (11)</p> <ul style="list-style-type: none"> <li>- advises the command level proponent EPF and EPC on CATEX determination and the legal sufficiency of environmental documents</li> <li>- advises the EPF during the scoping process of issues that should be addressed in EISs and on procedures for the conduct of public hearings</li> <li>- coordinates the appointment of the independent hearing officer with AFLSA/JAJT (or NGB/JA) and provides support for the hearing officer in cases of public hearings on the draft EIS.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S5.13.</b> FONSI's resulting from an EA are required to include specific information (AFI 32-7061, para 3.4).</p>	<p>Verify that the FONSI summarizes the EA or has the EA attached to it and incorporated by reference. (1)</p> <p>Verify that if the EA is not attached, the FONSI includes: (1)</p> <ul style="list-style-type: none"> <li>- the name of the action</li> <li>- a brief description of the action including alternatives considered and the chosen alternative</li> <li>- a brief discussion of anticipated environmental effects</li> <li>- conclusions leading to the FONSI</li> <li>- all mitigation actions that will be adopted.</li> </ul>
<p><b>S5.14.</b> Draft FONSI's are required to be made available for public review in specific circumstances (AFI 32-7061, para 3.4.6).</p>	<p>Verify that in the following circumstances, the draft FONSI is made available for public review for at least 30 days before a final determination on EIS preparation is made or before FONSI approval and implementing the action: (1)</p> <ul style="list-style-type: none"> <li>- when the proposed action is, or is closely similar to, one that usually requires preparation of an EIS</li> <li>- if it is an unusual case, a new kind of action, or a precedent setting case in terms of its potential environmental impacts</li> <li>- if the proposed action would be located in a floodplain or wetland.</li> </ul>
<p><b>S5.15.</b> The EPF must distribute NOIs (AFI 32-7061, para 1.3.7 and 3.6).</p>	<p>Verify that the proponent on the installation has sent all NOIs to HQ USAF/CEV for review and publication in the Federal Register. (1)</p> <p>Verify that the has provide copies to the appropriate state authorities. (1)</p> <p>Verify that the EPF has distribute the NOI for publication in the local media through the PAO. (1)</p>

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<p><b>S5.18.</b> A draft EIS must be prepared according to a specific format and process (40 CFR 1501.5(d), 1501.7, 1502.5(a), 1502.6, 1502.9 through 1502.18, and 1508.22).</p>	<p>Determine if a notice of intent (NOI) of the proposed action is published in the Federal Register and made available to the media in the areas potentially affected by the proposed action. (1)</p> <p>Verify that after the NOI has been published, scoping procedures have begun, to determine the relative significance of issues and to what depth they must be addressed in the EIS. (1)</p> <p>Verify that for projects directly undertaken by a Federal Agency, the EIS is prepared at the feasibility analysis stage. (1)</p> <p>Verify that a preliminary draft is prepared from the scoping procedure with the following format: (1)</p> <ul style="list-style-type: none"> <li>- cover sheet: list of responsible agencies: title of proposed action: name, address, and telephone number of the person at the agency who can supply further information: the designation of the statement as draft, final, or draft or final supplement: a one paragraph abstract: date by which comments must be received</li> <li>- summary: must adequately summarize the statement, stressing major conclusions, areas of controversy, and issues to be resolved</li> <li>- table of contents</li> <li>- purpose of and need for action: briefly specifying the underlying purpose and need to which the installation is responding in proposing the alternatives including the proposed action</li> <li>- alternatives including the proposed action: explore and objectively evaluate all reasonable alternatives, identify preferred alternative and explain reasoning</li> <li>- affected environment: description of the area(s) to be affected or created by the alternatives under considerations</li> <li>- environmental consequences: discussion of direct effects and their significance, indirect effects and their significance, possible conflicts between the proposed action and the objectives of NEPA, environmental effects of alternatives, energy requirements and conservation potential of various alternatives and mitigation measures, natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures, means to mitigate adverse effects</li> <li>- list of preparers: names and qualifications of persons primarily responsible for preparing the EIS or background papers</li> <li>- list of agencies, organizations, and persons to whom copies of the statement are sent</li> <li>- index</li> <li>- appendix: material prepared in coordination with the EIS, normally analytic and relevant to discussions being made.</li> </ul> <p>Verify that the EIS is prepared using an interdisciplinary approach. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S5.19.</b> The EPF is required to distribute copies of the preliminary draft EIS for review (AFI 32-7061, para 3.8.1).</p> <p><b>S5.20.</b> As a part of the EIS process, scoping must be done according to specific requirements (40 CFR 1501.7(a)).</p>	<p>Verify that the EPF provides a sufficient number of the preliminary draft EIS to HQ USAF/CEV for HQ USAF EPC review and AFCEE/ESE for technical review. (1)</p> <p>Verify that in the scoping process the lead agency: (1)</p> <ul style="list-style-type: none"> <li>- invited the participation of affected Federal, state, and local agencies, any affected Indian tribe, the proponent of the action and other interested persons unless there is a limited exception as defined by Agency regulations</li> <li>- determines the scope and the significant issues to be analyzed in depth in the EIS</li> <li>- identifies and eliminates from detailed study the issues which are not significant or which have been covered by prior environmental review</li> <li>- allocates assignments for preparation of the EIS among the lead and cooperating agencies with the lead agency retaining responsibility for the statement</li> <li>- indicates any public environmental assessments and other environmental impact statements which are being or will be prepared that are related but are not part of the scope of the EIS under consideration</li> <li>- identifies other environmental review and consultation requirements so that other analyses and studies may be prepared concurrently with, and integrated with the EIS</li> <li>- indicates the relationship between the timing of the preparation of environmental analyses and the agency's tentative planning and decision making schedules.</li> </ul>
<p><b>S5.21.</b> The EPF is required to send meeting plans for scoping meetings to AF/CEV (or ANGRC) for SAF/MIQ concurrence (AFI 32-7061, para 3.7).</p>	<p>Verify that meeting plans are sent to AF/CEV for concurrence by SAF/MIQ no later than 30 days prior to the first scoping meeting. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S5.22.</b> Public involvement is a required part of the EIS process (40 CFR 1506.6).</p>	<p>Verify that the Agency made a diligent effort to involve the public including: (1)</p> <ul style="list-style-type: none"> <li>- providing public notice of NEPA-related hearings, public meetings, and the availability of environmental documentation such as:               <ul style="list-style-type: none"> <li>- mailing of notices to those who have requested it on an individual action</li> <li>- notice in the Federal Register and mailings to national organizations reasonably expected to be interested if the action is of national concern</li> <li>- notice to the state, local Indian tribes, local newspapers and other local media if the action is of local concern</li> </ul> </li> <li>- holding or sponsoring public meetings in response to:               <ul style="list-style-type: none"> <li>- substantial environmental controversy or substantial interest in holding the meeting</li> <li>- a request for a hearing by another agency with jurisdiction over the action supported by reasons the hearing would be helpful</li> </ul> </li> <li>- soliciting appropriate information from the public</li> <li>- explanations of where individuals can get information or status reports.</li> </ul>
<p><b>S5.23.</b> After the preparation of the draft EIS, the Air Force is required to obtain and request comments from specific individuals (40 CFR 1502.19 and 1503.1).</p>	<p>Verify that prior to preparing the final EIS, the agency obtained the comments of any Federal agency with jurisdiction by law or special expertise with respect to any environmental impact involved or which is authorized to develop and enforce environmental standards. Verify that prior to preparing the final EIS, comments were requested from the following: (1)</p> <ul style="list-style-type: none"> <li>- appropriate state and local agencies which are authorized to develop and enforce environmental standards</li> <li>- Indian tribes, when the effects may be on a reservation</li> <li>- any agency which has requested that it receive statements on actions of the kind proposed.</li> </ul> <p>Verify that comments were requested from the applicant, if any. (1)</p> <p>Verify that comments were requested from the public. (1)</p>
<p><b>S5.24.</b> When preparing the final EIS specific actions are required (40 CFR 1503.4).</p>	<p>Verify that when preparing the final EIS, all comments are assessed and considered and responded to in one of the following ways: (1)</p> <ul style="list-style-type: none"> <li>- the alternatives are modified, including the proposed action</li> <li>- alternatives not previously given serious consideration by the agency are developed and evaluated</li> <li>- the analysis is supplemented, improved, or modified</li> <li>- an explanation is provided as to why the comments do not warrant further agency response.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>S5.24. (continued)</b>	Verify that all substantive comments received on the draft (or a summary of the comments) is attached to the final statement whether or not the comment is thought to merit individual discussion. (1)
<p><b>S5.25.</b> Under certain circumstances, supplements to the draft or final EIS must be prepared (40 CFR 1502.9(c)(1) and 1502.9(c)(4).</p>	<p>Verify that a supplement is prepared if one of the following occurs: (1)</p> <ul style="list-style-type: none"> <li>- the agency makes substantial changes in the proposed action that are relevant to environmental concern</li> <li>- there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.</li> </ul> <p>Verify that the supplement is prepared, circulated, and files in the same way that a draft and final statement unless alternate procedures have been approved by the Council on Environmental Quality. (1)(11)</p>
<p><b>S5.26.</b> At the time of a decision, the installation is required to prepare a concise public record of decision (ROD) (40 CFR 1505.2)</p>	<p>Verify that the record states what the decision was and: (1)</p> <ul style="list-style-type: none"> <li>- identifies all alternatives considered in reaching the decision, specifying the alternative or alternatives considered to be environmentally preferable</li> <li>- a statement as to whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why not.</li> </ul>
<p><b>S5.27.</b> When implementing the decision, the installation must meet specific requirements (40 CFR 1505.3).</p>	<p>Verify that mitigation and other conditions established in the EIS or during its review and committed as a part of the decision are implemented. (1)</p> <p>Verify that appropriate conditions are included in grants, permits, or other approvals. (1)</p> <p>Verify that funding is based on actions of mitigation. (1)</p> <p>Verify that results of relevant monitoring are made available upon request. (1)</p>
<p><b>S5.28.</b> For each FONSI and ROD containing mitigation measures, the proponent will publish a mitigation plan (AFI 32-7061, para 3.11.4).</p>	<p>Verify that the proponent has published a plan specifically identifying how the proponent will execute the mitigations, who will fund and implement the mitigations and when the mitigation will be completed. (1)</p> <p>Verify that the plan is forwarded to HW USAF/CEV for review within 90-days from the date of signature of the FONSI or ROD. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S5.29.</b> As a part of the EIAP process, specific documents are required to be submitted to HQ USAF/CEVP (AF Policy letter 3 January 1994).</p>	<p>Verify that if the installation has generated any of the following documents, they have been sent to HQ USAF/CEVP: (1)</p> <ul style="list-style-type: none"> <li>- all draft and final EISs and RODs</li> <li>- Federal Register notices</li> <li>- all draft and final Air Conformity Determinations with supporting documentation</li> <li>- findings of no practicable alternative (FONPAs)</li> <li>- EAs and FNSIs which address:               <ul style="list-style-type: none"> <li>- actions requiring the Air Force to make Air Conformity Decisions pursuant to the CAA as amended</li> <li>- actions requiring the Air Force to make FONPAs pursuant to the executive orders on wetlands and floodplains</li> <li>- system acquisitions</li> <li>- proposals by non-Air Force agencies for which the Air Force must make a decision, such as use of Air Force property for highways and joint use proposals.</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>A-106 POLLUTION ABATEMENT PLAN</b></p> <p><b>All Installations</b></p> <p><b>S6.1.</b> Actions or changes since previous review of the A-106 Pollution Abatement Plan should be examined (MP).</p> <p><b>S6.2.</b> Copies of all relevant DOD and U.S. Air Force directive, and guidance documents on the A-106 Pollution Abatement Plan should be maintained at the installation (MP).</p> <p><b>S6.3.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Obtain a copy of the previous report that shows budget items for the past, present, and next fiscal year and compare that to a current report of those years to determine if noncompliance issues have been resolved. (1)</p> <p>Determine whether copies of the following documents and publications are maintained and kept current at the installation: (1)</p> <ul style="list-style-type: none"> <li>- AFI 32-7001, <i>Environmental Budgeting</i>.</li> <li>- latest version of the <i>Instruction Kit for Completing USEPA Form 3500-7 for New Pollution Abatement and Prevention Projects</i>.</li> </ul> <p>Determine if any new regulations concerning the A-106 have been issued since the finalization of the manual. (1)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S6.4.</b> All installations must submit a 5 yr pollution abatement plan (the A-106 report) detailing the actions they plan to take to get into or maintain compliance (AFI 32-7001, para 3.8).</p>	<p>Obtain a copy of the previous A-106 Pollution Abatement Plan sent to USEPA. (1)</p> <p>Determine if the installation A-106 Pollution Abatement Plan reflects environmental requirements and properly prioritizes each as Operation and Services, Level 1, Level 2, or Level 3. (1)(5)</p> <p>Compare the A-106 Plan with requirements in the Project by Contract Management System (PCMS), and the Programming, Design, and Construction (PDC) System. (1)(5)</p> <p>Determine if the A-106 Plan includes all projects involving costs that are necessary to comply with environmental standards. (1)(5)</p> <p>Check to ensure projects resulting from previous ECAMP evaluations or regulatory inspections are included in the A-106 Plan. Management action plans from ECAMP will give projects required to get installation back in compliance. (1)(5)</p> <p>Determine if A-106 Plan includes funds required for studies, management, and monitoring associated with the definition and development of corrective measures and necessary equipment to assure compliance with standards. (1)(5)</p> <p>Determine if the installation budgets for the environmental requirements are recorded in the installation A-106 Plan. (1)(5)</p> <p>Compare listings in the A-106 with the PCMS and PDC listings in Civil Engineering. (1)</p> <p>Compare official financial records with obligation/expenditure data reflected in the A-106 system. (1)</p> <p>Determine if current Level 1 and Level 2 requirements are being executed. (1)(5)</p> <p>Check progress code in the A-106 Plan to ensure projects are under construction or work on-going. (1)</p>
<p><b>S6.5.</b> Installations are required to submit the A-106 to HQ USAF/CEV 1 May and 1 November each year (AFR 19-8, para 6).</p>	<p>Verify that the A-106 Environmental Pollution, Prevention, control, and Abatement Status Report (RCS: DD-A&amp;L(SA)1383) is submitted to HQ USAF/CEV 1 May and 1 November each year. (1)</p> <p>Verify that it reflects the current status of each project. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>WIMS-ES MANAGEMENT</b></p> <p><b>All Installations</b></p> <p><b>S7.1.</b> Actions or changes since previous review of WIMS-ES management processes at the installation should be examined (MP).</p> <p><b>S7.2.</b> Copies of all relevant DOD and U.S. Air Force directives, and guidance documents on the WIMS-ES management process should be maintained at the installation (MP).</p> <p><b>S7.3.</b> Installations are required to comply with state and local regulations and compliance agreements negotiated with Federal, state, and local governments concerning the WIMS-ES management process (AFR 19-1, para 2a).</p> <p><b>S7.4.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Obtain a copy of previous report and determine if compliance issues have been resolved. (1)</p> <p>Verify that the following documents are maintained: (1)</p> <p align="center">- AFI 32-7002, <i>Environmental Management System</i>.</p> <p>Verify that the installation is complying with state and local requirements concerning WIMS-ES management. (1)</p> <p>Determine if any new regulations related to WIMS-ES management have been issued since the finalization of the manual. (1)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S7.5.</b> Program management reporting is should be done in the Pollution Prevention module of WIMS-ES (AFI 32-7002, para 5.1, 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1, 13.1, 14.1, and 15.1).</p>	<p>Verify that quarterly reports are being added and released. (1)</p> <p>Verify that programming records are being added for projects and O&amp;S expenses. (1)</p> <p>Verify that the following records are being maintained for the indicated topics: (1)</p> <ul style="list-style-type: none"> <li>- Air Quality:               <ul style="list-style-type: none"> <li>- permits</li> <li>- each air emissions source and its control equipment and emissions</li> </ul> </li> <li>- Hazardous Materials (<i>see Pollution Prevention</i>)</li> <li>- Natural/Cultural Resources:               <ul style="list-style-type: none"> <li>- program records</li> <li>- surveys</li> </ul> </li> <li>- Hazardous Waste:               <ul style="list-style-type: none"> <li>- waste streams</li> <li>- overview synopsis</li> <li>- total amounts generated</li> <li>- disposal records as manifests are generated and completed</li> </ul> </li> <li>- POL Management:               <ul style="list-style-type: none"> <li>- UST inventory</li> </ul> </li> <li>- Solid Waste (<i>see Pollution Prevention</i>)</li> <li>- Special Programs:               <ul style="list-style-type: none"> <li>- PCB free data or complete inventory items</li> <li>- Asbestos survey results</li> </ul> </li> <li>- Noise:               <ul style="list-style-type: none"> <li>- overview screen in conservation module</li> </ul> </li> <li>- Water Quality:               <ul style="list-style-type: none"> <li>- potable water and wastewater permits</li> <li>- inventory of sources</li> <li>- records of exceedances.</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>LEAD BASED PAINT</b></p> <p><b>All Installations</b></p> <p><b>S8.1.</b> Actions or changes since previous review of the lead based paint (LBP) program should be examined (MP).</p> <p><b>S8.2.</b> Copies of all relevant DOD and U.S. Air Force directive, and guidance documents on LBP should be maintained at the installation (MP).</p> <p><b>S8.3.</b> Installations are required to comply with state and local regulations and compliance agreements negotiated with Federal, state, and local governments concerning LBP (EO 12088, Section 1-1).</p> <p><b>S8.4.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if noncompliance issues have been resolved. since previous review of the lead based paint program (1)</p> <p>Determine whether copies of the following documents and publications are maintained and kept current at the installation: (1)</p> <p align="center">- HQ USAF/CC Policy Letter, <i>Air Force Policy and Guidance on Lead Based Paint in Facilities</i>, 24 May 1993.</p> <p>Verify that the installation is complying with state and local requirements. (1)</p> <p>Verify that the installation is operating according to permits issued by the state or local agencies. (1)(2)</p> <p>(NOTE: Issues that are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- certification of individuals sampling and/or working with LBP</li> <li>- renovation and demolition procedures</li> <li>- handling and disposal procedures.)</li> </ul> <p>Determine if any new regulations concerning lead based paint have been issued since the finalization of the manual. (1)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S8.5.</b> Installations are required to develop and implement a plan for identifying, evaluating, managing, and abating LBP hazards (HQ USAF/CC Policy letter 24 May 1993, para 6).</p>	<p>Verify that the installation has a management plan that includes a strategy for: (1)</p> <ul style="list-style-type: none"> <li>- identifying, evaluating, controlling, and eliminating existing LBP hazards and preventing new hazards from developing</li> <li>- protecting facility occupants, especially children, and workers from LBP hazards</li> <li>- ensure compliance with all applicable environmental protection requirements and all laws and regulations pertaining to LBP activities.</li> </ul> <p>Verify that the plan also: (1)</p> <ul style="list-style-type: none"> <li>- is an integral part of their overall plan for inspecting, constructing, upgrading, repairing, maintaining, and demolishing the facility inventory</li> <li>- is based on local conditions and an evaluation of the health risk from LBP on base which considers available information on the conditions of the facilities, the results of facility inspections and evaluations, and incidents of lead toxicity resulting from LBP</li> <li>- gives priority to finding and reducing or eliminating the risk of existing hazardous conditions in high-priority facilities</li> <li>- emphasizes in-place management to control existing hazards and reduce the risk of hazardous exposure to acceptable levels</li> <li>- considers abatement of LBP as part of the normal facility renovation and upgrade programs when it is cost-effective</li> <li>- ensures precautions and procedures are incorporated into all maintenance, repair, renovation, and upgrade activities which are performed in-house, by contract, or self-help and which disturb painted surfaces known or likely to contain lead.</li> </ul>
<p><b>S8.6.</b> The identification and of existing and potential LBP hazards is required to be done according to specific procedures (USAF/CC Policy Letter 24 May 1993, para 7).</p>	<p>Verify that, depending on local circumstances, one of the following is used to identify and evaluate existing and potential LBP hazards: (1)</p> <ul style="list-style-type: none"> <li>- evaluations of observations from routine facility inspections and activities such as MFH walk-throughs, fire and safety inspections, inspections for family day care home licensing, and occupant reports of deteriorated paint</li> <li>- inspections and evaluations specifically designed to locate existing and potential LBP hazards so that appropriate measures can be taken to avoid hazardous lead exposures.</li> <li>- facility investigations to determine the source of documented lead exposure.</li> </ul> <p>Verify that facility personnel who conduct routine inspections have been instructed to report signs of paint deterioration or children chewing on painted surfaces in high-priority facilities. (1)</p> <p>Verify that there are procedures in place to document and respond to information reported from inspections and occupants concerning potential LBP problems and the resulting evaluations and actions. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S8.6. (continued)</b></p>	<p>Verify that facility inspections that are done specifically to identify LBP problems meet the following: (1)</p> <ul style="list-style-type: none"> <li>- they are focused on high-priority facilities and areas within those facilities with painted surfaces in deteriorated condition</li> <li>- the evaluations are performed by a team consisting of and BEE representatives or by a qualified contractor</li> <li>- reports of the data results and resulting actions are collected, consolidated, and analyzed by the Chief, Aerospace Medicine for reporting through Air Force medical channels</li> <li>- permanent records of facility evaluations are maintained by the BCE and/or BEE.</li> </ul>
<p><b>S8.7.</b> Prior to the start of facility maintenance, repair, modification, and renovation activities, it must be determined if LBP is present if the activity will disturb painted surfaces (HQ USAF/CC Policy Letter 24 May 1993, para 11).</p>	<p>Verify that prior to the start of maintenance, modification, or renovation activities it is determined if LBP is going to be disturbed. (1)</p>
<p><b>S8.8.</b> Paint used in all facilities, industrial and nonindustrial, will not contain more than 0.06 percent lead by weight of the nonvolatile solids (USAF/CC Policy Letter 24 May 1993, para 12).</p>	<p>Verify that paint with more than 0.06 percent lead by weight of the nonvolatile solids is not used or stored for future use at the installation. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>S8.9.</b> Air Force personnel who perform tests for LBP and work on painted surfaces are required to be trained (USAF/CC Policy Letter 24 May 1993, para 13).</p>	<p>Verify that at least one person from BCE has received USEPA certification. (1)</p> <p>Verify that the certified individual trains other on the proper precautions to take and potential hazards. (1)</p> <p>Verify that a minimum level of training which includes the following is provided for all workers who perform task which disturb painted surfaces: (1)</p> <ul style="list-style-type: none"> <li>- potential hazards of LBP</li> <li>- work practices to reduce and control dust and debris</li> <li>- handling of debris</li> <li>- hygiene</li> <li>- cleanup procedures.</li> </ul> <p>Verify that workers who will be performing larger jobs in which simple work practices will not reliably reduce or control dust and those who will be assisting in LBP evaluations have received additional training in OSHA and HUD requirements. (1)</p>
<p><b>S8.10.</b> Installations are required to perform a lead Toxicity Investigation (LTI) when children with elevated blood lead levels have been identified at the installation (USAF/CC Policy Letter, para 14).</p>	<p>Determine if the installation has ever had a case of elevated blood lead levels. (1)</p> <p>Verify that the LTI team consists of representatives from CBEE, MPH, PAO, and JAG as needed. (1)</p> <p>Verify that an LTI was conducted. (1)</p>

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**Table 9-1****Summary of Likelihood of Lead Based Paint Being Present and Regulation/Guidelines Which Normally Must be Followed****(USAF/CC Policy Letter, 24 May 1993)****High Priority Facilities**

<b>Facility Type</b>	<b>LBP Likely</b>	<b>HUD</b>	<b>OSHA</b>	<b>RCRA</b>	<b>AIR</b>
MFH/Day Care Home, Before 1980	Yes	Yes	Yes	Yes	No
MFH/Day Care Home, During/After 1980	No	Yes	No	No	No
Other High Priority Facilities Before 1980	Yes	Yes	Yes	Yes	No
Other High Priority Facilities During/After 1980, Ferrous Metal Surface	Yes*	Yes	Yes	Yes	No
Other High Priority Facilities, During/After 1980, Other Surfaces	No**	Yes	No	No	No

**Other Facilities (Not High-Priority)**

<b>Facility Type</b>	<b>LBP Likely</b>	<b>HUD</b>	<b>OSHA</b>	<b>RCRA</b>	<b>AIR</b>
Steel Structures	Yes	No	Yes	Yes	Yes
Industrials	Yes	No	Yes	Yes	No
Painted Yellow Pavement Markings	Yes	No	Yes	Yes	No
Nonindustrials, Ferrous Metal Surfaces	Yes*	No	Yes	Yes	No
Nonindustrials, During/After 1980, Other Surfaces	No**	No	No	No	No

\* CPSC restrictions uncertain but common practices favor lead present.

\*\* CPSC restriction uncertain but common practices favor lead absent.

HUD - Housing and Urban Development Interim Guidelines

OSHA - Occupational Safety and Health Administration

RCRA - Resource Conservation and Recovery Act

AIR - National Primary and Secondary Ambient Air Quality Standards

CPSC - Consumer Product Safety Act

**Notes:**

1. Likelihood of finding LBP on a particular surface in a facility is based on when it was constructed (before 1980 or during/after 1980), applicability of CPSC restrictions on use of LBP, and common painting practices.
2. Although LBP may not be likely, some precautions described in the HUD guidelines will normally be considered in high priority facilities since children are potentially at risk and there is some possibility the LBP is present.



**Table 9-2**

**PCB Label Format**

**CAUTION**  
**CONTAINS**  
**PCBs**  
**(Polychlorinated Biphenyls)**

A toxic environmental contaminant requiring special handling and disposal in accordance with U.S. Environmental Protection Agency Regulations 40 CFR 761 -- For Disposal Information contact the nearest U.S. E.P.A. Office

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In case of accident or spill, call toll free the U.S. Coast Guard National Response Center:  
800:424-8802

Also Contact \_\_\_\_\_  
Tel. No. \_\_\_\_\_





**Table 9-3****Dielectric Fluid Trend Names and Manufacturers****1. U.S. Manufactured Dielectrics:**

<b>Name</b>	<b>Manufacturer</b>
Aroclor	Monsanto
Aroclor B	Mallory
Sbestol	American Corporation
Askarel Hevi-Duty	Hevi-Duty Corporation
Askarel *	Ferranti-Packard, Ltd.
Askarel	Universal Mfg. Co.
Chlorextol	Allis-Chalmers
Chlorinol	Sparagoe Electric
Chlorphen	Jard Company
Diactor	Sangamo Electric
Dykanol	Cornell Dubilier
Elemex	McGraw Edison
Eucarel	Electric Utilities Co.
Hyvol	Aerovox
Inerteen	Westinghouse Electric
No-Flamol	Wagner Electric
Pyranol	General Electric
Saf-T-Kuhl	Kuhlman Electric

\* Generic name used for insulating liquids in capacitors and transformers.

**2. Foreign Manufactured Dielectrics:**

<b>Name</b>	<b>Manufacturer</b>
Clophen	Bayer (Germany)
Fenclo	Caffaro (Italy)
Kennechlor	Mitsubishi (Japan)
Phenoclor	Prodelec (France)
DK	Caffaro (Italy)
Pyralene	Prodelec (France)
Solvol	USSR
Santotherm	Mitsubishi (Japan)

3. Transformers that list other dielectrics or do not bear a manufacturer's identification or service plate on the transformer: if the transformer contains any of the dielectrics (commonly referred to as askarels), it is to be certified as a PCB transformer containing in excess of 500 ppm PCB and no laboratory testing is necessary.



## **Table 9-4**

### **Categorical Exclusions (AFI 32-7061, para 3.3.8)**

1. Procuring routine goods and services.
2. Routine Commissary and Exchange operations.
3. Routine recreational and welfare activities.
4. Normal personnel, fiscal, or budgeting, and administrative activities and decisions including those involving military and civilian personnel (for example, recruiting, processing, paying and record-keeping).
5. Preparing, revising, or adopting regulations, instructions, directives, or guidance documents that do not, themselves, result in an action being taken.
6. Preparing, revising, or adopting regulations, instructions, directives, or guidance documents that implement (without substantial change) the regulations, instructions, directives, or guidance documents from higher headquarters or other Federal agencies with superior subject matter jurisdiction.
7. Continuation of pre-existing actions, where there is no substantial change in existing conditions and where the actions were originally evaluated in accordance with applicable law and regulations.
8. Performing interior and exterior construction within the 5 ft line of a building without changing the land use of the existing building, provided the structure is not eligible for, or listed in, the National Register of Historic Places.
9. Repairing and replacing real property installed equipment.
10. Maintaining and repairing facilities not involving the disturbance of large quantities of hazardous materials such as asbestos.
11. Actions similar to other actions which have been determined to have an insignificant impact in a similar setting as established in an EIS or an EA, resulting in a Finding of No Significant Impact. Application of this CATEX must be documented on AF Form 813, specifically identifying the previous environmental document which provides the basis for this determination.
12. Installing, operating, modifying, and routinely repairing and replacing utility and communications systems, data processing cable, and similar electronic equipment that use existing rights of way, easements, distribution systems, or facilities.
13. Installing or modifying airfield operational equipment (such as runway visual range equipment, visual glide path systems, and remote transmitter or receiver facilities) on airfield property usually accessible only to maintenance personnel.

(continued)

**Table 9-4 (continued)**

14. Installing on previously developed land, equipment that does not substantially alter land use (i.e., land use of more than one acre). This type of installation include outgrants to private lessees. The EPF must document application of this CATEX on AF Form 813.
15. Laying-away or mothballing a production facility when
  1. agreement on any required historic preservation effort has been reached with the state historic preservation officer and the Advisory Council on Historic Preservation, and
  2. no degradation in the environmental restoration program will occur.
16. Acquiring land an ingrants (50 acres or less) for activities otherwise subject to CATEX. The EPF must document application of this CATEX on AF Form 813.
17. Transferring land and facilities for which the General Services Administration (GSA) is the action agency. such transfers are excluded only if there is no change in land use and GSA complies with NEPA.
18. Transferring administrative control of real property within the Air Force or to another military department or to another Federal agency(s), including returning public domain lands to the Department of the Interior.
19. Grazing easements, leases, licenses, and permits to use air Force controlled property for activities that, if conducted by the Air Force, would be categorically excluded in accordance with this list. The EPF must document the applicable CATEX exclusion on AF Form 813.
20. Converting in-house services to contract services, under the provisions of DOD Directive 4100.15.
21. Routine decreasing and increasing of manpower, including converting the workforce to either on-base contractor operation or to military operation from contractor operation (excluding base closure and realignment actions which are subject to congressional reporting under 10 USC 2687).
22. Routine, temporary movement of personnel, including deployments of personnel on a temporary duty (TDY) basis where existing facilities are used.
23. Reducing personnel due to workload adjustments, reducing personnel funding levels, skill imbalances, or other similar causes.
24. Implementing study efforts that involve no commitment of resources other than personnel and funding allocations.
25. Implementing actions designed to benefit or improve the natural environment or help assess its conditions without altering it (e.g., inspections, audits, surveys, investigations). This CATEX includes granting permits for surveys, provided that the survey technology or procedure is well understood and there are no adverse environmental impacts anticipated from it. The EPF must document application of this CATEX on AF Form 813.

(continued)

**Table 9-4 (continued)**

26. Carrying out specific investigatory activities to support remedial activities or cleanup of hazardous spillage or waste site or contaminated groundwater or soil. These investigatory activities include performing soil borings and sampling, installation and operation of test or monitoring wells. This CATEX applies to studies that assist in determining final approaches to cleanup actions agreed to by the USEPA or state regulators in accordance with prior interagency agreements, administrative orders, or work plans. (NOTE: This CATEX does not apply to selecting remedial action.)
27. Conducting routine basic and applied scientific research confined to the laboratory and in compliance with all applicable environmental and natural resource conservation laws.
28. Routine transporting of hazardous materials and wastes in accordance with the *Resource Conservation and Recovery Act* (RCRA) and the *Hazardous Materials Transportation Act* regulations, and any other applicable Federal, state, interstate, and local laws.
29. Emergency handling and transporting of small quantities of chemical surety material or suspected chemical surety material, whether or no classified as hazardous or toxic wastes, from a discovery sire to a permitted storage, treatment, or disposal facility.
30. Responding to the release or discharge of oil or hazardous materials on an emergency basis, in accordance with an approved Spill Prevention and Response Plan or Spill Contingency Plan that is consistent with the requirements of the National Contingency Plan. (Long-term cleanup and remediation activities should be evaluated separately.)
31. Relocating a small number of aircraft to an installation with similar aircraft that does not result in an increase of flying hours or the number of aircraft operations, change in flight tracks, or that does not cause an increase in permanent personnel or logistics support requirements at the receiving installation.
32. Infrequent and temporary (for less than 30 days) increase in air operations up to 50 percent of the typical installation aircraft operation rate or increases up to 50 or more operations a day, whichever is greater.
33. Conducting flying activities that comply with the Federal aviation regulations, that are dispersed over a wide area and that do not frequently (more than once a day) pass near the same ground points. (This CATEX does not cover regular activity on established routes or within special use airspace).
34. Conducting supersonic flying operations over land above 30,000 ft mean sea level or over water above 10,000 mean seal level, and more than 15 nautical miles from land.
35. Making formal requests to the FAA, or host-nation equivalent agency, to establish or modify special use airspace (for example, restricted areas, warning areas, military operating areas) and military training routes for subsonic operations that have a base altitude of 3000 ft above ground level or higher. The EPF must document this CATEX determination on AF Form 813, which must accompany the request to the Federal Aviation Administration (FAA).

(continued)

**Table 9-4 (continued)**

36. Adopting airfield approach, departure, and en route procedures that do not route air traffic over noise-sensitive areas, including residential neighborhoods or cultural, historical, and outdoor recreational areas. The EPF may categorically exclude such air traffic pattern at or greater than 3000 ft aboveground level regardless of underlying land use.
37. Participating in "air shows" and fly-overs by Air Force aircraft at non-Air Force public events after obtaining FAA coordination and approval.
38. Conducting Air force "open houses" and similar events, including air shows, where crowds and traffic control, etc. at the Air Force installations do not present (and have not in the past presented) safety or environmental impacts.

<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>SPECIAL PROGRAMS MANAGEMENT</b> <b>U.S. ECAMP</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA C RMA	<b>REVIEWER COMMENTS:</b>		



**Section 10**

**WATER QUALITY MANAGEMENT**

## SECTION 10

### WATER QUALITY MANAGEMENT

#### A. Applicability

##### *Wastewater*

This section includes regulations, responsibilities and compliance requirements associated with wastewater discharge at Air Force installations. Wastewater discharge can include any of the following:

1. sanitary wastewater discharge directly to a receiving stream, or through an Air Force treatment facility
2. sanitary or industrial wastewater discharge to a Publicly Owned Treatment Works (POTW) or other non-Air Force facility
3. stormwater runoff from operational areas of the facility to a receiving stream or water body
4. industrial or storm wastewater drained to an industrial waste reservoir.

Most Air Force installations have wastewater discharge of one kind or another, and therefore this section will be applicable to most installations.

##### *Drinking Water*

This section also identifies rules, regulations, and requirements for any Air Force installation that has jurisdiction over any public water supply system. A public water system is defined as a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. This term includes:

1. any collection, treatment, storage, and distribution facilities under control of the operator of such system
2. any collection or pretreatment storage facilities not under such control that are used primarily in connection with such system.

A public water system is either a *community water system* or a *noncommunity water system* (40 CFR 141.2). Air Force installations that meet all the criteria listed below are not required to comply with the requirements of the *Safe Drinking Water Act* (SDWA) since, by definition, they are not *public water systems* (40 CFR 141.3):

1. system consists only of distribution and storage facilities and does not have any collection and treatment facilities
2. facility gets all of its water from a public water system that is owned or operated by another party (non-Air Force)
3. facility does not sell water to any party.

#### B. Federal Legislation

##### *Wastewater*

- *The Federal Water Pollution Control Act*. This Act, commonly known as the *Clean Water Act* (CWA), as amended 4 February 1987, 33 U.S. Code (USC) 1251-1387, Public Law (PL) 100-4,

governs the control of water pollution in the nation. The objective of the act is to restore and maintain the chemical, physical and biological integrity of the nation's waters. Federal agencies are required to comply with all Federal, state, interstate, and local water pollution control requirements both substantively and procedurally (33 USC 1323(a)).

### *Drinking Water*

- *The Safe Drinking Water Act* (SDWA). This Act, PL 99-339, 42 USC 201, 300f--300j-25, 6939b, 6979a, 6979b, 7401--742, etc., is the Federal legislation which regulates the safety of drinking water in the country. Each department, agency, and instrument of the executive, legislative, and judicial branches of the Federal Government having jurisdiction over any potential source of contaminants identified by a state program must be subject to and observe all requirements of the state program applicable to such potential source of contaminants, both substantive and procedural, in the same manner, and to the same extent, as any other person, including payment of reasonable charges and fees (42 USC 300h-7(h)).

If a Federal agency has jurisdiction over any Federally owned or maintained public water system, or is engaged in any activity resulting, or which may result in, groundwater injection which endangers drinking water, it is subject to, and must observe, any Federal, state, and local regulations, administrative authorities, and process and sanctions respecting the provision of safe drinking water and respecting any underground injection program in the same manner, and to the same extent, as any nongovernmental entity. This requirement applies (42 USC 300j-6(a)):

1. to any rules substantive or procedural (including any record -keeping or reporting, permits, and other requirements)
2. to the exercise of any Federal, state, or local authorities, and
3. to any process or sanction, whether enforced in Federal, state, or local courts or in any other manner.

National primary drinking water regulations apply to each public water system in each state. However, such regulations do not apply to a public water system (42 USC 300g):

1. which consists only of distribution and storage facilities (and does not have any collection and treatment facilities)
2. which obtains all its water from, but is not owned or operated by, a public water system to which such regulations apply
3. which does not sell water to any person; and
4. which is not a carrier which conveys passengers in interstate commerce.

### *Wastewater and Drinking Water*

- Executive Order (EO) 12088. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the Agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

## **C. State/Local Regulations**

### *Wastewater*

States normally have wastewater discharge legislation and regulations which require permitting similar to the National Pollution Discharge Elimination System (NPDES) program. The state is often delegated authority to administer the NPDES permits for discharges in their state. These permits are often joint permits issued pursuant to both Federal CWA and state legislation. In some cases, the state will not administer the NPDES program and will issue a state permit even though a NPDES permit has been issued by the U.S. Environmental Protection Agency (USEPA). The states and the USEPA normally cooperate in the permit issuance process to insure that the two permits are consistent, but there may be differences in monitoring requirements and the number of pollutants limited. These requirements normally do not conflict, but may require additional sampling and dual reporting.

States also have more stringent requirements for wastewater treatment plant operations. Many states have Sewage Treatment Plant operator licensing and certification programs that require that an operator have a required level of experience and pass an exam.

Local entities (counties, cities) may also have enforceable wastewater discharge limitations that regulate discharges to an offsite POTW. Local limitations often include pH, temperature, and concentrations of various organic and inorganic compounds. Major industrial operations which discharge to an offsite POTW will be subjected to pretreatment permits from the POTW, the state, or the USEPA as appropriate. In some cases, another DOD activity may stipulate effluent discharge limitations for discharges to their treatment plant if the Air Force installation discharges to the DOD facility.

### *Drinking Water*

States have primary responsibility to enforce compliance with national primary drinking water standards and sampling, monitoring, and notice requirements in conformance with 40 CFR 141. USEPA executes the enforcement responsibilities until individual state programs are approved.

States that have primacy may establish drinking water regulations, monitoring schedules and reporting requirements more stringent than, or in addition to, those in the Federal regulations. Air Force public water systems in these states are required to comply with these additional requirements. Generally speaking, most states who have primacy adopt drinking water regulations which closely reflect the Federal requirements. Almost all states have achieved authorization from USEPA to administer drinking water compliance programs including underground injection control (UIC) programs.

## **D. Department of Defense (DOD) Regulations.**

### *Wastewater*

- DOD Instruction 4120.14 and OMB Circular A-106. DOD Instruction 4120.14 implements within DOD policies provided by EO 12088 and Office of Management and Budget (OMB) Circular A-106 and establishes policies for developing and submitting plans for installing improvements needed to abate water pollution emanating from DOD facilities.

### *Drinking Water*

- DOD Directive 6230.1. This directive of 24 April 1978, sets forth DOD policy for provisions of adequate safe drinking water and compliance with the SDWA and the standards established by 40 CFR 141.

## **E. U.S. Air Force Regulation (AFRs)**

### *Wastewater*

- Air Force Regulation (AFR) 19-7, *Environmental Pollution Monitoring*. This regulation specifies requirements for establishing water quality surveillance and monitoring to ensure compliance with appropriate Federal, state, and local requirements. All Air Force installations are required to issue supplements to AFR 19-7, that identify specific monitoring locations and frequencies of sampling at the installation. This AFR is scheduled to be replaced by Air Force Instruction (AFI) 48-119.
- Air Force Manual (AFM) 91-32, *Operation and Maintenance of Domestic and Industrial Wastewater Systems*. This manual specifies detailed operational and maintenance guidelines and requirements for water pollution control plants on Air Force installations. In particular, requirements for maintenance of operating logs, maps, and records are specified in these Air Force manuals (AFMs).
- AFR 91-9, *Water Pollution Control Facilities*. This regulation specifies additional requirements relative to proper operation of waste treatment works at Air Force installations. It defines required procedures for dealing with regulatory authorities requesting access to facilities and information or conducting inspections, and for conflict resolution. Requirements for training of treatment plant operators are also included along with requirements for a base wastewater regulation and plant-specific operation and maintenance manuals. This AFR is scheduled to be replaced by AFI 32-5017.
- AFI 32-7041, *Water Quality Compliance*. This AFI, dated 3 December 1993, applies to the generation, collection, treatment, reuse, and disposal of domestic and industrial wastewater, stormwater, nonpoint source runoff, sewage sludge, and water treatment residues.
- Headquarters U.S. Air Force (HQ USAF) Policy Letter. HQ USAF Policy Letter, *Nonpoint Source Pollution Policy*, 5 May 1987, outlines AF policy and Management Practices (MP).

### *Drinking Water*

- AFR 86-4, *Base Comprehensive Planning*. This regulation requires Base Comprehensive Plans to be reviewed and revised as appropriate every 5 yr. The Base Comprehensive Plan includes a drinking water system master plan. This AFR is scheduled to be replaced by AFI 32-7005.
- AFR 161-44, *Management of the Drinking Water Surveillance Program*. This regulation is the operative regulation for the management of drinking water programs at all Air Force installations. It implements the SDWA (PL 93- 523), the USEPA Primary Drinking Water Regulations, and DOD Directive 6230.1. It is the key regulation against which compliance with all appropriate standards, procedures and requirements for drinking water systems will be measured at Air Force installations.
- AFR 91-5, *Utility Services*, AFR 91-10, *Operation and Maintenance of Air Force Water Works Facilities*, and AFR 91-26, *Maintenance and Operation of Water Supply, Treatment, and Distribu-*

*tion Systems.* These regulations contain pertinent standards related to operation and maintenance of drinking water systems. AFR 91-10 also defines required procedures for dealing with regulatory authorities requesting access to facilities and information or conducting inspections, and for conflict resolution. AFR 91-5 is scheduled to be replaced by AFI 32-5007. AFR 91-10 is scheduled to be replaced by AFI 32-5017.

- AFI 32-7041), Water Quality Compliance. This AFI applies to the generation, collection, treatment, reuse, and disposal of domestic and industrial wastewater, stormwater, nonpoint source runoff, sewage sludge, and water treatment residuals.

## F. Key Compliance Requirements

### *Wastewater*

- NPDES Permits - Installations with point source discharges and/or treatment works treating domestic sewage are required to have a Federal NPDES permit if located in states without a USEPA approved NPDES permit program. Installations that are dischargers of stormwater associated with an industrial activity are required to apply for an individual permit, apply for a permit through a group application, or seek coverage under a promulgated stormwater general permit. Installations must meet the sampling requirements stipulated by NPDES permits (40 CFR 122.1(b)(3) and 122.26(c)).
- Treatment Works - Installations must not discharge into a treatment works any pollutant that would cause *pass through* or *interference*. Installations shall not introduce pollutants into a treatment works that create a fire or explosion hazard, cause corrosive structural damage, have a pH below 5.0, or are solid or viscous enough to cause obstructions. Installations are required to notify the treatment works immediately of any discharge, including any slug loadings, that could cause problems to the treatment works (40 CFR 403.5 and 403.12(f)).
- Operation and Maintenance of a Treatment Works - Treatment plant supervisors are required to maintain operating logs and records that are posted daily and are neat and legible. Treatment plants are required to be operated in accordance with all design parameters (40 CFR 403.12(f)).
- Effluent Limits for Electroplating Point Sources - Installations that have existing electroplating operations that introduce pollutants into a POTW resulting from the electroplating of common metals are subject to pretreatment standards which vary depending upon the level of discharge and the nature of the metals used (40 CFR 413).
- Effluent Limitation for Metal Finishing Point Sources - Installations that have shops performing electroplating, electroless plating, anodizing, coating, chemical etching and milling, and printed circuit board manufacturing are subject to certain best available technology point source effluent limitations, which include the self-monitoring of cyanide. Installations that introduce pollutants from existing metal finishing point sources into POTWs are subject to certain pretreatment standards. Installations that introduce pollutants from new metal finishing point sources into POTWs are subject to certain performance and pretreatment standards (40 CFR 433).
- Discharge Limits for Hospitals - Hospitals are required to limit the quantity and quality of their discharges. The following are restricted: BOD<sub>5</sub>, TSS, and pH (40 CFR 460).

- Discharge Limits for Photo Labs - Photo labs that process more than 150 m<sup>2</sup> per day of film must limit their discharges for silver, CN, and pH (40 CFR 459).
- Land Application of Sludge - 40 CFR 503 details the pollutant concentrations, cumulative loading rates, and other restrictions pertinent to the land application of sludge that is generated during the treatment of domestic sludge in a treatment works.
- Surface Disposal of Sewage Sludge - The operation, management, monitoring, and closure requirements for units used for the surface disposal of sewage sludge are outlined in 40 CFR 503.20 through 503.28.

#### *Drinking Water*

- Plans and Records - The facility manager must keep records of actions taken to correct or repair any part of the treatment and distribution system for at least 3 yr. Plans for water system modifications should be reviewed. Installations are required to survey public water systems and maintain records of those reviews (MP, 40 CFR 141.21(d) and 141.33(b)).
- Physical Requirements for Drinking Water Systems - There will not be any cross-connection, open or potential, between a system furnishing potable water and a system furnishing nonpotable water. All water systems shall install and operate optimal corrosion control treatment and/or comply with corrosion control requirements specified by the state (40 CFR 141.80(d)).
- Maximum Contaminant Level (MCL) Standards - Drinking water is to be supplied from sources approved by Federal, state, or local health authorities, or treated to specific standards. Community water systems, Noncommunity water systems, except as defined under *exempted water systems*, and Community and NTNCWS are required to meet specific MCLs for organic, inorganic, and microbiological contaminants. These are outlined in Table 10-1 and 10-2 (40 CFR 141.11(a) through 141.11(c), 141.12, 141.15, 141.16(a), and 141.60 through 141.63).
- Monitoring - The monitoring schedule and what constituents are to be monitored is based on what type of facility being operated. Installations with community water systems and/or NTNCWS are required to monitor for inorganic contaminants. All public water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels. Monitoring for Endrin is required to be done according to specific schedules. Community and noncommunity water systems are required to monitor for total coliforms and installations are required to monitor for radioactivity in community water systems (40 CFR 141.21(a), 141.23, 141.24, and 141.26).
- Total Coliform and Turbidity Sampling - Total Coliform samples are required to be collected at regular intervals throughout the month except at systems that use only groundwater and serve 4900 people or fewer. Public water systems that use surface water or groundwater under the direct influence of surface water and do not practice filtration are required to collect at least one total coliform sample near the first service connection each day the turbidity level of the source water exceeds 1 NTU. When a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within 24 h of being notified of the positive result. Sampling for turbidity is required to be done at public water systems that use water obtained in whole or part from surface water sources, according to a specific schedule and excesses reported (40 CFR 141.21 and 141.22).
- Water Analysis - Installations with community water systems that add a disinfectant to the water are required to analyze for total trihalomethanes. Suppliers of water for community public water sys-

tems are required to analyze for sodium, and collect samples from representative entry points to the water distribution system and analyze for corrosivity. Bacteriological analysis of samples used to determine compliance with MCLs must be performed in a state-approved lab or by a state-approved individual (40 CFR 141.28, 141.30, 141.41 and 141.42).

- **Filtration and Disinfection** - Installations that have a public water system that uses surface water sources or groundwater sources under direct influence of a surface water source must provide filtration as a treatment technique for microbiological contaminants which meets specific standards, provide disinfection treatment by 29 June 1993, and report specific information monthly to the state starting 29 June 1993, or when filtering.
- **Notification and Reporting Requirements** - Records of chemical analyses are required to be kept for not less than 10 yr. When Primary Drinking Water Standards are Exceeded, public notifications must be made. Installations that operate public water systems must send reports to the state on any failure to comply with the applicable biological, turbidity, radioactivity, and chemical standards, and on any failure to comply with monitoring requirements that apply (40 CFR 141.31, 141.32, and 141.33(a)).
- **Lead and Copper in Drinking Water Systems** - Installations with community or nontransient, non-community water systems (NTNCWS) must notify their users about lead in drinking water systems and must meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded. Installations with water systems exceeding the lead action level after the implementation of corrosion control and source water treatment requirements are required to replace lead service lines. Monitoring for lead and copper is required to start on a specified date, be done at a specified number of sites, fulfill specific reporting requirements and retain onsite all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (40 CFR 141.80 through 141.90).

## **F. Responsibility for Compliance**

### *Wastewater*

- **The Base Civil Engineer (BCE).** The BCE is responsible for the preparation of all wastewater discharge permit applications, monitoring compliance with all approved NPDES permit conditions, and reporting requirements specified as in the NPDES permit. The BCE is also responsible for developing a Pre-treatment Program in accordance with the pre-treatment provisions of 40 CFR 401 et seq. for all wastewater pre-treatment systems on the installation. BCE design departments are responsible for the design and construction of wastewater collection and treatment systems as needed on the installation. Training of personnel to meet proficiency levels consistent with local operator certification requirements is the responsibility of the BCE.
- **The Water And Waste Shop.** The Water and Waste Shop within Base Civil Engineering has responsibility for operations and maintenance of treatment plants, pretreatment facilities, pump stations, oil or water separators and other associated facilities around the installation including taking timely and appropriate corrective actions when permit limits are exceeded. They also have process and discharge monitoring requirements to control treatment and comply with discharge permit requirements.
- **Bioenvironmental Engineering (BEE).** The BEE is responsible for monitoring wastewater dis-



charge and stream water quality at selected locations around the installation, according to the installation's Supplement to Air Force Regulation 19-7.

- **Individual Shop Supervisors and Superintendents.** Individual shop supervisors and superintendents are responsible for ensuring that prohibited, unpermitted discharge of wastewater containing toxic or hazardous substances to the sanitary or stormwater systems does not occur from their shop in accordance with the base wastewater regulation.

#### *Drinking Water*

- **Armstrong Lab.** Armstrong Lab, Brooks Air Force Base, Texas, provides services to complete all required laboratory, chemical, physical, and radiological analyses for drinking water. It also establishes a water supply sampling schedule for each installation to conform to the frequency established in AFR 161-44. Armstrong Lab maintains a potable water quality data repository of the last 10 yr and disseminates analytical results as required to the using activities and commands.
- **Director of Base Medical Services.** Director of Base Medical Services, through the Bioenvironmental Engineering Section, is responsible for proper sample collection from drinking water systems at Air Force installations and determining compliance with drinking water standards. Coordination with Armstrong Lab, interpretation of results of water analyses, and notifications to state regulatory authorities when maximum contaminant levels are exceeded are also the responsibilities of the Director of Base Medical Services.
- **Base Civil Engineer (BCE).** The BCE designs, constructs, and operates the water supply system to provide sufficient drinking water to installation personnel. The BCE is responsible for providing adequate water treatment to assure drinking water does not exceed the maximum contaminant levels established under primary drinking water regulations. Training of operating personnel to meet proficiency levels consistent with the operator certification requirements that apply to their location is also the responsibility of the BCE. BCE maintains an up-to-date map of the complete potable water system, makes repairs, and maintains the systems. The BCE is also responsible for negotiating and maintaining the base's water supply contract.

#### **G. Key Compliance Definitions**

- *Active Sewage Sludge Unit* - a sewage sludge unit that has not closed (40 CFR 503.21(a)).
- *Aerobic Digestion* - the biochemical decomposition of organic matter in sewage sludge into CO<sub>2</sub> and water by microorganisms in the presence of air (40 CFR 503.31(a)).
- *Agricultural Land* - land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture (40 CFR 503.11(a)).

- ***Agronomic Rate*** - the whole sludge application rate (dry weight basis) designed (40 CFR 503.11(b)):
  1. to provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land
  2. to minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the groundwater.
- ***Air Pollution Control Device*** - one or more processes used to treat the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(a)).
- ***Anaerobic Digestion*** - the biochemical decomposition of organic matter in sewage sludge into methane gas and CO<sub>2</sub> by microorganisms in the absence of air (40 CFR 503.31(b)).
- ***Annual Pollutant Loading Rate*** - the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period (40 CFR 503.11(c)).
- ***Annual Whole Sludge Application Rate*** - the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period (40 CFR 503.11(d)).
- ***Apply Sewage Sludge or Sewage Sludge Applied To The Land*** - means land application of sewage sludge (40 CFR 503.9(a)).
- ***Aquifer*** - a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding groundwater to wells or springs (40 CFR 503.21(b)).
- ***Auxiliary Fuel*** - fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel (40 CFR 503.41(b)).
- ***Base Flood*** - a flood that has a one percent chance of occurring in any given year (i.e., a flood with a magnitude equalled once in 100 yr) (40 CFR 503.9(b)).
- ***Best Available Technology (BAT)*** - the best technology treatment techniques, or other means which the administrator finds, examined for efficacy under field conditions and not solely under lab conditions that are available (taking cost into consideration). For the purposes of setting Maximum Contaminant Levels (MCLs) for synthetic organic chemicals, any BAT must be at least as effective as granular activated carbon (40 CFR 141.2).
- ***Blowdown*** - the minimum discharge of recirculating water for the purpose of discharging materials contained in the water, the further buildup of which would cause concentrations in amounts exceeding limits established by best engineering practice (40 CFR 401.11(p)).
- ***Bulk Sewage Sludge*** - sewage sludge that is not sold or given away in a bag or other container for application to the land (40 CFR 503.11(e)).
- ***Chemical Metal Cleaning Waste*** - any wastewater resulting from the cleaning of any metal process equipment with chemical compounds, including, but not limited to, boiler tube cleaning (40 CFR 423.11).

- *Class 1 Sludge Management Facility* - any POTW, as defined in 40 CFR 501.2, required to have an approved pretreatment program under 40 CFR 403.8(a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR 403.10(e)) and any treatment works treating domestic sewage, as defined in 40 CFR 122.2, classified as a Class 1 sludge management facility by the USEPA Regional Administrator, or, in the case of approved state programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.
- *Class A Sludge* - when one of the following method is used, it is considered Class A with respect to pathogens:
  - **Alternative 1.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number/gram (MPN/g) of total solids (dry weight basis), or the density of Salmonella sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The temperature of the sewage sludge that is used or disposed shall be maintained at a specific value for a period of time. When the percent solids of the sewage sludge is 7 percent or higher, the temperature of the sewage sludge shall be 50 °C [122 °F] or higher; the time period shall be 20 min or longer; and the temperature and time period shall be determined using the following equation, except when small particles of sewage sludge are heated by either warmed gases or an immiscible liquid.

$$D = \frac{131,700,000}{10^{0.1400t}} \quad \text{Eq.(2)}$$

Where, D = time in days. t = temperature in °C.

When the percent solids of the sewage sludge is 7 percent or higher and small particles of sewage sludge are heated by either warmed gases or an immiscible liquid, the temperature of the sewage sludge shall be 50 °C [122 °F] or higher; the time period shall be 15 s or longer; and the temperature and time period shall be determined using the above equation.

When the percent solids of the sewage sludge is less than 7 percent and the time period is at least 15 s, but less than 30 min, the temperature and time period shall be determined using the above equation.

When the percent solids of the sewage sludge is less than 7 percent; the temperature of the sewage sludge is 50 °C [122 °F] or higher; and the time period is 30 min or longer, the temperature and time period shall be determined using the below equation.

$$D = \frac{50,070,000}{10^{0.1400t}} \quad \text{Eq.(3)}$$

Where, D = time in days. t = temperature in °C.

- **Alternative 2.** Either the density of fecal coliform in the sewage sludge is less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The pH of the sewage sludge that is used or disposed shall be raised to above 12 and shall remain above 12 for 72 h.

The temperature of the sewage sludge shall be above 52 °C [125.6 °F] for 12 h or longer during the period that the pH of the sewage sludge is above 12.

At the end of the 72 h period during which the pH of the sewage sludge is above 12, the sewage sludge shall be air dried to achieve a percent solids in the sewage sludge greater than 50 percent.

- **Alternative 3.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains enteric viruses.

When the density of enteric viruses in the sewage sludge prior to pathogen treatment is less than one Plaque-forming Unit per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses until the next monitoring episode for the sewage sludge.

When the density of enteric viruses in the sewage sludge prior to pathogen treatment is equal to or greater than one Plaque-forming Unit per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses when the density of enteric viruses in the sewage sludge after pathogen treatment is less than one Plaque-forming Unit per 4 g of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the enteric virus density requirement are documented.

After the enteric virus reduction is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to enteric viruses when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented.

The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains viable helminth ova.

When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is less than 1 per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova until the next monitoring episode for the sewage sludge.

When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is equal to or greater than 1 per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova when the density of viable helminth ova in the sewage sludge after pathogen treatment is less than 1 per 4 g of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the viable helminth ova density requirement are documented.

After the viable helminth ova reduction is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to viable helminth ova when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented.

- **Alternative 4.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The density of enteric viruses in the sewage sludge shall be less than 1 Plaque-forming Unit per 4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f), unless otherwise specified by the permitting authority.

The density of viable helminth ova in the sewage sludge shall be less than 1 per 4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f), unless otherwise specified by the permitting authority.

- **Alternative 5.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella*, sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or given away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

Sewage sludge that is used or disposed shall be treated in one of the Processes to Further Reduce Pathogens described in appendix B of 40 CFR 503.

- **Alternative 6.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella*, sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or given away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

Sewage sludge that is used or disposed shall be treated in a process that is equivalent to a Process to Further Reduce Pathogens, as determined by the permitting authority.

- **Class B Sludge** - when one of the following methods is used, it is considered Class A with respect to pathogens:
  - **Alternative 1.** Seven samples of the sewage sludge is collected at the time the sewage sludge is used or disposed. The geometric mean of the density of fecal coliform in the samples must be less than either 2 million MPN/g of total solids (dry weight basis) or 2 million Colony Forming Units/g (CFU/g) of total solids (dry weight basis).
  - **Alternative 2.** Sewage sludge that is used or disposed shall be treated in one of the Processes to Significantly Reduce Pathogens described in Appendix B of 40 CFR 503.
  - **Alternative 3.** Sewage sludge that is used or disposed is be treated in a process that is equivalent to a Process to Significantly Reduce Pathogens, as determined by the permitting authority.
- **CN,A** - cyanide amenable to chlorination (40 CFR 413.02).
- **CN,T** - cyanide, total (40 CFR 413.02).
- **Coagulation** - a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs (40 CFR 141.2).
- **Combined Sewer** - a wastewater collection system that collects both stormwater and wastewater (AFI 32-7041, para A1.1.2.6).
- **Combined Sewer Overflow** - direct discharge of untreated wastewater from a combined sewer (AFI 32-7041, para A1.1.2.7).
- **Community Water System** - a public water system that serves at least 15 service connections used by year round residents or regularly serves at least 25 year-round residents (40 CFR 141.2)
- **Contaminant** - any physical, chemical, biological, or radiological substance or matter in water (40 CFR 141.2).
- **Contaminate An Aquifer** - to introduce a substance that causes the MCL for nitrate in 40 CFR 141.11 to be exceeded in groundwater or that causes the existing concentration of nitrate in groundwater to increase when the existing concentration of nitrate in the groundwater exceeds the MCL for nitrate in 40 CFR 141.11 (40 CFR 503.21(c)).

- *Continuous Discharge* - a discharge which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities (40 CFR 123.3).
- *Control Efficiency* - the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator (40 CFR 503.41(c)).
- *Conventional Filtration Treatment* - a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal (40 CFR 141.2).
- *Cover* - soil or other material used to cover sewage sludge placed on an active sewage sludge unit (40 CFR 503.21(d)).
- *Cover Crop* - a small grain crop, such as oats, wheat, or barley, not grown for harvest (40 CFR 503.9(d)).
- *Cumulative Pollutant Loading Rate* - the maximum amount of an inorganic pollutant that can be applied to an area of land (40 CFR 503.11(f)).
- *Daily Discharge* - the discharge of a pollutant measured during a calendar day or any 24 h period that reasonably represents the calendar day for purposes of sampling (40 CFR 122.2).
- *Density Of Microorganisms* - the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge (40 CFR 503.31(c)).
- *Diatomaceous Earth Filtration* - a process resulting in substantial particulate removal in which (40 CFR 141.2):
  1. a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum), and
  2. while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.
- *Direct Discharge* - the discharge of a pollutant (40 CFR 122.2).
- *Direct Filtration* - a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal (40 CFR 141.2).
- *Discharge of Pollutant* - the addition of any pollutant to navigable waters from any point source and any addition of any pollutant to the waters of the contiguous zone or the ocean zone or the ocean from any point source, other than from a vessel or other floating craft (40 CFR 401.11(h)).
- *Disinfectant* - any oxidant, including but not limited to chlorine, chlorine dioxide, chloramines, and ozone added to water in any part of the treatment or distribution process, that is intended to kill or inactivate pathogenic micro-organisms (40 CFR 141.2).
- *Disinfection* - a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents (40 CFR 141.2).

- *Dispersion Factor* - the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack (40 CFR 503.41(d)).
- *Displacement* - the relative movement of any two sides of a fault measured in any direction (40 CFR 503.21(e)).
- *Domestic or Other Non-Distribution System Plumbing Problem* - a coliform contamination problem in a public water system with more than one service connection that is limited to the specific service connection from which the coliform-positive sample was taken (40 CFR 141.2).
- *Domestic Septage* - either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receive either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant (40 CFR 257.2).
- *Domestic Sewage* - waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works (40 CFR 503.9(g)).
- *Effluent Limitations* - any restriction established by the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources, other than new sources, into navigable waters, the waters of the contiguous zone or the ocean (40 CFR 401.11(i)).
- *Environmentally Sensitive Area* - an area of environmental importance which is in or adjacent to navigable waters (49 CFR 194.5).
- *Excluded Sludge* - The following are types of sludge and activities which are exempted from meeting the requirements outlined in 40 CFR 503:
  1. processes used to treat domestic sewage or processes used to treat sewage sludge prior to final use except for the standards on pathogen and vector reduction in 40 CFR 503.32 and 503.33
  2. sewage sludge co-fired in an incinerator with other wastes or for the incinerator in which sewage sludge and other waste are co-fired
  3. sludge generated at an industrial facility during the treatment of industrial wastewater, including sewage sludge generated during the treatment of industrial wastewater combined with domestic sewage
  4. sewage sludge determined to be hazardous
  5. sewage sludge with a concentration of polychlorinated biphenyls (PCBs) equal to greater than 50 mg/kg of total solids (dry weight basis)
  6. ash generated during the firing of sewage sludge in a sewage sludge incinerator
  7. grit (i.e., sand, gravel, cinders, or other material with high specific gravity) or screenings (e.g., relatively large materials such as rags) generated during preliminary treatment of domestic sewage in a treatment works
  8. sludge generated during the treatment of either surface water or groundwater used for drinking water
  9. commercial septage, industrial septage, a mixture of domestic septage and commercial septage, or a mixture of domestic septage and industrial septage (40 CFR 503.6).



- **Exempted Public Water Systems** - the following are public water systems which are not required to meet the standards outlined in 40 CFR 141 (40 CFR 141.3):
  1. systems which consist only of distribution and storage facilities and do not have any collection and treatment facilities
  2. systems that obtain all of their water from, but is not owned by or operated by, a public water system to which 40 CFR 141 applies
  3. systems that do not sell water to any person
  4. systems that are not a carrier that conveys passengers in interstate commerce.
- **Fault** - a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to strata on the other side (40 CFR 503.21(f)).
- **Feed Crops** - crops produced primarily for consumption by animals (40 CFR 503.9(j)).
- **Feedlot** - a concentrated, confined animal or poultry growing operation for meat, milk, or egg production, or stabling in pens or houses wherein the animals or poultry are fed at the place of confinement and crop or forage growth or production is not sustained in the area of confinement (40 CFR 412.11(b)).
- **Fiber Crops** - crops such as flax and cotton (40 CFR 503.9(k)).
- **Filtration** - a process for removing particulate matter from water by passage through porous media (40 CFR 141.2).
- **Final Cover** - the last layer of soil or other material placed on a sewage sludge unit at closure (40 CFR 503.21(g)).
- **Flocculation** - a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through gentle stirring by hydraulic or mechanical means (40 CFR 141.2).
- **Fluidized Bed Incinerator** - an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas (40 CFR 503.41(e)).
- **Forest** - a tract of land thick with trees and underbrush (40 CFR 503.11(g)).
- **Gross Alpha Particle Activity** - the total radioactivity due to alpha particle emissions as inferred from measurements on a dry sample (40 CFR 141.2).
- **Groundwater Under the Direct Influence of Surface Water** - refers to any water beneath the surface of the ground with:
  1. significant occurrence of insects or other macro-organisms, algae, or large-diameter pathogens such as *Giardia lamblia*, or
  2. significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions.

Direct influence must be determined for individual sources in accordance with criteria established by the state (40 CFR 141.2).

- *Holocene Time* - the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present (40 CFR 503.21(h)).
- *Halogen* - one of the chemical elements chlorine, bromine, or iodine (40 CFR 141.2).
- *Hourly Average* - the arithmetic mean of all measurements, taken during 1 h. At least two measurements must be taken during the hour (40 CFR 503.41(f)).
- *Incineration* - the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device (40 CFR 503.41(g)).
- *Indirect Discharge* - the introduction of pollutants into a POTW from any nondomestic source regulated under section 307(b), (c), or (d) of the Act (40 CFR 403.3(g)).
- *Industrial Activities* - in relation to stormwater runoff, industrial activities include:
  1. facilities subject to stormwater effluent limitations guidelines, new source performance standards under 40 CFR subchapter N
  2. facilities classified as Standard Industrial Classification 24 (except 2434), 26 (except 265 and 267), 28 (except 283), 29, 311, 32 (except 323) 35, 344, 373
  3. facilities classified as Standards Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations and oil and gas explorations, production, processing, or treatment operations, or transmission facilities that discharge stormwater contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate product, finished products, by-products or waste products located on the site of such operations
  4. hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under *Resource Conservation and Recovery Act, Subpart C (RCRA-C)*
  5. landfills, land application sites, and open dumps that receive or have received industrial wastes, including those sites that are subject to Federal regulation
  6. facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but no limited to those classified as Standard Industrial Classification 5015 and 5093;
  7. steam electric power generating facilities, including coal handling sites
  8. transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25, 43, 44, 45, and 5171 which have vehicle maintenance shops, equipment cleaning operations, or airport de-icing operations
  9. treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludges that are located within the confines of the facility with a design flow of 1.0 mg or more, or required to have an approved pretreatment program. Not included are farmlands, domestic gardens, or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with section 405 of the CWA
  10. construction activity including clearing, grading, and excavation activities except operations that result in the disturbance of land less than 5 acres of total land area which are not part of a larger common plan of development or sale

11. facilities under Standard Industrial Classifications 20,21,22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and which are not otherwise included in categories 1 - 10) (40 CFR 122.26(b)(14)(i) through 122.26(b)(14)(xi)).

- **Industrial User** - a source of indirect discharge (40 CFR 403.3(h)).
- **Industrial Wastewater** - wastewater generated in a commercial or industrial process (40 CFR 503.9(n)).
- **Initial Compliance Period** - the first full 3 yr compliance period which begins at least 18 mo after promulgation, except for Dichloromethane, 1,2,4-Trichlorobenzene, 1,1,2-Trichloroethane, Benzo(a)pyrene, Dalapon, Di(2-ethylhexyl) adipate, Di(2-ethylhexyl) phthalate, Dinoseb, Diquat, Endrin, Endothall, Glyphosate, Hexachlorobenzene, Hexachlorocyclopentadiene, Oxamyl (Vydate), Picloram, Simazine, 2,3,7,8,-TCDD (Dioxin), Antimony, Beryllium, Cyanide (as free Cyanide), Nickel, and Thallium, initial compliance period means the first full 3 yr compliance period after promulgation for systems with 150 or more service connections (January 1993 - December 1995, and first full 3 yr compliance period after the effective date of the regulation (January 1996 - December 1998) for systems having fewer than 150 service connections (40 CFR 141.2).
- **Integrated Facility** - a facility that performs electroplating as only one of several operations necessary for manufacture of a product at a single physical location and has significant quantities of process wastewater from nonelectroplating sources (40 CFR 413.02).
- **Interference** - a discharge which, alone or in conjunction with one or more discharges from other sources inhibits or disrupts the POTW and causes a violation of any requirement of the POTW's NPDES permit (40 CFR 403.3(i)).
- **Job Shop** - a facility which owns not more than 50 percent (annual area basis) of the materials undergoing metal finishing (40 CFR 433.11).
- **Land Application** - the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil (40 CFR 503.11(h)).
- **Land With a High Potential For Public Exposure** - land that the public uses frequently. This includes, but is not limited to, a public contact site and a reclamation site located in a populated area (e.g., a construction site located in a city) (40 CFR 503.31(d)).
- **Land With a Low Potential For Public Exposure** - land the public uses infrequently. This includes, but is not limited to, agricultural land, forest, and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area) (40 CFR 503.31(e)).
- **Large Water System** - in reference to lead and copper in systems, this refers to a water system that serves more than 50,000 persons (40 CFR 141.2).
- **Leachate Collection System** - a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit (40 CFR 503.21(i)).

- **Lead Service Line** - a service line made of lead which connects the water main to the building inlet and any lead pigtail, gooseneck, or other fitting which is connected to such a lead line (40 CFR 141.2).
- **Legionella** - means a genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires Disease (40 CFR 141.2).
- **Liner** - soil or synthetic material that has a hydraulic conductivity of  $1 \times 10^{-7}$  cm/s [ $3 \times 10^{-8}$  in./s] or less (40 CFR 503.21(j)).
- **Lower Explosive Limit For Methane Gas** - the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 °C [77 °F] and atmospheric pressure (40 CFR 503.21(k)).
- **Management Practice (MP)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- **Maximum Contaminant Level (MCL)** - the maximum permissible level of a contaminant in water that is delivered to any user of a public water system (40 CFR 141.2).
- **Maximum Contaminant Level Goal (MCLG)** - refers to the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. Maximum contaminant level goals are non-enforceable health goals (40 CFR 141.2).
- **Maximum Total Trihalomethane Potential** - means the maximum concentration of total trihalomethanes produced in a given water containing a disinfectant residual after 7 days at a temperature of 25 °C or above (40 CFR 141.2).
- **Medium Size Water System** - in reference to lead and copper in systems, this refers to a water system that serves greater than 3300 and less than or equal to 50,000 persons (40 CFR 141.2).
- **Metal Cleaning Wastes** - any wastewater resulting from cleaning (with or without chemical cleaning compounds) any metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning (40 CFR 423.11).
- **Monthly Average** - the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month (40 CFR 503.41(h)).
- **Monthly Average** - the arithmetic mean of all measurements taken during the month (40 CFR 503.11(i)).
- **Municipality** - a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities: created by or under state law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under section 208 of the CWA, as amended. The definition includes a special district created under state law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an inte-

grated waste management facility as defined in section 201(e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use, or disposal of sewage sludge (40 CFR 503.9(o)).

- **National Pretreatment Standard** - any regulation containing pollutant discharge limits promulgated by the USEPA (40 CFR 403.3(j)).
- **Navigable Waters** - all navigable waters of the United States, tributaries of navigable waters of the United States, interstate waters, intrastate lakes, rivers, and streams which are utilized by interstate travelers for rivers, and streams which are utilized by interstate travelers for recreational or other purposes, intrastate lakes, rivers, and streams from which fish or shellfish are taken and sold in interstate commerce and intrastate lakes, rivers, and streams which are utilized for industrial purposes by industries in interstate commerce. Navigable waterways do not include prior converted cropland (40 CFR 401.11(l)).
- **Near the First Service Connection** - means at one of the 20 percent of all service connections in the entire system that are nearest the water supply treatment facility, as measured by water transport time within the distribution system (40 CFR 141.2).
- **New Source** - in relation to NPDES permits, any building, structure, facility, or installation from which there is or may be a *discharge of pollutants* the construction of which commenced:
  1. after promulgation of standards of performance under section 306 of CWA which are applicable to such sources, or
  2. after proposal of standards of performance in accordance with section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with section 306 within 120 days of their proposal.

The following are the criteria for new source determination:

1. it is constructed at a site at which no other source is located, or
  2. it totally replaces the process or production equipment that causes the discharge of pollutants at an existing sources, or
  3. its processes are substantially independent of an existing source at the same site (40 CFR 122.2 and 122.29(b)).
- **New Source** - any building, structure, facility, or installation from where there is or may be the discharge of pollutants, the construction of which is commenced after the publication of proposed regulations prescribing a standards of performance under section 306 of the CWA, which will be applicable to such source as such standards is thereafter promulgated in accordance with section 306 of the act (40 CFR 401.11(e)).
  - **Noncommunity Water System** - a public water system that is not a community water system (40 CFR 141.2).
  - **Noncontact Cooling Water** - the water that is contained in a leak-free system, i.e., no contact with any gas, liquid, or solid other than the container for transport; the water shall have no net poundage addition of any pollutant over intake water levels (40 CFR 401.44(o)).
  - **Nontransient, Noncommunity Water System (NTNCWS)** - a public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 mo/yr (40 CFR 141.2).

- *NPDES Permit* - a permit granted by USEPA to a direct discharger which permits wastewater discharge to a watercourse in accordance with the conditions of the permit. NPDES means National Pollutant Discharge Elimination System (40 CFR 403.3(l)).
- *Open Lot* - pens or similar confinement areas with dirt, concrete (or paved or hard) surface wherein animals or poultry are substantially or entirely exposed to the outside environment except for possible small portions affording some protection by windbreaks, small shed-type shade areas (40 CFR 412.11(f)).
- *Other Container* - either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton (1.1 short tons) or less (40 CFR 503.11(j)).
- *pH* - the logarithm of the reciprocal of the hydrogen ion concentration (40 CFR 503.31(g)).
- *Pass Through* - a discharge which exits the POTW into waters in quantities or concentrations which, alone or in conjunction with one or more discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (40 CFR 403.3(n)).
- *Pasture* - land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover (40 CFR 503.11(k)).
- *Pathogenic Organisms* - disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova (40 CFR 503.31(f)).
- *Person* - an individual, association, partnership, corporation, municipality, state or Federal agency, or an agent or employee thereof (40 CFR 503.9(q)).
- *Person* - an individual, corporation, company, association, partnership, municipality, or state, Federal, or tribal agency (40 CFR 141.2).
- *Person Who Prepares Sewage Sludge* - either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge (40 CFR 503.9(r)).
- *Picocurie (pCi)* - quantity of radioactive material producing 2.22 nuclear transformations/minute (40 CFR 141.2).
- *Place Sewage Sludge or Sewage Sludge Placed* - means disposal of sewage sludge on a surface disposal site (40 CFR 503.9(s)).
- *Point of Disinfectant Application* - the point where the disinfectant is applied and water downstream of that point is not subject to recontamination by surface water runoff (40 CFR 141.2).
- *Point-of-Entry Treatment Device* - a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building (40 CFR 141.2).
- *Point-of-Use Treatment Device* - a treatment device applied to a single tap used for the purpose of

reducing contaminants in drinking water at that one tap (40 CFR 141.2).

- *Point Source* - any discernible confined and discrete conveyance including but not limited to a pipe, ditch, channel, or conduit from which pollutants are or may be discharged (40 CFR 401.11(d)).
  - *Pretreatment* - the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW (40 CFR 403.3(q)).
  - *Process Generated Wastewater* - in relation to feedlots, this is water directly or indirectly used in the operation of a feedlot for any or all of the following: spillage or overflow from animal or poultry watering systems; washing, cleaning, or flushing pens, barns, manure pits, or other feedlot facilities; direct contact swimming, washing, or spray cooling of animals; and dust control (40 CFR 412.11(d)).
  - *Process Wastewater* - any water which during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, or waste product (40 CFR 401.44(q)).
  - *Process Wastewater for Feedlots* - any process generated wastewater and any precipitation (rain or snow) which comes into contact with any manure, litter, or bedding, or any other raw material or intermediate or final material or product used in or resulting from the production of animals or poultry or direct production (40 CFR 412.11(c)).
  - *Public Contact Site* - land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses (40 CFR 503.11(l)).
  - *Public Water System* - a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. This term includes:
    1. any collection, treatment, storage, and distribution facilities under control of the operator of such system, and
    2. any collection or pretreatment storage facilities not under such control that are used primarily in connection with such system.
- A public water system is either a "community water system" or a "noncommunity water system" (40 CFR 141.2).
- *Publicly Owned Treatment Works (POTW)* - a treatment works which is owned by the state or a municipality. This includes any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes, and other conveyances only if they convey waste to a POTW (40 CFR 403.3(o)).
  - *Qualified Groundwater Scientist* - an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in ground-water hydrology and related fields, as may be demonstrated by state registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding ground-water monitoring, pollutant fate and transport, and corrective action (40 CFR 503.21(l)).

- *Range Land* - open land with indigenous vegetation (40 CFR 503.11(m)).
- *Reclamation Site* - drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites (40 CFR 503.11(n)).
- *Rem* - the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A millirem (mrem) is 1/1000 of a rem (40 CFR 141.2).
- *Residual Disinfectant Concentration* - ("C" in CT calculations) is the concentration of disinfectant measured in mg/L in a representative sample of water (40 CFR 141.2).
- *Risk Specific Concentration* - the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of the site where the sewage sludge incinerator is located (40 CFR 503.41(i)).
- *Runoff* - rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off of the land surface (40 CFR 503.9(v)).
- *Sanitary Survey* - an onsite review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water (40 CFR 141.2).
- *Sedimentation* - a process for removal of solids before filtration by gravity or separation (40 CFR 141.2).
- *Seismic Impact Zone* - an area that has a 10 percent or greater probability that the horizontal ground level acceleration of the rock in the area exceeds 0.10 gravity once in 250 yr (40 CFR 503.21(m)).
- *Sewage Sludge* - solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage, scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludges in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewerage in a treatment works (40 CFR 257.2)
- *Sewage Sludge Feed Rate* - either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365 day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located (40 CFR 503.41(j)).
- *Sewage Sludge Incinerator* - an enclosed device in which only sewage sludge and auxiliary fuel are fired (40 CFR 503.41(k)).
- *Sewage Sludge Unit* - land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR 122.2 (40 CFR 503.21(n)).
- *Sewage Sludge Unit Boundary* - the outermost perimeter of an active sewage sludge unit (40 CFR



503.21(o)).

- *Slow Sand Filtration* - a process involving passage of raw water through a bed of sand at low velocity (generally less than 0.4 m/h [1.31 ft/h]) resulting in substantial particulate removal by physical and biological mechanisms (40 CFR 141.2).
- *Specific Oxygen Uptake Rate (SOUR)* - the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in the sewage sludge (40 CFR 503.31(h)).
- *Stack Height* - the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 m [213.25 ft]. When the difference is greater than 65 m [213.25 ft], stack height is the creditable stack height determined in accordance with 40 CFR 51.100(ii) (40 CFR 503.41(l)).
- *Standard Sample* - the aliquot of finished drinking water that is examined for the presence of coliform bacteria (40 CFR 141.2).
- *State* - the agency of the state or tribal government that has jurisdiction over public water systems. During any period when a state or tribal government does not have primary enforcement responsibility pursuant to Section 1413 of the SDWA (42 USC 300g-2), the term "state" means the Regional Administrator of the USEPA (40 CFR 141.2).
- *Store or Storage Of Sewage Sludge* - the placement of sewage sludge on land on which the sewage sludge remains for 2 yr or less. This does not include the placement of sewage sludge on land for treatment (40 CFR 503.9(y)).
- *Stormwater Discharge Associated with an Industrial Activity* - the discharge from any conveyance which is used for collecting and conveying stormwater and which is directly related to manufacturing, processing or raw materials storage areas at any industrial plant. This does not include discharges from facilities excluded from the NPDES program. For the categories of industries identified in the definition for *Industrial Activities*, the Item No. 1 through 10, the term includes, but is not limited to stormwater discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste wastes; sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater. For Item No. 11 in the definition for *Industrial Activities* the term only includes only stormwater discharges from all the areas (except access roads and rail lines) that are listed in the previous sentence where materials handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to stormwater (40 CFR 122.26(b)(14)).
- *Strong Chelating Agents* - all compounds which, by virtue of their chemical structure and amount present, form soluble metal complexes which are not removed by subsequent metals control techniques such as pH adjustment followed by clarification or filtration (40 CFR 413.02).
- *Supplier of Water* - any person who owns or operates a public water system (40 CFR 141.2).

- **Surface Disposal Site** - an area of land that contains one or more active sewage sludge units (40 CFR 503.21(p)).
- **Surface Water** - all water that is open to the atmosphere and subject to surface runoff (40 CFR 141.2).
- **System with a Single Service Connection** - a system which supplies drinking water to consumers via a single service line (40 CFR 141.2).
- **TTO** - total toxic organics (40 CFR 413.02).
- **Total Hydrocarbons** - the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane (40 CFR 503.41(m)).
- **Total Metal** - the sum of the concentrations of mass of copper, nickel, chromium, and zinc (40 CFR 413.02).
- **Total Solids** - the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 °C [217.4 to 221 °F] (40 CFR 503.31(i)).
- **Total Trihalomethanes (TTHM)** - the sum of the concentration in milligrams per liter of the trihalomethane compounds rounded to two significant figures (40 CFR 141.2).
- **Treat or Treatment Of Sewage Sludge** - the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge (40 CFR 503.9(z)).
- **Treatment Works** - either a Federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature (40 CFR 503.9(aa)).
- **Trihalomethane (THM)** - one of the family of organic compounds, named as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure (40 CFR 141.2).
- **Unstabilized Solids** - organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process (40 CFR 503.31(j)).
- **Unstable Area** - land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement (40 CFR 503.21(q)).
- **Vector Attraction** - the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents (40 CFR 503.31(k)).
- **Virus** - means a virus of fecal origin which is infectious to humans by waterborne transmission (40 CFR 141.2).
- **Volatile Solids** - the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 °C [1022 °F] in the presence of excess air (40 CFR 503.31(l)).

- *Waterborne Disease Outbreak* - the significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a public water system which is deficient in treatment, as determined by the appropriate local or state agency (40 CFR 141.2).
- *Wet Electrostatic Precipitator* - an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(n)).
- *Wetlands* - those areas that are inundated or saturated by surface water or groundwater at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (40 CFR 503.9(bb)).
- *Wet Scrubber* - an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(o)).

**WATER QUALITY MANAGEMENT**  
**GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>CONTACT THESE PERSONS OR GROUPS:(a)</b>	<b>REFER TO PAGE NUMBER:</b>
All Installations	W.1 through W.5	(1)(2)	11-31
<b>Drinking Water</b>			
General Requirements	W.6 through W.12	(1)(2)(3)	11-34
Standards	W.13 through	(2)	11-36
Monitoring and Sampling	W.16 through W.37	(2)	11-37
Section E--Disinfection and Filtration	W.38 through W.45	(1)(2)	11-48
Notification and Reporting Requirements	W.46 through W.53	(1)(2)	11-53
Lead and Copper in Drinking Water Systems	W.54 through W.65	(1)(2)	11-56
Water to Aircraft	W.66	(1)(2)	11-60
Sole Source Aquifers	W.67	(1)	11-61
<b>Wastewater</b>			
General	W.68 and W.69		11-61
NDPES Permits	W.70 through W.75	(1)(2)	11-62
Discharges to POTWs/FOTWs	W.76 through W.79	(1)(2)(3)	11-65
FOTW Operation	W.80 through W.85	(3)	11-67
Thermal Processing Discharges	W.86	(3)	11-69
Fire Training Pit Discharges	W.87 through W.89	(4)	11-69
Nonpoint Source Discharges	W.90		11-70
Effluent Limitations for Electroplating Point Sources	W.91 through W.97	(2)(3)	11-71
Effluent Limitations for Metal Finishing Point Sources	W.98 through W.100	(2)(3)	11-74
Existing Metal Finishing Point Sources	W.101	(2)(3)	11-76
New Metal Finishing Point Sources	W.102 and W.103	(2)(3)	11-76
Photo Labs	W.104	(2)(3)	11-77
Effluent Limitations for Hospitals	W.105	(2)(3)	11-77

- (a) CONTACT/LOCATION CODE:**
- (1) Environmental Planning (BCE)
  - (2) Bioenvironmental Engineering (BEE)
  - (3) Water Treatment Plant Supervisor (BCE)
  - (4) Natural Resources Planner (BCE)

## GUIDANCE FOR CHECKLIST USERS (continued)

	REFER TO CHECKLIST ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)	REFER TO PAGE NUMBER:
<b>Land Application of Sludge</b>			
General	W.106 through W.112		11-78
Vectors and Pathogens	W.113 through W.117	(1)(2)	11-84
Notifications	W.118 through W.122		11-89
Monitoring	W.123 and W.124		11-93
Recordkeeping and Reporting	W.125 through W.132		11-94
<b>Surface Disposal of Sludge</b>			
General	W.133 through W.139		11-101
Monitoring and Documentation	W.140 through W.145		11-106
Swimming Pools and Bathing Areas	W.146	(2)	11-108

**(a) CONTACT/LOCATION CODE:**

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## **WASTEWATER MANAGEMENT**

### **Records to Review During an ECAMP Assessment**

#### *Wastewater*

- NPDES Permits
- NPDES Permit renewal applications (if expire within 180 days)
- Discharge monitoring reports for the past year
- Laboratory records and procedures and USEPA QA results
- Monthly operating reports for wastewater treatment facilities
- Flow monitoring calibration certification and supporting records
- Ash pond volume certification and supporting records
- Red water inspection records
- Special reports, certifications, etc., required by NPDES permit
- Spill Prevention Control and Countermeasure (SPCC) Plan
- All records required by SPCC Plan
- All notices of noncompliance
- All notices of violations
- NPDES state or Federal inspection reports
- Sewage treatment plant operator certification
- Administrative Orders
- Sewer and storm drain layout
- Local sewer ordinance
- Local service use permit
- Notification to local POTW
- Old Spill Reports
- Repair/Maintenance records for the wastewater treatment system
- Recurring work program records
- Spare supplies and parts list
- Equipment calibration records
- As Built Drawings
- Federal Facility Compliance Agreements
- Stormwater pollution prevention plan
- Pretreatment Permits

#### *Drinking Water*

- Bacterial and chemical analyses of drinking water, including sampling dates and locations, dates of analyses, analytical methods used, and results of analyses
- Monthly operating reports (flow, chlorine residual, etc.)
- State and public notification of noncompliance with primary drinking water regulations
- Action taken by the facility to correct violations of primary drinking water regulations
- Sanitary surveys of the water system conducted by the facility itself, a private consultant, or any local, state, or Federal Agency
- Public notification of noncompliance with secondary MCL for fluoride
- Variance or exemption granted to the facility for its water supply system
- Permit authorizing the operation of an underground injection well
- Records of planning and construction of injection wells

- Results of injection well monitoring
- Records, including any petition for review, of facility projects that may potentially cause contamination of a sole source aquifer through its recharge zone
- Equipment calibration records
- Recurring work program records
- Spare supplies and parts list
- Waivers from the state
- Operating instructions.

### **Physical Features to Inspect During an ECAMP Assessment**

#### *Wastewater*

- Discharge outfall pipes
- Wastewater treatment facilities
- Industrial treatment facilities
- Streams, rivers, open waterways
- Floor and sink drains (especially in industrial areas)
- stormwater collection points (especially in industrial areas)
- Oil storage tanks
- Oil/water separators
- Fire training pit
- Condition of fuel storage ree dikes
- Laboratory facilities
- Lift stations
- Safety alarms and equipment
- Sludge disposal areas
- Wastewater generation points

#### *Drinking Water*

- Drinking water collection, treatment, and distribution facilities
- Onsite laboratory analysis facilities
- Underground injection wells
- Storage Tanks and pump stations
- Safety alarms and equipment
- Drinking water sources

### **People to Interview During an ECAMP Assessment**

- Base Civil Engineering, including:
  - Environmental Coordinator
  - Collection, Treatment, and Distribution Facility Operators
- Bioenvironmental Engineering, Wastewater
- Base Civil Engineering (Environmental Planning)
- Bioenvironmental Engineering
- Wastewater Treatment Plant Superintendent

**COMPLIANCE CATEGORY:  
WATER QUALITY MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL INSTALLATIONS</b></p> <p><b>W.1.</b> Actions or changes since previous review on water quality should be examined (MP).</p> <p><b>W.2.</b> Copies of all relevant Federal, state, and local regulations on water quality are required to be maintained at the installation (AFR 19-1, para 11f).</p>	<p>Obtain copies of previous reviews and determine whether noncompliance issues were resolved. (1)(2)</p> <p>Determine if the following are current and readily available: (1)(2)</p> <p><b>DRINKING WATER:</b></p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance With Pollution Standards.</i></li> <li>- 40 CFR 141, <i>National Primary Drinking Water Regulations.</i></li> <li>- 40 CFR 149, <i>Sole Source Aquifers.</i></li> <li>- applicable state and local requirements.</li> </ul> <p><b>WASTEWATER:</b></p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance With Pollution Standards.</i></li> <li>- 40 CFR 122, <i>USEPA Administered Permit Programs: The NPDES System.</i></li> <li>- 40 CFR 136, <i>Test Procedures for the Analysis of Pollutants.</i></li> <li>- 40 CFR 403, <i>General Pretreatment Regulations for Existing and New Sources of Pollution.</i></li> <li>- 40 CFR 413, <i>Electroplating Point Source Category.</i></li> <li>- 40 CFR 433, <i>Metal Finishing Point Source Category.</i></li> <li>- 40 CFR 459, <i>Photographic Point Source Category.</i></li> <li>- 40 CFR 460, <i>Hospital Point Source Category.</i></li> <li>- applicable state and local regulations.</li> </ul> <p>Verify that the Base Staff Judge Advocate reviews Federal, state, and local regulations that may affect ongoing and proposed activities and keeps the EPC informed as needed. (1)(2)</p>

(1) Environmental Planning (BCE) (2) Bioenvironmental Engineering (BEE) (3) Water Treatment Plant Supervisor (BCE) (4) Natural Resources Planner (BCE)





**COMPLIANCE CATEGORY:  
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U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.4. (continued)</b></p>	<p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- monitoring and recordkeeping for NPDES permitted sources</li> <li>- underground injection control</li> <li>- MCLs for drinking water contaminants</li> <li>- stormwater runoff</li> <li>- filtration requirements</li> <li>- nonpoint sources</li> <li>- wastewater</li> <li>- certification requirements for laboratories analyzing samples</li> <li>- wastewater treatment plant operator certification</li> <li>- sludge disposal</li> <li>- pretreatment standards</li> <li>- discharges at sewage treatment facilities</li> <li>- stormwater pollution prevention plans</li> <li>- septic tanks</li> <li>- more stringent contaminant level requirements</li> <li>- certification and training requirements</li> <li>- water system surveys reporting requirements</li> <li>- monitoring frequency</li> <li>- use of groundwater</li> <li>- use and maintenance of well</li> <li>- watershed protection</li> <li>- water withdrawal rates</li> <li>- conservation and drainage modifications</li> <li>- wellhead protection programs</li> <li>- cross connection control and backflow prevention</li> <li>- O&amp;M practices such as: maintenance of a disinfectant residual throughout the distribution system; proper maintenance of the distribution system; proper disinfection of replaced or repaired mains; main flushing programs; proper operation and maintenance of storage tanks and reservoirs; and continual maintenance of positive water pressure</li> <li>- UIC programs.)</li> </ul> <p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreement. (1)</p> <p>Verify that contracts for the purpose of water and/or wastewater are being complied with in relation to quality, quantity, connections, etc. (1)</p>

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U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.5.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p><b>DRINKING WATER</b></p> <p><b>General Requirements</b></p> <p><b>W.6.</b> BCE is required to maintain an up-to-date map of the complete potable water system (AFR 161-44, para 3-6h).</p> <p><b>W.7.</b> BCE must keep records of actions taken to correct or repair any part of the treatment and distribution system for at least 3 yr (40 CFR 141.33(b)).</p>	<p>Determine if any new regulations concerning water quality have been issued since the finalization of the manual. (1)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)</p> <p>Verify that the BCE has an up-to-date map of the potable water system. (1)</p> <p>Verify that a facility survey of plumbing devices and systems (excluding military family housing) is done every 5 yr in conjunction with the Base Bioenvironmental Engineer. (1)(2)</p> <p>Determine whether installation or operational changes to the water system have taken place since the previous review. Review map of complete potable water system. (1)</p> <p>Verify that as-built drawings are updated to reflect changes in water supply. (1)</p> <p>Verify that water system records of operational changes are maintained for at least 3 yr and identify any current operational changes. (1)</p> <p>Determine if water supply system master plan has been updated every 5 yr in accordance with AFR 86-4. (1)</p> <p>Determine if there are recurring work programs, spare parts and supplies list, equipment calibration and maintenance history records. (1)</p>

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U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.8.</b> The BCE and Director of Base Medical Services will review all plans and drawings of new or modified water systems to identify potential cross-connections (AFR 91-13, para 4c(6)).</p> <p><b>W.9.</b> When there is a threat of cross-connection with the drinking water systems, backflow prevention devices must be installed (AFR 91-13, para 6).</p> <p><b>W.10.</b> Installations are required to survey public water systems according to a specified schedule and maintain records of those reviews (40 CFR 141.21(d) and 141.33(c)).</p> <p><b>W.11.</b> Water treatment plant operators must be properly trained and certified to maintain, operate, and report if necessary on that installation's drinking water system (AFR 91-10, para 2).</p>	<p>Determine if the BCE and Director of Base Medical Service review plans for water system modifications. (1)(2)</p> <p>Verify that sites of potential cross-connections are identified and, if needed, backflow prevention devices specified. (1)(2)</p> <p>Verify that in areas where there is a threat of cross-connection with the potable water systems backflow prevention devices are installed that prevent back-pressure or back-siphonage from fixtures, equipment, appliances, or buildings. Examples of potential areas of hazard include: (1)(2)</p> <ul style="list-style-type: none"> <li>- the pesticide mixing area</li> <li>- paint shops</li> <li>- battery filling/draining areas</li> <li>- laboratory sinks.</li> </ul> <p>Verify that community water systems which do not collect five or more routine bacteriological samples per month have undergone an initial sanitary survey by 29 June 1994, and are then surveyed every 5 yr thereafter. (2)</p> <p>Verify that noncommunity water systems which do not collect five or more routine samples per month have undergone an initial sanitary survey by 29 June 1999, and are then surveyed every 5 yr thereafter. (2)</p> <p>(NOTE: Noncommunity water systems using only protected and disinfected groundwater are only required to conduct a survey every 10 yr after the initial survey.)</p> <p>Verify that records of sanitary system surveys are kept for 10 yr. (2)</p> <p>Verify that the results of the sanitary surveys have been submitted to the state and determine whether the state has requested an alternate monitoring frequency. (2)</p> <p>Determine if water treatment plant operators are certified as required by interviewing the BCE. (3)</p> <p>Verify that certified operators receive periodic refresher training. (3)</p> <p>Determine if the operator understands when and how a public notification should be made through the Public Affairs Office (PAO). (1)(2)(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.12.</b> All water systems shall install and operate optimal corrosion control treatment or comply with corrosion control requirements specified by the state (40 CFR 141.80(d)).</p> <p><b>Standards</b></p> <p><b>W.13.</b> Community water systems, except as defined under exempted water systems in the Definitions, are required to meet specific MCLs for inorganic and organic chemicals, fluorides, radium 226, radium-228, gross alpha particle radioactivity, beta particles and photon radioactivity from man-made radionuclides (40 CFR 141.11(a) through 141.11(c), 141.12, 141.15, and 141.16(a)).</p> <p><b>W.14.</b> Noncommunity water systems, except as defined under exempted water systems, will not exceed a MCL for nitrate of 10 mg/L (40 CFR 141.11(a)).</p>	<p>Verify that water systems are operating corrosion control systems or meeting state requirements. (2)</p> <p>Verify that combined radium-226 and radium-228 do not exceed 5pCi/L. (2)</p> <p>Verify that gross alpha particle radioactivity does not exceed 15 pCi/L. (2)</p> <p>Verify that the average annual concentration of beta particles and photon radioactivity from manmade radionuclides does not produce an average dose rate equal to the total body or any internal organ greater than 4 mrems/yr. (2)</p> <p>Verify that the MCL of 4.0 mg/L for fluoride is not exceeded. (2)</p> <p>Verify that the MCLs outlined in Table 10-1 and 10-2 are met. (2)</p> <p>Verify that the nitrate level at noncommunity water systems does not exceed 10 mg/L. (2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.15.</b> Community and nontransient, noncommunity water system (NTNCWS), except as defined under exempted water systems, are required to meet specific MCLs for organic contaminants, inorganic contaminants and microbiological contaminants (40 CFR 141.60 through 141.63).</p> <p><b>Monitoring and Sampling</b></p> <p><b>W.16.</b> Installations with community water systems and/or NTNCWS are required to meet specific monitoring requirements for inorganic contaminants (40 CFR 141.23(a)).</p>	<p>Verify that the standards outlined in Table 10-1 and 10-2 are met. (2)</p> <p>Verify that systems which collect at least 40 bacteriological samples per month have no more than 5 percent of the samples collected during a month that are total coliform positive. (2)</p> <p>Verify that systems which collect less than 40 bacteriological samples per month have no more than 1 sample collected per month that is total coliform positive. (2)</p> <p>Verify that there are no fecal coliform-positive repeat sampling or <i>E. coli</i>-positive repeat samples, or any total coliform-positive repeat samples following a fecal coliform-positive or <i>E. coli</i>-positive routine sample. (2)</p> <p>Verify that groundwater systems: (2)</p> <ul style="list-style-type: none"> <li>- take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment beginning in the compliance period starting 1 January 1993</li> <li>- takes each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.</li> </ul> <p>Verify that surface water systems: (2)</p> <ul style="list-style-type: none"> <li>- take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point that is representative of each source after treatment beginning in the compliance period starting 1 January 1993</li> <li>- takes each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment. (2)</li> </ul> <p>(NOTE: In relation to these requirements, surface water systems include systems with a combination of surface and ground sources.)</p> <p>Verify that if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions. (2)</p> <p>(NOTE: The state may reduce the total number of samples which must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed if the detection limit of the method used for analysis is less than one-fifth of the MCL and compositing is done in a laboratory.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.16. (continued)</b></p>	<p>Verify that if the concentration in a composite sample is greater than or equal to one-fifth of the MCL of any inorganic chemical, a follow-up sample is analyzed within 14 days from each sampling point included in the composite and analyzed for the contaminants which exceeded one-fifth of the MCL in the composite sample. (2)</p> <p>(NOTE: Detection limits for each analytical methods and MCLs for each inorganic contaminant are listed in Table 10-3.</p> <p>Verify that for groundwater systems, inorganic monitoring is repeated at least once every compliance period (every 3 yr), and samples are taken quarterly for at least two quarters if a MCL is violated. (2)</p> <p>Verify that for surface water systems, inorganic sampling is repeated annually and samples are taken quarterly for at least four quarters if a MCL is violated. (2)</p> <p>(NOTE: The state may issue a waiver reducing the required monitoring.)</p>
<p><b>W.17. Installations with community and NTNCWS are required to meet specific monitoring requirements for asbestos (40 CFR 141.23(b)).</b></p>	<p>Verify that asbestos is monitored during the first 3 yr compliance period of each 9 yr compliance cycle starting 1 January 1993. (2)</p> <p>(NOTE: The installation may apply to the state for a waiver of monitoring if they believe that asbestos is not an issue.)</p> <p>Verify that if the system is vulnerable to asbestos contamination only because of corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur. (2)</p> <p>Verify that if the system is vulnerable to asbestos contamination due to both its source water supply and corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where asbestos is most likely to occur. (2)</p> <p>Verify that when the maximum contaminant level is exceeded, monitoring is done quarterly. (2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.18.</b> Installations with community water systems and/or NTNCWS are required to meet specific monitoring requirements for antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium (40 CFR 141.23(c)).</p> <p><b>W.19.</b> All public water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels according to specific parameters (40 CFR 141.23(d), 141.23(e), 141.23(f)(2)).</p>	<p>Verify that monitoring is done as follows: (2)</p> <ul style="list-style-type: none"> <li>- groundwater systems take one sample at each sampling point every 3 yr surface water systems (or combined surface/ground) take one sample annually at each sampling point when MCLs are exceeded, monitoring is done quarterly.</li> </ul> <p>Verify that the following schedules are met for monitoring of nitrate: (2)</p> <ul style="list-style-type: none"> <li>- community and NTNCWS served by groundwater monitor annually starting 1 January 1993</li> <li>- community and NTNCWS served by surface water monitor quarterly starting 1 January 1993</li> <li>- transient noncommunity water systems monitor annually starting 1 January 1993.</li> </ul> <p>Verify that when the MCL for nitrate are exceeded the following schedules are met for monitoring: (2)</p> <ul style="list-style-type: none"> <li>- community and NTNCWS do repeat monitoring quarterly for at least 1 yr following any one sample in which the concentration exceeds more than 50 percent of the MCL.</li> </ul> <p>(NOTE: After the initial round of quarterly sampling is completed, each community and nontransient noncommunity system which is monitoring annually shall take the subsequent samples during the quarters which previously resulted in the highest analytical result.)</p> <p>Verify that public water systems take one sample at each sampling point in the compliance period beginning 1 January 1993, and ending 31 December 1995, for nitrite. (2)</p> <p>(NOTE: After the initial sample, systems where an analytical result for nitrite is less than 50 percent of the MCL will monitor at the frequency specified by the state.)</p> <p>Verify that community, nontransient, noncommunity and transient noncommunity systems repeat monitoring for nitrites quarterly for at least 1 yr after any one sample is greater than 50 percent of the MCL. (2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.19. (continued)</b></p>	<p>Verify that systems which are monitoring annually for nitrites take each subsequent sample during the quarters which previously resulted in the highest analytical result. (2)</p> <p>Verify that when nitrate or nitrite samples indicate an exceedance of the MCL, a confirmation sample is taken within 24 h of receipt of the results. (2)</p> <p>(NOTE: If the system is unable to take a confirmation sample within 24 h, it must notify consumers of the exceedance.)</p>
<p><b>W.20.</b> Monitoring for Endrin is required to be done according to specific schedules (40 CFR 141.24(a) and 141.24(d)).</p>	<p>Verify that community water systems using surface water sources have completed endrin analyses by 30 July 1993. (2)</p> <p>(NOTE: For community water systems, samples will be taken during the time of the year designated by the state as most likely for pesticide contamination and the analyses repeated at intervals specified by the state but no less frequently than every 3 yr.)</p> <p>Verify that when the MCL is exceeded the state is notified within 7 days and three additional analyses are initiated within 1 mo. (2)</p> <p>Verify that when an average of four analyses exceeds the MCL level the installation must report to the state and give notice to the public and continue to monitor at a frequency designated by the state. (2)</p> <p>(NOTE: Instead of the initial analyses, data for surface water acquired within 1 yr prior to 30 July 1992 and data for groundwater acquired within 3 yr of 30 July 1992 may be substitute at the discretion of the state.)</p>
<p><b>W.21.</b> Beginning with the initial compliance period, monitoring of the contaminants listed in Chart 2 of Table 10-1 at community and NTNCWS is required to be done according to specific parameters (40 CFR 141.24(f)).</p>	<p>Verify that groundwater systems take a minimum of one sample at every entry point of the distribution system which is representative of each well after treatment. (2)</p> <p>Verify that surface water systems (or combined surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment. (2)</p> <p>(NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.)</p> <p>Verify that if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions. (2)</p> <p>Verify that each community and nontransient noncommunity water system takes 4 consecutive quarterly samples for each contaminant, except vinyl chlorides. (2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.25.</b> Community water systems, except as defined as exempted water systems, are required to monitor for total coliforms at a frequency based on the population served by the system (40 CFR 141.21(a)(2)).</p>	<p>Verify that the installations community water systems is sampling according to the schedule in Table 10-6. (2)</p>
<p><b>W.26.</b> Noncommunity water systems, except as defined under exempted water systems, are required to monitor for total coliforms according to a specific schedule (40 CFR 141.21(a)(3)).</p>	<p>Verify that noncommunity water systems using only groundwater (except groundwater under the direct influence of surface water) and serving 1000 persons or less monitors each calendar quarter the system provides water to the public. (2)</p> <p>Verify that the following noncommunity water systems are monitoring for total coliforms according to the schedule outlined in Table 10-6: (2)</p> <ul style="list-style-type: none"> <li>- systems using only groundwater (except groundwater under the direct influence of surface water) and serving more than 1000 persons during any month</li> <li>- systems using surface water, in total or in part</li> <li>- systems using groundwater under the direct influence of surface water.</li> </ul>
<p><b>W.27.</b> Total coliform samples are required to be collected at regular time intervals throughout the month except at system which use only groundwater and serves 4900 person or fewer (40 CFR 141.21(a)(4)).</p>	<p>Verify that total coliform samples are collected at regular intervals. (2)</p> <p>(NOTE: Systems which use groundwater (except groundwater under the influence of surface water) and serves 4900 persons or fewer may collect all required samples on a single day if they are being taken from different sites.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.28.</b> Public water systems that use surface water or groundwater under the direct influence of surface water that do not practice filtration are required to collect at least one total coliform sample near the first service connection each day the turbidity level of the source water exceeds 1 NTU (40 CFR 141.21(a)(5)).</p> <p><b>W.29.</b> When a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within 24 h of being notified of the positive result (40 CFR 141.21(b)(1) through 141.21(b)(4) and 141.21(e)(1)).</p>	<p>Verify that when the turbidity exceeded 1 NTU, total coliform samples were taken within 24 h of the first exceedance by reviewing the records on turbidity. (2)</p> <p>Verify that if more than one routine sample per month is collected, at least three repeat samples are taken for each total coliform-positive sample found. (2)</p> <p>Verify that if one or less routine sample per month is collected that no less than four repeat samples are collected for each total coliform-positive sample found. (2)</p> <p>Verify that at least one of the repeat samples is collected from the sampling tap where the original total coliform positive sample was taken. (2)</p> <p>Verify that at least one repeat sample was taken at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. (2)</p> <p>Verify that all repeat samples are collected on the same day. (2)</p> <p>Verify that if one or more of the repeat samples is total coliform-positive, an additional set of repeat samples is collected within 24 h of notification of the positive result. (2)</p> <p>Verify that the sampling process is repeated until either total coliforms are not detected in one complete set of repeat samples or the system determines that the MCL for total coliforms is exceeded and the state is notified. (2)</p> <p>Verify that if a repeat sample is total coliform-positive it is also analyzed for fecal coliforms. (2)</p> <p>(NOTE: The system may test for <i>Escherichia coli</i> instead of fecal coliforms.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.30.</b> When the installations fluoridates its water supply it is required to sample daily and maintain specific records (AFR 161-44, para 6-5).</p>	<p>Verify that sampling is conducted daily. (2)</p> <p>Verify that plant operators complete either AF Form 1460 or AF Form 1461 to record the quantity of fluoride added and the results of the daily tests. (2)</p>
<p><b>W.31.</b> Sampling for turbidity is required to be done at public water systems which must install filtration according to a specific schedule until the time at which the system installs filtration (40 CFR 141.22).</p>	<p>Verify that suppliers of water for both community and noncommunity water systems sample for turbidity at a representative entry point to the water distribution system at least once daily. (2)</p> <p>Verify that when the turbidity levels are exceeded immediate resampling is done. (2)</p> <p>Verify that the state is notified within 48 h. (2)</p> <p>(NOTE: These systems must monitor for turbidity according to 40 CFR 141.73 and 141.74, see checklist items W.39, W.41, and W.45.)</p>
<p><b>W.32.</b> When a resample indicates excess turbidity, the water plant personnel must notify the BCE, the BEE, Director of Base Medical Services. (AFR 161.44, para 6-3).</p>	<p>Verify that if the resample shows excess turbidity, the BCE, the director of base medical services, and the bioenvironmental engineer are notified. (2)</p>
<p><b>W.33.</b> Installations are required to monitor for radioactivity in community water systems (40 CFR 144.26).</p>	<p>Verify that compliance for standards of gross alpha particle activity, radium-226 and radium 228 is based on an annual composite of four consecutive samples that are obtained at quarterly intervals or the average of the analysis of 4 samples obtained at quarterly intervals. (2)</p> <p>(NOTE: A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analysis if the measured gross alpha particle activity does not exceed 5 pCi/L at a confidence level of 95 percent.)</p> <p>Verify that when the gross alpha particle activity exceeds 5 pCi/L the same or an equivalent sample is analyzed for radium-226 and if the concentration of radium-226 exceeds 3 pCi/L, the same or equivalent sample is analyzed for radium-228. (2)</p> <p>Verify that suppliers of water monitor for gross alpha particle activity, radium-226 and radium-228 every 4 yr and within 1 yr of the introduction of a new water source for a community water system. (2)</p> <p>(NOTE: The state has the power to order additional samples, waive required samples and impose additional requirements.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.36. (continued)</b></p> <p><b>W.37.</b> Analysis for inorganic contaminants, volatile organic contaminants, pesticides and bacteria to determine compliance with MCL must be performed in a state-approved laboratory or by a state-approved individual (40 CFR 141.23(k)(5), 141.24(p)(7), 141.28).</p> <p><b>Section E--Disinfection and Filtration</b></p> <p><b>W.38.</b> Installations that have a public water system that uses surface water sources or groundwater sources under direct influence of a surface water source must provide filtration as a treatment technique for microbiological contaminants unless certain criteria are met (40 CFR 141.71(a) and 141.71(b)).</p>	<p>(NOTE: The state might require monitoring for additional parameters which may indicate corrosivity, such as sulfates and chlorides.)</p> <p>Determine if laboratories used for analysis are state certified for laboratory analysis. (2)</p> <p>(NOTE: Public water systems that use a groundwater source under the direct influence of surface water are not required to meet these conditions to avoid filtration until 18 mo after the state has determined that the facility is under the direct influence of surface water unless the state has determined that filtration is required.)</p> <p>Verify that filtration of drinking water is performed unless all of the following conditions for source water are met: (1)</p> <ul style="list-style-type: none"> <li>- the fecal coliform concentration is less than or equal to 20/100 mL or total coliform concentration is equal to or less than 100/100 mL in representative samples of the source water immediately prior to the first or only point of disinfectant application in at least 90 percent of the measurement made in the last 6 mo that the system served water to the public on an ongoing basis</li> <li>- the turbidity level does not exceed 5 NTU in representative samples of the source water immediately prior to the first or only point of disinfectant application unless state determines otherwise and there has not been more than two events in the past 12 mo the system served water to the public or more than five events in the past 120 mo the system served water to the public.</li> </ul>

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<p><b>W.39. (continued)</b></p>	<p>Verify that if other filtration technologies are used, they have been approved by the state. (1)</p> <p>Verify that starting 29 June 1993, or whenever filtration is installed, turbidity measurements are performed on representative samples of the systems filtered water every 4 h that the system serves water to the public. (1)</p> <p>Verify that as of 29 June 1993, or whenever filtration is installed, the residual disinfectant concentration of water entering the distribution system is monitored continuously and the lowest value recorded each day. (1)</p> <p>Verify that if there is a failure in the continuous monitoring equipment, grab sampling is done every 4 h. (1)</p> <p>(NOTE: Grab sampling can be done for no more than 5 working days following the failure of the continuous monitoring system.)</p> <p>(NOTE: Systems serving 3, 300 or fewer person can use grab sampling instead of continuous monitoring if the following daily frequencies are met:</p> <table border="0"> <thead> <tr> <th>System size by population</th> <th>Samples/day</th> </tr> </thead> <tbody> <tr> <td>≤ 500</td> <td>1</td> </tr> <tr> <td>501 to 1000</td> <td>2</td> </tr> <tr> <td>1001 to 2500</td> <td>3</td> </tr> <tr> <td>2501 to 3300</td> <td>4.)</td> </tr> </tbody> </table> <p>Verify that any time the residual disinfectant concentration falls below 0.2 mg/L in a system using grab sampling, the system takes a grab sample every 4 h until the residual disinfectant concentration is equal to or greater then 0.2 mg/L. (1)</p> <p>Verify that the residual disinfectant concentration is measured at least at the same points in the distribution system and at the same time as total coliforms are sampled. (1)</p>	System size by population	Samples/day	≤ 500	1	501 to 1000	2	1001 to 2500	3	2501 to 3300	4.)
System size by population	Samples/day										
≤ 500	1										
501 to 1000	2										
1001 to 2500	3										
2501 to 3300	4.)										

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.40.</b> Installations with public water systems that use a surface water source or a groundwater source under direct influence of a surface water source that is not required to provide filtration are required to provide disinfection treatment by 30 December 1991 (40 CFR 141.72(a)).</p>	<p>Verify that the following requirements for disinfection are met: (2)</p> <ul style="list-style-type: none"> <li>- it ensures 99.9 percent (3-log) inactivation of <i>Giardia lamblia</i> cysts every day except for once per month by meeting the required CT applicable to the systems particular water quality parameters as outlined in 40 CFR 141.74</li> <li>- it ensures 99.99 percent (4-log) inactivation of virus every day except for once per month by meeting the required CT applicable to the systems particular water quality parameters as outlined in 40 CFR 141.74</li> <li>- the CT values are calculated daily as specified in 40 CFR 141.74(b)(3)</li> <li>- throughout the disinfection system there is either:               <ul style="list-style-type: none"> <li>- automatic startup and alarm for insuring continuous disinfection application while water is delivered through distribution system</li> <li>- automatic shut-off when there is less than 0.2 mg/L residual disinfectant</li> <li>- the residual disinfectant concentration in water entering distribution system is not less than 0.2 mg/L for more than 4 h</li> <li>- the residual disinfectant concentration, measured as total chlorine, combined chlorine, or chlorine dioxide is not undetectable in more than 5 percent of samples each month for more than 2 consecutive months.</li> </ul> </li> </ul> <p>(NOTE: Water in a distribution system with a heterotrophic bacteria concentration less than or equal to 500 mL, measured as Heterotrophic Plate Count (HPC) is deemed to have a detectable disinfectant residual.)</p>
<p><b>W.41.</b> Installations with public water systems that use a surface water source or a groundwater source under direct influence of a surface water source that provides filtration or that are required by the state to install filtration must meet specific disinfection requirements by 22 June 1993 or within 18 mo of being required to install filtration (40 CFR 141.72(b) and 141.73).</p>	<p>Determine if the installation provides filtration for drinking water. If so, verify that by 29 June 1993 the following requirements for disinfection are provided: (2)</p> <ul style="list-style-type: none"> <li>- it ensures 99.9 percent (3-log) inactivation of <i>Giardia lamblia</i> cysts</li> <li>- it ensures 99.99 percent (4-log) inactivation of viruses</li> <li>- the residual disinfectant concentration in water entering distribution system is not less than 0.2 mg/L for more than 4 h</li> <li>- the residual disinfectant concentration throughout the distribution system is not undetectable in more than 5 percent of samples each month for any 2 mo the system serves water to the public</li> <li>- analytical methods as specified in 40 CFR 141.74 are used to demonstrate compliance with the requirements for filtration and disinfection.</li> </ul> <p>(NOTE: Systems which filter are given an inactivation credit dependent on the type of filtration used.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.42.</b> Installations with public water systems that use a surface water source and do not provide filtration are required to report specific information monthly to the state beginning 31 December 1990, (unless the state has determined that filtration is not required) until filtration is in place (40 CFR 141.75(a)).</p>	<p>Verify that the following listed information is reported to the state at the indicated times: (1)(2)</p> <ul style="list-style-type: none"> <li>- source water quality information within 10 days after the end of each month the system serves water to the public</li> <li>- disinfection information within 10 days after the end of each month the system serves water to the public</li> <li>- a report summarizing compliance with all watershed control programs no later than 10 days after the end of each Federal fiscal year</li> <li>- a report on the onsite inspection conducted during that year, unless it was conducted by the state, no later than 10 days after the end of the Federal fiscal year</li> <li>- the occurrence of a waterborne disease outbreak potentially attributable to that water system as soon as possible, but no later than by the end of the next business day</li> <li>- when turbidity exceeds 5 NTU, as soon as possible but no later than the end of the next business day</li> <li>- any time the residual falls below 0.2 mg/L in the water entering the distribution system as soon as possible, but no later than by the end of the next business day.</li> </ul> <p>(NOTE: See the complete text of 141.75(a) for more details on how this information is to be reported.)</p>
<p><b>W.43.</b> Installations with public water systems that use a groundwater source under the direct influence of surface water and does not provide filtration treatment must report specific information to the state monthly starting 31 December 1990, or 6 mo after the state determines that the groundwater source is under the direct influence of surface water, whichever is later (40 CFR 141.75(a)).</p>	<p>Verify that the following listed information is reported to the state at the indicated times: (1)(2)</p> <ul style="list-style-type: none"> <li>- source water quality information within 10 days after the end of each month the system serves water to the public</li> <li>- disinfection information within 10 days after the end of each month the system serves water to the public</li> <li>- a report summarizing compliance with all watershed control programs no later than 10 days after the end of each Federal fiscal year</li> <li>- a report on the onsite inspection conducted during that year, unless it was conducted by the state, no later than 10 days after the end of the Federal fiscal year</li> <li>- the occurrence of a waterborne disease outbreak potentially attributable to that water system as soon as possible, but no later than by the end of the next business day</li> <li>- when turbidity exceeds 5 NTU, as soon as possible but no later than the end of the next business day</li> <li>- any time the residual falls below 0.2 mg/L in the water entering the distribution system as soon as possible, but no later than by the end of the next business day.</li> </ul> <p>(NOTE: See the complete text of 141.75(a) for more detail on how this information is to be reported.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.44.</b> Installations with public water systems that use a surface water source or a groundwater source under the direct influence of surface water that provide filtration must report specific information monthly to the state starting 29 June 1993, or when filtration is installed, whichever is later (40 CFR 141.75(b)).</p>	<p>Verify that by 29 June 1993, or whenever filtration is installed, the following information is provided to the state in the indicted time frame: (1)(2)</p> <ul style="list-style-type: none"> <li>- turbidity measurements within 10 days after the end of each month the system serves water to the public</li> <li>- disinfection information within 10 days after the end of each month the system serves water to the public</li> <li>- notice of an occurrence of a waterborne disease outbreak, as soon as possible but no later than by the end of the next business day</li> <li>- when the turbidity exceeds 5 NTU, as soon as possible, but no later than the end of the next business day</li> <li>- any time the residual falls below 0.2 mg/L in the water entering the distribution system, as soon as possible, but no later than by the end of business the next day.</li> </ul> <p>(NOTE: See the complete text of 40 CFR 141.75(b) for more details on how this information is to be reported.)</p>
<p><b>W.45.</b> USEPA has set certain standards for analytic procedures that must be used and followed to demonstrate compliance with disinfection and filtration requirements (40 CFR 141.74).</p>	<p>Confirm that analytic methods as specified in 40 CFR 141.74 are used to demonstrate compliance with the requirements for filtration and disinfection. (1)(2)</p>
<p><b>Notification and Reporting Requirements</b></p>	
<p><b>W.46.</b> Water treatment facilities are required to prepare a monthly report compiled from daily operation data reports using AF Form 1461 and AF Form 1460 and a yearly operating report (AFR 91-26, para 1-10).</p>	<p>Determine compliance issues by reviewing monthly and yearly reports. (2)</p>

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<p><b>W.47.</b> Results of bacteriological lab analysis are to be reported on DD Form 686 or equivalent log book or state form and a duplicate copy furnished to the BCE (AFR 161-44, para 6-2c and 7-3a).</p> <p><b>W.48.</b> Public water systems are required to maintain on the premises, or at a convenient location specific records (40 CFR 141.33(a), 141.33(b) and 141.33(d)).</p> <p><b>W.49.</b> When Primary Drinking Water Standards are exceeded, public notifications must be made (40 CFR 141.32).</p>	<p>Verify that duplicate copies are maintained by BCE and review a representative sample of DD Form 686 or other reporting forms. (1)</p> <p>Verify that BEE keeps records of bacteriological analysis for at least the last 5 yr. (2)</p> <p>Verify that records of bacteriological analyses are kept for a minimum of 5 yr. (2)</p> <p>Verify that records of chemical analyses are kept for a minimum of 10 yr. (2)</p> <p>Verify that records of actions taken to correct violations of primary drinking water regulations are kept for a minimum of 3 yr after the last action taken for a particular violation. (1)</p> <p>Verify that records concerning a variance or exemption granted to the system are kept for a period ending not less than 5 yr following the expiration of the variance or exemption. (1)</p> <p>Determine if the following public notification procedures were followed by interviewing the BEE staff: (2)</p> <ul style="list-style-type: none"> <li>- notices were placed in a daily newspaper of general circulation in the area served by the system as soon as possible, but no later than 14 days after the violation or failure</li> <li>- notices were placed in a weekly newspaper of general circulation if there is no daily newspaper</li> <li>- notices were issued by mail delivery, by direct mail or with the water bill, or by hand delivery within 45 days after the violation or failure.</li> </ul> <p>(NOTE: The state may waive mail or hand delivery if it is determined that the violation or failure is corrected within the 45 day period.)</p> <p>Verify that if there is an acute violation, the public radio and TV were notified. (1)</p> <p>Verify that if public notification was made it was worded according to USEPA guidelines. (2)</p> <p>(NOTE: The Base Office of Information should also be contacted to verify that these procedures were carried out.)</p> <p>Verify that following the initial notice, additional notice is given at least once every 3 mo by mail delivery, or by hand delivery, for as long as the violation exists. (2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.49. (continued)</b></p> <p><b>W.50.</b> When Primary Drinking Water Standards are exceeded, the notifications in Table 10-7 must be made (AFR 161-44, para 7-2).</p> <p><b>W.51.</b> Community water systems that exceed the secondary MCL of 2.0 mg/L for fluoride but not the MCL of 4.0 mg/L are required to notify specific individuals (40 CFR 143.5)</p> <p><b>W.52.</b> Installations that operate public water systems must send monthly reports to the state, including results of bacteriological and turbidity monitoring (AFR 161-44, para 7-1(a)).</p> <p><b>W.53.</b> Installations that operate public water systems must send reports to the state on any failure to comply with applicable biological, turbidity, radioactivity and chemical standards, and on any failure to comply with monitoring requirements that apply (40 CFR 141.31).</p>	<p>(NOTE: Instead of the requirements outlined here, community water systems in an area that is not served by a daily or weekly newspaper of general circulation must give notice by hand delivery or by continuous posting in conspicuous places within the area served by the system. Notice must be given within 72 h for acute violations and 14 days for other violations.)</p> <p>Verify that the notifications outlined in Table 10-7 were done. (2)</p> <p>Verify that notice has been provided to the following: (2)</p> <ul style="list-style-type: none"> <li>- all billing units annually</li> <li>- all new billing units at the time service begins</li> <li>- the state public health officer.</li> </ul> <p>(NOTE: A copy of the text of the notice is found in 40 CFR 243.5(b).)</p> <p>Verify that monthly reports have been sent by examining the file of monthly reports to the state. (2)</p> <p>Verify that reports have been sent by examining the file of reports to the state. (1)</p> <p>Verify that, in general, reports are sent within the first 10 days following the month in which the result is received or the first 10 days following the end of the required monitoring period whenever standards are not met. (2)</p> <p>Verify that the installation reported failure to comply with any National Primary Drinking Water standards to the state within 48 h. (1)</p> <p>Determine if information copies are sent to the MAJCOM Surgeon and Director of Engineering and Services and AFMSC/SGP. (2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Lead and Copper in Drinking Water Systems</b></p> <p><b>W.54.</b> The use of pipe, solder, or flux that contains lead is not allowed in specific situations (40 CFR 141.43(a)(1) and 141.43(d)).</p> <p><b>W.55.</b> Community waters systems and each NTNCWS were required to issue a notice by 19 June 1988 to persons served by the system that might be affected by lead contamination (40 CFR 141.34 and 141.43(a)(2)).</p> <p><b>W.56.</b> Installations with community or NTNCWS must notify their users about lead in drinking water systems (40 CFR 141.80(g), 141.85 and 141.91(f)).</p>	<p>Verify that lead pipe, solder, or flux is not used in the installation or repair of either of the following: (1)</p> <ul style="list-style-type: none"> <li>- any public water system</li> <li>- any plumbing in a residential facility providing water for human consumption which is connected to a public water system.</li> </ul> <p>(NOTE: This does not apply to leaded joints necessary for the repair of cast iron pipes.)</p> <p>(NOTE: Lead-free is defined as not more than 0.2 percent content for solders and flux and not more than 8.0 percent lead in reference to pipes and pipe fittings.)</p> <p>Verify that the notice was issued by one of the following methods: (1)</p> <ul style="list-style-type: none"> <li>- 3 newspaper notices</li> <li>- a notice included with the water bill</li> <li>- a hand delivered notice.</li> </ul> <p>(NOTE: For NTNCWS notice may be given by continuous posting.)</p> <p>(NOTE: The notice is not required if the system can demonstrate to the state that the water system, including the nonresidential and residential portion connected to the water system, are lead free.)</p> <p>(NOTE: Notice must be provided even if there is no violation of the national primary drinking water standards. The required wording of the notice is outlined in 40 CFR 141.34.)</p> <p>Verify that public education materials are distributed in the following manner when a water system exceeds the lead action level based on tap water samples: (1)(2)</p> <ul style="list-style-type: none"> <li>- the material is in the appropriate languages where languages other than English are spoken by a significant proportion of the population</li> <li>- within 60 days after exceeding the lead action level:</li> <li>- notices are insert in each customer's water utility bill</li> <li>- information is provided to the editorial departments of the major daily and weekly newspapers circulated in the community</li> <li>- pamphlets or brochures are delivered to pertinent facilities, organizations, schools and medical centers</li> <li>- public service announcements are submitted to at least 5 of the radio and television stations broadcasting to the community.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.57.</b> Community water systems and NTNCWS are required to meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded (40 CFR 141.80(a)(1), 141.80(c), 141.80(e), 141.86(b), and 141.90(e)).</p> <p><b>W.58.</b> All water systems are required to install and operate optimal corrosion control (40 CFR 141.80(d)).</p>	<p>Verify that the notification tasks are repeated every 6 mo for as long as a community water system exceeds the lead action level. (1)(2)</p> <p>Verify that a NTNCWS delivers the public education materials by posting informational posters and distributing brochures. (1)</p> <p>Verify that a NTNCWS repeats distribution of information at least once each calendar year in which the system exceeds the lead action level. (1)(2)</p> <p>(NOTE: The text of written materials and broadcast materials can be found in 40 CFR 141.85(a) and 141.85(b).)</p> <p>Verify that by 31 December any water system that has had to issue public education materials submits a letter to the state indicating that the system has delivered the public education materials as required each year that the levels are exceeded. (2)</p> <p>Verify that the concentration of lead does not exceed 0.015 mg/L in more than 10 percent of tap water samples collected during any monitoring period. (2)</p> <p>Verify that the concentration of copper does not exceed 1.3 mg/L in more than 10 percent of tap water samples collected during any monitoring period. (2)</p> <p>Verify that the water system has corrosion control that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any of the national primary drinking water standards. (1)</p> <p>(NOTE: Please see 40 CFR 181 and 40 CFR 183 for design details for corrosion control systems in relationship to the size of the water system.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.59.</b> Systems that exceed the lead or copper action level are required to implement applicable source water treatment standards (141.80(e) and 141.83).</p> <p><b>W.60.</b> Installations with water systems exceeding the lead action level after implementation of corrosion control and source water treatment requirements are required to replace lead service lines (40 CFR 141.80(f) and 141.84).</p> <p><b>W.61.</b> Monitoring for lead and copper is required to start on a specified date and be done at a specified number of sites according to the chart in Table 10-8 (40 CFR 141.80(g), 141.86(a)(1), 141.86(c), and 141.86(d)).</p>	<p>Verify that systems exceeding the lead or copper action level do lead and copper source water monitoring and make a treatment recommendation to the state within 6 mo after exceeding the lead or copper action rate. (1)</p> <p>Verify that if the state requires the installation of source water treatment, the installation is done within 24 mo after the states initial response. (1)</p> <p>Verify that follow-up tap water monitoring and source water monitoring is completed within 36 mo after the states initial response. (1)</p> <p>Verify that lead service line replacement is done according to the schedules and parameters outlined in 40 CFR 141.84. (1)(2)</p> <p>(NOTE: A system is not required to replace an individual lead service line if the lead concentration in all service line samples from that line is less than 0.015 mg/L.)</p> <p>(NOTE: Replacement of lead service lines can stop when the first draw samples that are collected meet the lead action levels during two consecutive monitoring periods and the system submits the results to the state.)</p> <p>Verify that sample sites have been selected and sampling started as of the dates indicated in Table 10-8. (1)(2)</p> <p>Verify that the procedures for sampling and granting of variances found in 141.86 are followed. (1)(2)</p> <p>Verify that for the initial tap sample, all large water systems monitor during two consecutive 6-mo periods and all small and medium-size water systems monitor during each 6-mo period until: (1)(2)</p> <ul style="list-style-type: none"> <li>- the system exceeds the lead or copper action levels and is then required to implement corrosion control treatment</li> <li>- the system meets the lead and copper action levels during two consecutive 6-mo monitoring periods.</li> </ul> <p>(NOTE: A small or medium-sized water system that meets the lead and copper action levels during each of two consecutive 6-mo monitoring periods can reduce the frequency of sampling to once a year. If action levels are met during three consecutive years of monitoring, the frequency may be reduced to once every 3 yr.)</p> <p>Verify that for monitoring after the installation of corrosion control and source water treatment, large systems with optimal corrosion control by 1 January 1997 monitor during two consecutive 6-mo periods. (1)(2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.64.</b> In reference to lead and copper in water systems, all water systems are required to fulfill specific reporting requirements (40 CFR 141.90(a) and 141.90(b)).</p> <p><b>W.65.</b> All systems subject to the lead and copper requirements are required to retain on site all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (40 CFR 141.80(j) and 141.91).</p>	<p>Verify that waste systems report sampling results for all tap water samples within the first 10 days following the end of each monitoring period. (2)</p> <p>Verify that water systems report the sampling results for all source water samples within the first 10 days following the end of each source water monitoring period. (1)(2)</p> <p>Verify that records are kept onsite for 12 yr. (1)(2)</p>
<p><b>WATER TO AIRCRAFT</b></p> <p><b>W.66.</b> Aircraft watering points should be sampled at least monthly for coliform. Water trucks or tanks that service aircraft should be sampled at least quarterly (AFR 161-44, Attachment 8).</p>	<p>(NOTE: Inspect the service connection on the distribution system that provides water to aircraft.)</p> <p>Determine if monthly bacteriological surveillance is being done. (2)</p> <p>Verify that each water tank or truck is sampled quarterly from discharge points and that a water sample from the discharge point of one tank or truck is obtained and analyzed at least once a month by examining documentation. (2)</p>
<p><b>SOI SOURCE AQUIFERS</b></p> <p><b>W.67.</b> Projects that may affect the recharge zone or stream flow source zone of a designated sole source aquifer are regulated (40 CFR 149.103 and 149.104).</p>	<p>(NOTE: Currently the only Federally designated sole source aquifer is the Edwards Aquifer in the San Antonio Texas area.)</p> <p>Determine if the facility is located near a designated sole source aquifer. (1)</p> <p>Verify that the installation maintains a list of projects for which environmental impact statements will be prepared. (1)</p>

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<p><b>WASTEWATER</b></p> <p><b>General</b></p> <p><b>W.68.</b> The installation is required to conduct a water quality compliance program assessment (AFI 32-7041, para 3.2 through 3.4).</p> <p><b>W.69.</b> Collected fuel, oil, grease, oily waste, solvents, cleaning compounds, or corrosion control facility wastes or other contaminants cannot be discharged to oil/water separators (AFI 32-704, para 2.3.5.2).</p> <p><b>W.69. (continued)</b></p>	<p>Verify that if any projects may potentially cause direct or indirect contamination through its recharge zone a petition has been submitted to the USEPA Regional Administrator. (1)</p> <p>Verify that permits are reviewed semiannually to ensure that the installation is meeting the compliance requirements set by the permits. (1)</p> <p>Verify the data generated from monitoring activities is reviewed monthly. (1)</p> <p>Verify that discharge monitoring reports are reviewed monthly to ensure correct pre-treatment and timely submittal of reports. (1)</p> <p>Verify that collected fuel, oil, grease, oil waste, solvents, cleaning compounds, or corrosion control facility waste is not being discharged to an oil/water separator by identifying which oil/water separators are located in areas that these types of wastes are generated, such as: (1)</p> <ul style="list-style-type: none"> <li>- corrosion control</li> <li>- the paint shops</li> <li>- motor pools</li> <li>- aircraft maintenance</li> <li>- print shops.</li> </ul> <p>(NOTE: If the oil/water separator is hooked into the wastewater treatment works and the discharge of inappropriate substances is sufficient to create a problem at the treatment works, write up the finding under a Federal regulation as found in the section titled Discharges to POTW/FOTWs.)</p> <p>(NOTE: Adequately sized oil/water separators may be used to remove incidental releases of residual fuel, oil, grease and other contaminants when dry cleanup methods are not feasible.)</p>

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<p><b>NPDES Permits</b></p> <p><b>W.70.</b> Installations with point source discharges or treatment works treating domestic sewage are required to have a Federal NPDES permit and meet the parameters of that permit if located in the states without an USEPA approved NPDES permit program (40 CFR 122.1(b)(3)).</p> <p><b>W.71.</b> Installations which are dischargers of stormwater associated with an industrial activity (see definitions) are required to apply for an individual permit, apply for a permit through a group application, or seek coverage under a promulgated stormwater general permit (40 CFR 122.26(c)).</p>	<p>Determine if the installation is located in a state with an USEPA approved NPDES permit program. (1)</p> <p>Verify that the installation has obtained the proper permits for point source discharges or treatment works treating domestic sewage. (1)(2)</p> <p>Verify that the installation is operating according to permit requirements such as: (1)(2)</p> <ul style="list-style-type: none"> <li>- monitoring and sampling</li> <li>- concentrations of discharge constituents</li> <li>- stormwater runoff</li> <li>- recordkeeping</li> <li>- reports.</li> </ul> <p>(NOTE: The Regional Administrator may require the installation to have a permit for:</p> <ul style="list-style-type: none"> <li>- the use or disposal of sewage sludge as necessary to protect public health</li> <li>- combined sewer overflows (CSOs)</li> <li>- discharge of water treatment residuals including sludge and process wastewater from drinking water treatment plants and filter backwash from swimming pools</li> <li>- oil/water separators.)</li> </ul> <p>Determine if the installation is discharging stormwater associated with an industrial activity. (1)</p> <p>Verify that an application has been submitted for a permit. (1)</p>

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<p><b>W.72.</b> Analytical testing required by the NPDES is required to be done in accordance with USEPA approved analytical procedures (40 CFR 136.3).</p>	<p>Verify that the test procedures outlined in 40 CFR 136.3 are used and check for the following: (1)(2)</p> <ul style="list-style-type: none"> <li>- use USEPA approved analytical testing lab</li> <li>- if alternate analytical procedures are used, proper approval obtained from state/USEPA</li> <li>- parameters other than those required by the permit are analyzed</li> <li>- satisfactory calibration and maintenance of instruments and equipment</li> <li>- quality control procedures used</li> <li>- duplicate samples are analyzed</li> <li>- spiked samples are used</li> <li>- commercial laboratory is state certified within states with formal certification programs.</li> </ul>
<p><b>W.73.</b> Each permitted discharge point should be free of contaminants or pollutants (MP).</p>	<p>Observe each permitted effluent discharge point on facility. Note appearance, odors or other observed characteristics (oil sheen, visible foam, visible floating solids, color). (1)(2)</p> <p>(NOTE: Evaluators should also observe some discharge points which are not permitted, if any, to determine if any problems exist.)</p>
<p><b>W.74.</b> Installations with NPDES permits are required to meet specific reporting requirements (40 CFR 122.41(l)).</p>	<p>Verify that the installation gives notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility when: (1)</p> <ul style="list-style-type: none"> <li>- the alteration or addition might meet one of the criteria for determining if the facility is a new source (see definitions)</li> <li>- the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged (this applies to pollutants which are not subject to requirements on the permit or other notifications)</li> <li>- the alteration or addition results in a significant change in the installations sludge use or disposal practices.</li> </ul> <p>Verify that the installation notifies the Director of any planned changes at the permitted facility or activity which may result in noncompliance with permit requirements. (1)</p> <p>Verify that monitoring is reported as required on the permit. (1)</p> <p>Determine if the installation is monitoring more frequently than required. (1)</p> <p>Verify that if the installation is monitoring more frequently than required by permit these results are also being reported. (1)</p> <p>Verify that reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule on the permit are submitted no later than 14 days following each specified date. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Discharges to POTWs/ FOTWs</b></p> <p><b>W.76.</b> Installations must not discharge into a POTW/FOTW any pollutant which would cause pass through or interference (40 CFR 403.5(a) and 403.5(c)(2)).</p> <p><b>W.77.</b> Wastewaters from operations which produce hazardous waste such as aircraft maintenance operations are required to meet pretreatment standards before being discharged to the wastewater treatment plant or be handled as hazardous waste (AFI 32-7041, para. 2.3.5.3).</p> <p><b>W.78.</b> Installations must not introduce specific pollutants into a POTW/FOTW (40 CFR 403.5(b)).</p>	<p>Determine the following: (1)(2)(3)</p> <ul style="list-style-type: none"> <li>- what point source discharges are at the installation</li> <li>- what drains in the installation lead to the treatment works</li> <li>- what do personnel pour down the drains leading to the treatment works</li> <li>- what types of materials are located in areas where spills may reach the drains to the treatment works.</li> </ul> <p>Verify that the facilities are not discharging to a POTW/FOTW pollutants which would cause a pass through or interference (see definitions). (3)</p> <p>Determine if there are any of the following and verify that they are being met: (3)</p> <ul style="list-style-type: none"> <li>- pretreatment standards or reporting requirements imposed upon the facilities by the offsite POTW and verify that they are being met</li> <li>- industrial discharge agreements</li> <li>- local ordinances.</li> </ul> <p>Determine if wastewaters from hazardous waste producing activities such as aircraft maintenance are discharged to the FOTW/POTW. (3)</p> <p>Verify that discharging facilities are performing any pretreatment standard assigned to the facility prior to discharge to the FOTW/POTW. (3)</p> <p>Verify that pollutants which create a fire or explosion hazard in the POTW/FOTW, including but not limited to waste streams with a closed cup flashpoint of less than 140 °F, are not being discharged from the installation to a POTW/FOTW. (1)(3)</p> <p>Verify that pollutants which will cause corrosive structural damage to the POTW/FOTW are not being discharged from the installation to a POTW/FOTW. Examples are discharges from: (1)(3)</p> <ul style="list-style-type: none"> <li>- corrosion control and cleaning shops (oils, grease, and detergent)</li> <li>- paint shops (solvents, stripping compounds, and paint).</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>FOTW Operation</b></p> <p><b>W.80.</b> Personnel engaged or to be employed in the operation and maintenance of water pollution control facilities are required to be trained according to AFR 50-9 and Chapter 400, AFM 40-1 (AFR 91-9, para 8, AFR 91-10, para 2b and AFR 161-44, para 3-4d).</p> <p><b>W.81.</b> Supervisors at Air Force treatment plants are required to provide training in safety and occupational hazards (AFR 91-9, para 9 and AFR 91-10, para 10).</p> <p><b>W.82.</b> Treatment plant operators are required to maintain certain operating logs and records (AFR 91-9, para 10).</p>	<p>Verify that the operating and maintenance staff have been trained by interviewing the staff. (3)</p> <p>Determine if periodic refresher training is conducted by examining training records. (3)</p> <p>Verify that safety and occupational hazards instructions are posted around the plant or readily available to plant personnel. (3)</p> <p>Determine if training is conducted on proper safety practices at the plant. (3)</p> <p>Verify that logs and records are kept by interviewing treatment plant supervisor. (3)</p> <p>Examine AF forms 1462 (Utility Operating Log) and AF Form 1463 (Plant Operating Log for domestic wastewater plants). (3)</p> <p>Determine if these forms are posted daily and are neat and legible. (3)</p> <p>Determine if copies are distributed as follows: (3)</p> <ul style="list-style-type: none"> <li>- original retained by BCE</li> <li>- duplicate to MAJCOM.</li> </ul> <p>Verify that the treatment facilities maintain and keep available the following information: (3)</p> <ul style="list-style-type: none"> <li>- required manuals</li> <li>- system OIs with single-line drawings including operational and compliance monitoring procedures</li> <li>- up-to-date system as-built drawings along with other system plans and blueprints</li> <li>- maintenance records.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.83.</b> Wastewater systems at installations are required to be operated and maintained according to AFM 91-32 and plant specific operations and maintenance manuals that are required for each system (AFR 91-9, para 6).</p> <p><b>W.84.</b> Lift stations are required to be designed and operated to remain operable during power failures and have redundant pumps to provide adequate capacity for handling the flow when one pump is out of service (AFI 32-7041, para 2.3.2).</p>	<p>Verify that the system is being operated and maintained according to the plant specific operations and maintenance manuals. (3)</p> <p>Verify that the following is in place by physically inspecting any treatment system on the installation: (3)</p> <ul style="list-style-type: none"> <li>- adequate provisions to prevent effluent bypass or facility overload</li> <li>- standby power or other equivalent provisions provided</li> <li>- adequate alarm systems for power or equipment failures available</li> <li>- general housekeeping</li> <li>- presence of odors</li> <li>- all treatment units in service</li> <li>- established procedures available for training new operators</li> <li>- files maintained on spare parts inventory, major equipment specifications, and parts and equipment suppliers</li> <li>- there is an adequate supply of chemicals</li> <li>- standby pumping capability</li> <li>- a recurring work program</li> <li>- equipment calibration.</li> </ul> <p>Verify that major lift stations provide stand-by power generations, portable power generators, or the use of two independent power sources at each stations. (3)</p> <p>Verify that smaller lift stations provide a connection for a portable generator. (3)</p> <p>Verify that sound and visual alarms are installed at pump stations to alert maintenance staff when pump failure occur. (3)</p> <p>Verify that there are backup batteries or other emergency power sources to retain alarm data during power failure. (3)</p> <p>Verify that there are redundant pumps to provide adequate pumping capacity for handling the maximum wastewater when one pump is out of service. (3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.85.</b> Installations are required to eliminate Combined Sewer Overflows (CSOs) and unauthorized connections of industrial wastewater and floor drains from industrial shops to domestic wastewater collection systems (AFI 32-7041, para 2.3.3).</p>	<p>Verify that the installation has been eliminating CSOs and unauthorized connections of industrial wastewater and floor drains from industrial shops to domestic wastewater collection systems. (1)</p>
<p><b>Thermal Processing Discharges</b></p> <p><b>W.86.</b> Installations with thermal processing facilities designed to process or which are processing 50 tons or more per day of municipal solid wastes are required to operate in a manner which will protect water quality (40 CFR 240.100(a), and 240.204).</p>	<p>(NOTE: This does not apply to hazardous, agricultural, or mining wastes.)</p> <p>Verify that all waters discharged from the facility are treated to meet the most stringent of applicable water quality standards. (3)</p> <p>Verify that when monitoring instrumentation indicates excessive discharge contamination, appropriate adjustments are made to lower the concentrations to acceptable levels. (3)</p> <p>Verify that in the event of an accidental spill, the local regulatory agency is notified immediately. (1)</p>
<p><b>Fire Training Pit Discharges</b></p> <p><b>W.87.</b> Installations with live fire training facilities that are connected to onsite wastewater treatment plants should discharge the effluent gradually to avoid adverse impact on the wastewater treatment plants (MP).</p>	<p>Determine if there is an effective fuel and water separator. (4)</p> <p>Verify that proper maintenance of the fuel and water separator is being done and look for visible discharge of fuel in the effluent. (4)</p> <p>Determine if there are self-monitoring reports on fuel and water separators. (4)</p> <p>Determine if onsite storage treatment of wastewater is done before discharging to on-base wastewater treatment plant or if it is discharged directly to surface water sources. (4)</p> <p>Determine the status of the wastewater treatment plant discharge permit for compliance with permit requirements. (4)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.87. (continued)</b></p> <p><b>W.88.</b> New live aircraft fire training facilities are required to be operated as zero discharge facilities (AFI 32-7041, para 2.3.5.1).</p> <p><b>W.89.</b> Only uncontaminated fuel may be used in live aircraft fire training exercises (AFI 32-7041, para 2.3.5.1).</p> <p><b>Nonpoint Source Discharges</b></p> <p><b>W.90.</b> Air Force policy is that installations will reduce nonpoint source pollution through increased management and planning (AFI 32-7041, para 2.5).</p>	<p>Determine the type and quality of fuel used for fire training and verify that it is free from contaminant that can cause adverse environmental impact on the environment. (4)</p> <p>Verify that new facilities have provisions for protecting the groundwater, including a groundwater monitoring system and double-lined basins with leak detection systems. (1)</p> <p>Verify that regulatory approval was obtained prior to contract award for construction. (1)</p> <p>Verify that only uncontaminated fuel is used in all live aircraft fire training exercises. (1)</p> <p>Verify that the installation: (1)</p> <ul style="list-style-type: none"> <li>- has up-to-date regulations on nonpoint source discharges</li> <li>- obtains assistance in reviewing management plans from the following agencies: <ul style="list-style-type: none"> <li>- local Soil Conservation Service</li> <li>- state Agricultural Extension Service</li> <li>- state Water Quality Office</li> </ul> </li> <li>- includes stipulations in construction, fish and wildlife management, grazing, and forest harvest contracts to reduce erosion due to runoff</li> <li>- includes Best Management Practices in land use plans for grazing and cropland lease</li> <li>- implements erosion control measures in military training and recreation areas</li> <li>- obtains permits from state agencies when needed.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Effluent Limitations for Electroplating Point Sources</b></p> <p><b>W.91.</b> Installations that have electroplating operations are subject to certain point source effluent limitations (40 CFR 413.01(a) through 413.01(c), and 413.04).</p> <p><b>W.92.</b> Installations that have existing sources that introduce pollutants into a POTW that discharge less than 38,000 L (10,000 gal) per calendar day of pollutants in process wastewaters resulting from the electroplating of common metals are subject to certain pretreatment standards (40 CFR 413.10, 413.14(a), 413.14(b), and 413.14(f)).</p>	<p>Determine if the installation has electroplating operations. (2)(3)</p> <p>(NOTE: See Table 10-10 for similar but exempted operations.)</p> <p>Verify that pretreated pollutants standards are measured by determining the relevant subcategory from the corresponding daily and 4 day average values listed in Chart 1 in Table 10-10. (2)(3)</p> <p>Verify that where electroplating process wastewaters are combined with regulated wastewaters that have 30 days average standards, the corresponding 30 day average standard for electroplating is used. (2)(3)</p> <p>(NOTE: Electroplating of common metals refers to electroplating with copper, nickel, chromium, zinc, tin, lead, cadmium, iron, aluminum, or any combination of these.)</p> <p>Determine if the installation has existing sources that discharge less than 38,000 L (10,000 gal) per calendar day of pollutants in process wastewaters resulting from the electroplating of common metals into POTWs. (2)(3)</p> <p>Verify that the sources wastewater meets the limitations listed in Chart 2 of Table 10-10. (2)(3)</p> <p>Verify that the installation does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (2)(3)</p> <p>Verify that the sources wastewater TTO is limited to 4.57 (mg/L) maximum for any 1 day. (2)(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.93.</b> Installations that have existing sources that introduce pollutants into a POTW that discharges 38,000 L (10,000 gal) or more per calendar day of pollutants in process wastewaters resulting from the electroplating of common metals are subject to certain pretreatment standards (40 CFR 413.10, 413.14(a), 413.14(c) through 413.14(e), and 413.14(g)).</p>	<p>(NOTE: Electroplating of common metals refers to electroplating with copper, nickel, chromium, zinc, tin, lead, cadmium, iron, aluminum, or any combination of these.)</p> <p>Determine if the installation has existing sources that discharge 38,000 L (10,000 gal) or more per calendar day of pollutants in process wastewaters resulting from the electroplating of common metals into POTWs. (2)(3)</p> <p>Verify that the sources wastewater meets the limitations listed in Chart 3 of Table 10-10. (2)(3)</p> <p>(NOTE: Mass-based standards are equivalent to and may be applied in place of those listed in Chart 3 upon prior agreement between the installation and the POTWs receiving the wastes.)</p> <p>Verify that the installation does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (2)(3)</p> <p>Verify that if there is an absence of chelating agents in the pretreatment process, that after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide) the limitation listed in Chart 4 of Table 10-10 are met. (2)</p> <p>Verify that the sources wastewater TTO is limited to 2.13 (mg/L) maximum for any 1 day. (2)(3)</p>
<p><b>W.94.</b> Installations that have existing sources that introduce pollutants into the POTW that discharges less than 38,000 L (10,000 gal) per calendar day of pollutants in process wastewaters resulting from chromating, phosphating or immersion plating on ferrous or non-ferrous materials are subject to certain pretreatment standards (40 CFR 413.50, 413.54(a), 413.54(b), and 413.54(f)).</p>	<p>Determine if the installation has existing sources that discharge less than 38,000 L (10,000 gal) per calendar day of pollutants in process wastewaters resulting chromating, phosphating or immersion plating on ferrous or nonferrous materials into POTWs. (2)(3)</p> <p>Verify that the sources wastewater meets the limitations listed in Chart 2 of Table 10-10. (2)(3)</p> <p>Verify that the installation does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (2)(3)</p> <p>Verify that the sources wastewater TTO is limited to 4.57 (mg/L) maximum. (2)(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.95.</b> Installations that have existing sources that introduce pollutants into a POTW that discharges 38,000 L (10,000 gal) or more per calendar day of pollutants in process wastewaters resulting from chromating, phosphating or immersion plating on ferrous or non-ferrous materials are subject to certain pretreatment standards (40 CFR 413.50, 413.54(a), 413.54(c) through 413.54(e), and 413.54(g)).</p>	<p>Determine if the installation has existing sources that discharge 38,000 L (10,000 gal) or more per calendar day of pollutants in process wastewaters resulting from chromating, phosphating or immersion plating into POTWs. (2)(3)</p> <p>Verify that the sources wastewater meets the limitations listed in Chart 3 of Table 10-10. (2)(3)</p> <p>NOTE: Mass-based standards are equivalent to and may be applied in place of those listed in Chart 3 upon prior agreement between the installation and the POTWs receiving the wastes.)</p> <p>Verify that the installation does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (2)(3)</p> <p>Verify that if there is an absence of chelating agents in the pretreatment process, that after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide) the limitations listed in Chart 4 of Table 10-10 are met. (2)(3)</p> <p>Verify that the sources wastewater TTO is limited to 2.13 (mg/L) maximum for any 1 day. (2)(3)</p>
<p><b>W.96.</b> Installations that have existing sources that introduce pollutants into POTW that discharge less than 38,000 L (10,000 gal) per calendar day of pollutants in process wastewaters resulting from electroless plating are subject to certain pretreatment standards (40 CFR 413.70, 413.74(a), 413.74(b), and 413.74(f)).</p>	<p>(NOTE: Electroless plating refers to electroless plating of a metallic layer on a metallic or nonmetallic substrate.)</p> <p>Determine if the installation has existing sources that discharge less than 38,000 L (10,000 gal) per calendar day of pollutants in process wastewaters resulting from the electroless plating into POTWs. (2)(3)</p> <p>Verify that the sources wastewater meets the limitations listed in Chart 2 of Table 10-10. (2)(3)</p> <p>Verify that the installation does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (2)(3)</p> <p>Verify that the sources wastewater TTO is limited to 4.57 (mg/L) maximum. (2)(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.97.</b> Installations that have existing sources that introduce pollutants into POTW that discharge 38,000 L (10,000 gal) or more per calendar day of pollutants in process wastewaters resulting from electroless plating are subject to certain pretreatment standards (40 CFR 413.70, 413.74(a), 413.74(c) through 413.74(e), and 413.74(g)).</p>	<p>(NOTE: Electroless plating refers to electroless plating of a metallic layer on a metallic or nonmetallic substrate.)</p> <p>Determine if the installation has existing sources that discharge 38,000 L (10,000 gal) or more per calendar day of pollutants in process wastewaters resulting from electroless plating into POTWs. (2)(3)</p> <p>Verify that the sources wastewater meets the limitations listed in Chart 3 of Table 10-10. (2)(3)</p> <p>(NOTE: Mass-based standards are equivalent to and may be applied in place of those listed in Chart 3 upon prior agreement between the installation and the POTWs receiving the wastes.)</p> <p>Verify that the installation does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (2)(3)</p> <p>Verify that if there is an absence of chelating agents in the pretreatment process, that after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide) the limitations listed in Chart 4 of Table 10-10 are met. (2)</p> <p>Verify that the sources wastewater TTO is limited to 2.53 (mg/L) maximum for any 1 day. (2)(3)</p>
<p><b>Effluent Limitations for Metal Finishing Point Sources</b></p>	
<p><b>W.98.</b> Installations that have shops performing electroplating, electroless plating, anodizing, coating (chromating, phosphating; and coloring), chemical etching and milling, and printed circuit board manufacture are subject to certain point source effluent limitations (40 CFR 433.10 through 433.12(c)).</p>	<p>Determine if the installation has shops performing electroplating, electroless plating, anodizing, coating (chromating, phosphating; and coloring), chemical etching and milling, and printed circuit board manufacture. (2)(3)</p> <p>(NOTE: If any of the listed processes are performed, then refer to Table 10-11 for an additional listing of process operations subject to limitations under this regulation.)</p> <p>Verify that self-monitoring of cyanide is conducted after cyanide treatment and before dilution with other streams. (2)(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.99.</b> Installations that have shops performing electroplating, electroless plating, anodizing, coating (chromating, phosphating; and coloring), chemical etching and milling, and printed circuit board manufacture are subject to certain BPT point source effluent limitation (40 CFR 433.13).</p>	<p>Verify that the pollutants discharged from metal finishing point sources meet the limitations listed in Chart 1 of Table 10-11). (2)(3)</p> <p>Verify that oil and grease does not exceed the following: (2)(3)</p> <ul style="list-style-type: none"> <li>- maximum for any one day of 52 mg/L</li> <li>- monthly average of 26 mg/L.</li> </ul> <p>Verify that total suspended solids (TSS) does not exceed the following: (2)(3)</p> <ul style="list-style-type: none"> <li>- maximum for any one day of 60 mg/L</li> <li>- monthly average of 31 mg/L.</li> </ul> <p>Verify that the installation does not augment the use of process wastewater or otherwise dilute the wastewater as a partial or total substitute for adequate treatment to achieve compliance. (2)(3)</p>
<p><b>W.100.</b> Installations that have shops performing electroplating, electroless plating, anodizing, coating (chromating, phosphating; and coloring), chemical etching and milling, and printed circuit board manufacture are subject to certain best available technology (BAT) point source effluent limitation (40 CFR 433.14).</p>	<p>Determine if the installation has shops performing electroplating, electroless plating, anodizing, coating (chromating, phosphating; and coloring), chemical etching and milling, and printed circuit board manufacture. (2)(3)</p> <p>Verify that the pollutants in discharge from metal finishing point sources meet the limitations listed in Chart 1 of Table 10-11. (2)(3)</p> <p>(NOTE: Alternately, if the installation has facilities that perform cyanide treatment, and if permitted by the appropriate authority, the following amenable limits may apply for cyanide: Maximum for any 1 day = 0.86 (mg/L); Maximum monthly average = 0.32 (mg/L).)</p> <p>Verify that the installation does not augment the use of metal finishing process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (2)(3)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.103.</b> Installations that introduce pollutants from new metal finishing point sources into POTWs are subject to certain pretreatment standards (40 CFR 433.17).</p>	<p>Determine if the installation introduces pretreated pollutants from new metal finishing point sources into POTWs. (2)(3)</p> <p>Verify that the pretreated pollutants introduced from new metal finishing point sources into POTWs meet the standards listed in Chart 3 of Table 10-11. (2)(3)</p> <p>(NOTE: Alternately, if the installation has a facility that performs cyanide treatment, and if permitted by the appropriate authority, the following amenable limits may apply: Maximum for any 1 day = 0.86 (mg/L); Maximum monthly average = 0.32 (mg/L).)</p> <p>Verify that the installation does not augment the use of metal finishing process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (2)(3)</p>
<p><b>Photo Labs</b></p> <p><b>W.104.</b> Installations that have point source discharges resulting from the development or printing of paper prints, slides, negatives, enlargements, movie film, and other sensitized materials are subject to certain limitations (40 CFR 459.10 and 459.12).</p>	<p>(NOTE: Facilities processing 150 m<sup>2</sup> (16,000 ft<sup>2</sup>) per day or less are not covered.)</p> <p>Determine if the installation has point source discharges resulting from the development or printing of paper prints, slides, negatives, enlargements, movie film, and other sensitized materials. (2)(3)</p> <p>Verify that the photographic processing point source effluent is limited according to the specifications in Chart 2 of Table 10-12. (2)(3)</p>
<p><b>Effluent Limitations for Hospitals</b></p> <p><b>W.105.</b> Installations that have hospital point source effluents are subject to certain discharge standards (40 CFR 460.10).</p>	<p>Determine if the installation has a hospital point source. (2)(3)</p> <p>Verify that the hospital point source effluent is limited in the quality or quantity of pollutants discharged as described in Chart 1 of Table 10-12. (2)(3)</p> <p>(NOTE: The standards apply to discharge after application of BAT.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>LAND APPLICATION OF SLUDGE</b></p> <p><b>General</b></p> <p><b>W.106.</b> As of 19 February 1994, representative samples of sewage sludge applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator are required to be collected and analyzed (40 CFR 503.8).</p> <p><b>W.107.</b> As of 19 February 1994, depending on when the last time bulk sewage sludge subject to the cumulative loading rates in Table 10-13 was last applied to a site (40 CFR 503).</p>	<p>(NOTE: Checklist items W.106 through W.145 apply only to sludge generated during the treatment of domestic sewage in a treatment works. For exclusions see the definitions of the term Excluded Sludge.)</p> <p>Determine if the facility applies sewage sludge to the land, places it on a surface disposal site, or fires it in a sewage sludge incinerator. (2)(3)</p> <p>Verify that the sludge is analyzed prior to application, placement, or firing for the following: (3)</p> <ul style="list-style-type: none"> <li>- enteric viruses</li> <li>- fecal coliforms</li> <li>- helminth ova</li> <li>- inorganic pollutants</li> <li>- <i>Salmonella</i> bacteria</li> <li>- specific oxygen uptake rate (SOUR)</li> <li>- total, fixed, and volatile solids.</li> </ul> <p>Verify that personnel contacted the permitting authority in the state to determine if bulk sewage sludge which has to meet the standards in Table 10-13 has been applied to the site since 20 July 1993. (1)</p> <p>(NOTE: If sludge subject to these standards has not been applied to the site since 20 July 1993, the cumulative amount for each pollutant in Table 10-13 may be applied.)</p> <p>Verify that if bulk sewage sludge subject to these standards has been applied since 20 July 1993 and the cumulative amount of each pollutant applied to the site is known, the known cumulative amount is used to determine the additional amount of each pollutant that can be applied. (1)</p> <p>(NOTE: If the cumulative amount is not known, there shall be no further application to the site.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.108.</b> As of 19 February 1994, bulk sewage sludge or sewage sludge sold or given away in a bag or other container must meet specific standards (40 CFR 503.10(e), 503.10(f), 503.13(a)(1), 503.13(a)(4), and 503.14(e)).</p>	<p>Verify that if the facility gives or sells bulk sewage sludge or sewage sludge in a bag or other container, it meets the pollutant concentration limits in Table 10-14. (1)</p> <p>Verify that if the facility gives or sells bulk sewage sludge in a bag or other container it meets one of the following: (1)</p> <ul style="list-style-type: none"> <li>- pollutant concentrations do not exceed Table 10-15</li> <li>- the product of the concentration of each pollutant in the sewage sludge and the annual whole sludge application rate for the sewage sludge does not cause the annual pollutant loading rates in Table 10-16 to be exceeded.</li> </ul> <p>Verify that a label is affixed to the bag or container or an information sheet provided to the person who receives the sewage sludge. (1)</p> <p>Verify that the label or information sheet states: (1)</p> <ul style="list-style-type: none"> <li>- the name and address of the person who prepared the sewage sludge</li> <li>- a statement that the application to land is prohibited except in accordance with the instructions on the label or information sheet</li> <li>- the annual whole sludge application rate for the sewage sludge that does not cause any exceedance of the annual pollutant loading rates in Table 10-16.</li> </ul> <p>(NOTE: When sewage sludge or material derived from sewage sludge is sold or given away in a bag or other container and meets the requirements in Table 10-15, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from the labeling requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.110. (continued)</b></p>	<p>(NOTE: When bulk sewage sludge is applied to the land that meets the requirements in Table 10-15, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from the requirements concerning Table 10-13 and the agronomic rate application:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done:               <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [1104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.111.</b> As of 19 February 1994, bulk sewage sludge applied to a lawn or home garden must not contain pollutants in excess of the limits in Table 10-15 (40 CFR 503.13(a)(3)).</p> <p><b>W.112.</b> As of 19 February 1994, the annual application rate for domestic septage applied to agricultural land, forest or a reclamation site must not exceed specific limits (40 CFR 503.12(c) and 503.13(c)).</p>	<p>Verify that if bulk sewage sludge is applied to a lawn or home garden it does not contain pollutants in excess of the limits in Table 10-15. (1)</p> <p>Verify that the annual application rate for domestic septage applied to agricultural lands, forest or a reclamation site do not exceed the annual application rate calculated using the following equation: (1)</p> $AAR = \frac{N}{0.0026}$ <ul style="list-style-type: none"> <li>- AAR = Annual application rate in gallons per acre per 365 day period</li> <li>- N = amount of nitrogen in pounds per acre per 365 day period needed by the crop or vegetation grown on the land.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Vectors and Pathogens</b></p> <p><b>W.113.</b> As of 19 February 1994, bulk sewage sludge applied to agricultural land, forest, a public contact site or a reclamation site is required to meet specific standards for pathogens (40 CFR 503.15(a)(1), 503.32(a), and 503.32(b)).</p>	<p>Verify that the sewage sludge meets the Class A or the Class B pathogen requirements (see Definitions) and the following site restrictions: (1)</p> <ul style="list-style-type: none"> <li>- food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil</li> <li>- food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge</li> <li>- animals are not allowed to graze for 30 days after application</li> <li>- turf grown on land where sewage sludge is applied is not harvested for 1 yr after application of sewage sludge when the turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the permitting authority</li> <li>- public access to land with a high potential for public exposure is restricted for 1 yr after application</li> <li>- public access to land with a low potential for public exposure is restricted for 30 days after application.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.114.</b> As of 19 February 1994, bulk sewage sludge applied to agricultural land, forest, a public contact site or a reclamation site is required to meet specific standards for vector attraction reduction (40 CFR 503.15(c)(1) and 503.33(b)(1) through 503.33(b)(10)).</p>	<p>Verify that one of the following vector reduction requirements are met: the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: (1)</p> <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved</li> <li>- 2 the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials</li> <li>- sewage sludge is injected below the surface of the land:             <ul style="list-style-type: none"> <li>- no significant amount of the sewage sludge is present on the land surface within 1 h after injection</li> <li>- when the sludge that is injected in Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process</li> </ul> </li> <li>- sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.115.</b> As of 19 February 1994, bulk sewage sludge applied to a lawn or home garden must meet the Class A pathogen requirements and specific vector reduction requirements (40 CFR 503.15(a)(2), 503.32(a), and 503.33(b)(1) through 503.33(b)(8)).</p>	<p>Verify that for bulk sewage sludge the Class A pathogen requirements (see Definitions) are met. (1)</p> <p>Verify that one of the following vector reduction requirements are met: the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. if this cannot be done: (1)</p> <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved</li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstablized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstablized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.116.</b> As of 19 February 1994, sewage sludge that is sold or given away in a bag or container must meet Class A pathogen requirements and specific vector reduction requirements (40 CFR 503.15(a)(3), 503.32(a), and 503.33(b)(1) through 503.33(b)(8)).</p>	<p>Verify that for sewage sludge that is sold or given away in a bag or container, it meets the Class A pathogen requirements (see definitions). (1)</p> <p>Verify that one of the following vector reduction requirements are met: (1)</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent</li> <li>- a 17 percent reduction of volatile solids when the 38 percent volatile solids reduction requirements cannot be met for an anaerobically digested sewage sludge and the vector reduction attraction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]</li> <li>- a 15 percent reduction of volatile solids when the 38 percent volatile solids reduction requirements cannot be met for an aerobically digested sewage sludge and the vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has percent solids of two percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [68 °F]</li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer and the temperature is higher than 40 °C [104 °F] and the average temperature of the sewage sludge is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 percent based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.117.</b> As of 19 February 1994, domestic septage that is applied to agricultural land, forest, or a reclamation site must meet specific pathogen requirements and vector reduction requirements (40 CFR 503.15(b), 503.15(d), 503.32(c)(1), 503.32(c)(2), 503.33(b)(9), 503.33(b)(10), and 503.33(b)(12)).</p>	<p>Verify that one of the following requirements is met for pathogen control: (1)(2)</p> <ul style="list-style-type: none"> <li>- the pH of the domestic septage is raised to 12 or higher by alkali addition, remaining 12 or higher for 30 min, and the following land restrictions are met:               <ul style="list-style-type: none"> <li>- food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil</li> <li>- food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge</li> </ul> </li> <li>- site restrictions are followed:               <ul style="list-style-type: none"> <li>- food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil</li> <li>- food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge</li> <li>- animals are not allowed to graze for 30 days after application</li> <li>- turf grown on land where sewage sludge is applied is not harvested for 1 yr after application of sewage sludge when the turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the permitting authority</li> <li>- public access to land with a high potential for public exposure is restricted for 1 yr after application</li> <li>- public access to land with a low potential for public exposure is restricted for 30 days after application.</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.117. (continued)</b></p> <p><b>Notifications</b></p> <p><b>W.118.</b> As of 19 February 1994, persons who prepare bulk sewage sludge are required to provide specific notifications (40 CFR 503.10(b), 503.12(f), and 503.12(g)).</p>	<p>Verify that one of the following vector attraction reduction requirements is met: (1)</p> <ul style="list-style-type: none"> <li>- sewage sludge is injected below the surface of the land:               <ul style="list-style-type: none"> <li>- no significant amount of the sewage sludge is present on the land surface within 1 h after injection</li> <li>- when the sludge that is injected in Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process</li> </ul> </li> <li>- sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process</li> <li>- the pH of domestic septage is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for 30 min.</li> </ul> <p>Verify that if the facility prepares bulk sewage sludge, it provides the person applying the bulk sewage sludge the notices and necessary information needed to comply with the land application regulations. (1)</p> <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Table 10-15, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done:               <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.120.</b> As of 19 February 1994, persons who apply bulk sewage sludge to the land are required to provide notice to the land owner or lease holder (40 CFR 503.10(b), 503.10(c), and 503.12(h)).</p>	<p>Verify that notice is given that includes the information needed to verify compliance with the land application regulations. (2)</p> <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Table 10-15, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done:               <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C. [86 and 98.6 °F] When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstablized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstablized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.121.</b> As of 19 February 1994, facilities that prepare bulk sewage sludge that is used in a different state are required to provide written notice (40 CFR 503.12(i)).</p> <p><b>W.122.</b> As of 19 February 1994, facilities that apply bulk sewage sludge subject to the cumulative loading rates in Table 10-13 are required to provide written notice prior to the initial application of the sludge (40 CFR 503.10(b), 503.10(c), and 503.12(j)).</p>	<p>Determine if the facility prepares sewage sludge for land application that is used in another state. (2)</p> <p>Verify that written notification is prepared and provided to the permitting authority in the state of application that includes the following: (2)</p> <ul style="list-style-type: none"> <li>- the location of each land application site</li> <li>- the approximate time period bulk sewage sludge will be applied to the site</li> <li>- the name, address, telephone number, and NPDES permit number (if appropriate) for the facility preparing the sludge</li> <li>- the name, address, telephone number, and NPDES permit number (if appropriate) for the facility applying the sludge.</li> </ul> <p>Verify that prior to the initial application of bulk sewage sludge that is subject to the cumulative loading rates in Table 10-13, notice is provided to the permitting authority for the state that includes: (2)</p> <ul style="list-style-type: none"> <li>- the location of the land application site</li> <li>- the name, address, telephone number, NPDES permit number (if appropriate) of the facility applying the sludge.</li> </ul> <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Table 10-15, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.122. (continued)</b></p> <p><b>Monitoring</b></p> <p><b>W.123.</b> Monitoring for the limitations in Tables 10-13 through 10-16, pathogen density in Class A and Class B pathogens, and vector attraction reduction requirements must be done according to the frequency in Table 10-17(40CFR503.16(a)).</p> <p><b>W.124.</b> In specific instances, when domestic sewage is applied to agricultural land, forest, or a reclamation site, each container of domestic septage applied to the land is required to be monitored for compliance (40 CFR 503.16(b)).</p>	<ul style="list-style-type: none"> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)</li> </ul> <p>Verify that monitoring for the limitations in Tables 10-13 through 10-16, pathogen density in Class A and Class B pathogens, and vector attraction reduction requirements is done according to the frequency in Table 10-17. (2)</p> <p>(NOTE: After the sewage sludge has been monitored for 2 yr, the permitting authority may reduce the frequency of monitoring.)</p> <p>Verify that each container of domestic septage is monitored if the pH has been raised to 12 or higher by alkali addition, and kept there for 30 min. (2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Recordkeeping and Reporting</b></p> <p><b>W.125.</b> When bulk sewage sludge is applied to the land or sold in a bag or container and it meets the requirements in Table 10-15, Class A pathogen requirements, and vector attraction reduction requirements, specific recordkeeping requirements must be met (40 CFR 503.17(a)(1)).</p>	<p>Determine if the facility applies bulk sewage sludge or sells or gives it away in a bag or container. (2)</p> <p>Verify that it meets the requirements in Table 10-15, Class A pathogen requirements (see definitions) and one of the following vector attraction reduction requirements: (2)</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done:               <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [86 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [86 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.127. (continued)</b></p>	<ul style="list-style-type: none"> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.</li> </ul> <p>Verify that the following information is retained for 5 yr by the person who prepares the sludge: (2)</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Table 10-15</li> <li>- a statement certifying which vector attraction reduction is being used and that Class A pathogen requirements are being met</li> <li>- a description of how the Class A pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met.</li> </ul> <p>Verify that the following information is retained for 5 yr by the person who applies the sludge: (2)</p> <ul style="list-style-type: none"> <li>- a statement certifying that appropriate management practices and application procedures are being used</li> <li>- a description of how required management practices are implemented</li> <li>- a description of how the vector reduction requirements are met.</li> </ul>
<p><b>W.128.</b> When the bulk sewage sludge that meets the limitations in Table 10-15, the requirements concerning Class B pathogens, and is applied to agricultural land, forest, a public contact site, or reclamation site specific reporting requirements must be met (40 CFR 503.17(a)(4)).</p>	<p>Determine if the facility applies bulk sewage sludge to agricultural land, forest, a public contact site or reclamation site. (2)</p> <p>Verify that it meets the requirements in Table 10-15 and Class B pathogen requirements (see definitions). (2)</p> <p>Verify that the following information is retained for 5 yr by the person who prepares the sludge: (2)</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Table 10-15</li> <li>- a statement certifying which for of vector attraction reduction is being used and that Class A pathogen requirements are being met</li> <li>- a description of how the Class B pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met when it is used.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.131.</b> When domestic septage is applied to agricultural land, forest, or a reclamation site specific reporting requirements must be met (40 CFR 503.17(b)).</p> <p><b>W.132.</b> Class I sludge management facilities, POTWs with a design flow rate equal to or greater than 1 million gal/day [3,785,412 L/day], and POTWs that serve 10,000 people or more are required to submit specific information to the permitting authority (40 CFR 503.18).</p>	<p>Determine if the facility applies domestic septage to agricultural land, forest, a public contact site or reclamation site. (2)</p> <p>Verify that the following information is retained for 5 yr by the person who applies the domestic septage: (2)</p> <ul style="list-style-type: none"> <li>- the location of each site on which domestic septage is applied</li> <li>- the number of acres in each site on which domestic septage is applied</li> <li>- the date and time of application at each site</li> <li>- the nitrogen requirements for the crop or vegetation grown on each site during a 365 day period</li> <li>- the rate in gallons per acre per 365 day period at which domestic septage is applied to each site</li> <li>- a statement certifying which vector attraction reduction is being used and that pathogen requirements are being met</li> <li>- a description of how the Class A pathogen requirements are being met</li> <li>- a description of how the pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met.</li> </ul> <p>Verify that the following information is submitted to the permitting authority by 19 February of each year: (2)</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Table 10-15</li> <li>- a statement certifying which for of vector attraction reduction is being used and that Class A pathogen requirements are being met</li> <li>- a description of how the Class A pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met.</li> </ul> <p>Verify that the following information is submitted on 19 February of each year when 90 percent or more of any of the cumulative loading rates in Table 10-13 is met: (2)(3)</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Table 10-13</li> <li>- the number of hectares in each site upon which bulk sewage sludge is applied</li> <li>- the date and time bulk sewage sludge is applied to each sites</li> <li>- the cumulative amount of each pollutant from Table 10-13 in the bulk sewage sludge applied to each site</li> <li>- amount applied to each site</li> <li>- a certification statement indicating that required information for each site has been obtained</li> <li>- a description of how the requirement to obtain information were met.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SURFACE DISPOSAL OF SLUDGE</b></p> <p><b>General</b></p> <p><b>W.133.</b> As of 19 February 1994, An active sewage sludge unit that is located within 60 m [196.85 ft] of a fault that has displacement in Holocene time; located in an unstable area; or located in a wetland is required to close by 19 February 1994 (40 CFR 503.22(b)).</p> <p><b>W.134.</b> As of 19 February, 1994, the facility is required to submit a written closure and postclosure plan that meets specific requirements to the permitting authority 180 days prior to the date of closure (40 CFR 503.22(c)).</p> <p><b>W.135.</b> As of 19 February 1994, active sewage sludge units without a liner and leachate collection system are required to meet specific standards (40 CFR 503.23(a)(1) and 503.23(b)).</p>	<p>(NOTE: The requirements concerning surface disposal of sludge do not apply to sewage sludge stored on the land or to the land on which sewage sludge is stored. It also does not apply to sewage sludge that remains on the land for longer than 2 yr when the facility who prepares the sewage sludge demonstrates that the land on which the sewage sludge remains is not an active sewage sludge unit. It also does not apply to sewage treated on the land or to the land on which the sewage sludge is treated (40 CFR 503.20(b) and 503.20(c).)</p> <p>Determine if the facility has a sewage sludge unit that is located within 60 m [196.85 ft] of a fault that has displacement in Holocene time; located in an unstable area; or is located in a wetland. (2)</p> <p>Verify that the unit will be closed by 19 February 1994 unless otherwise stipulated by the permitting authority. (2)</p> <p>Determine if the facility is planning on closing an active sewage sludge unit or has recently closed a sewage sludge unit. (2)</p> <p>Verify that the closure and postclosure plan was submitted to the permitting authority at least 180 days in advance of closure and the plan contained the following: (2)</p> <ul style="list-style-type: none"> <li>- a discussion of how the leachate collection system will be operated and maintained for 3 yr after closure if the unit has a liner and leachate collection system</li> <li>- a description of the system used to monitor for methane gas in the air in any structure within the surface disposal site and in the air at the property line</li> <li>- a discussion of how public access will be restricted for 3 yr after closure.</li> </ul> <p>Verify that if there are plans to turn the surface disposal site over to another owner, the facility notifies the subsequent owner that sewage sludge was placed on the land. (2)</p> <p>Verify that following concentrations are not exceeded in sewage sludge placed on an active sewage sludge unit: (2)</p> <ul style="list-style-type: none"> <li>- arsenic: 73 mg/kg</li> <li>- chromium: 600 mg/kg</li> <li>- nickel: 420 mg/kg.</li> </ul> <p>(NOTE: Amounts are based on a dry weight basis.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.136.</b> As of 19 February 1994, active sewage sludge units without a liner and leachate collection system with a boundary less than 150 m [492.13 ft] from the property line of the surface disposal site are required to meet specific requirements (40 CFR 503.23(a)(2) and 503.23(b)).</p> <p><b>W.137.</b> As of 19 February 1994, sewage sludge units are required to be operated according to specific operation and management standards (40 CFR 503.24).</p>	<p>Verify that the concentration of each pollutant listed in Table 10-18 are not exceeded in relation to the listed distances. (2)</p> <p>(NOTE: At the time of the permit application, the owner/operator of the site may ask for site specific pollutant limits.)</p> <p>Verify that sewage sludge is not placed in an active sewage sludge unit if it is likely to adversely affect a threatened or endangered species or its critical habitat. (2)</p> <p>Verify that active sewage sludge units: (2)</p> <ul style="list-style-type: none"> <li>- do not restrict the flow of a base flood</li> <li>- is located 60 m [196.85 ft] or more from a fault that has displacement in Holocene time, unless otherwise specified by the permitting authority</li> <li>- is not located in an unstable area</li> <li>- it will not contaminate an aquifer</li> <li>- is not located in a wetland unless by permit.</li> </ul> <p>(NOTE: The results of a ground water monitoring program developed by a qualified groundwater scientist or a certification by a qualified groundwater scientist will be used to demonstrate that sewage sludge placed on an active sewage sludge unit does not contaminate an aquifer.)</p> <p>Verify that when a surface disposal site is located in a seismic impact zone, the unit is designed to withstand the maximum recorded horizontal ground level acceleration. (2)</p> <p>Verify that for runoff the following occurs: (2)</p> <ul style="list-style-type: none"> <li>- the runoff is collected and disposed of in accordance with an NPDES permit</li> <li>- the runoff collection system has the capacity to handle runoff from a 24 h, 25 yr storm event.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.137. (continued)</b></p>	<p>Verify that leachate is handled so that: (2)</p> <ul style="list-style-type: none"> <li>- the leachate collection system for an active sewage sludge unit that has a liner and leachate collection system is operated and maintained during the period the sewage sludge unit is active and for 3 yr thereafter</li> <li>- leachate from an active sewage sludge unit that has a liner and a leachate collection system is collected and disposed of in accordance with the applicable requirements from when the unit is active and for 3 yr thereafter.</li> </ul> <p>Verify that the following occurs when a cover is placed on a sewage sludge unit: (2)</p> <ul style="list-style-type: none"> <li>- the concentration of methane gas in the air in any structure within the surface disposal site of an active unit does not exceed 25 percent of the lower explosive limit for methane gas during the period that the unit is active and the concentration of the methane gas in air at the property line of the surface disposal site do not exceed the lower explosive limit for methane gas during the period that the sewage sludge unit is active</li> <li>- the concentration of methane gas at closure when the final cover is placed in air in any structure within any structure within the surface disposal site shall not exceed 25 percent of the lower explosive limit for methane gas for 3 yr after the unit closes and the concentration of methane gas in air at the property line of the unit does not exceed the lower explosive limit for methane gas 3 yr after closure unless otherwise specified by the permitting authority.</li> </ul> <p>Verify that a food or feed crop or a fiber crop are not grown on an active sewage sludge unit unless it has been demonstrated to the permitting authority that through management practices public health and the environment are protected from any reasonably anticipated adverse effects. (2)</p> <p>Verify that animals are not grazed on an active sewage sludge unit unless it has been demonstrated to the permitting authority that through management practices public health and the environment are protected from any reasonably anticipated adverse effects. (2)</p> <p>Verify that public access is restricted for the period that the surface disposal site contains an active unit and for 3 yr after the last active sewage sludge unit in the surface disposal site closes. (2)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.138.</b> As of 19 February 1994, Class A or one of the Class B pathogen requirements (see definitions) must be met when placing sewage sludge on an active sewage sludge unit unless it is covered with soil or other material at the end of each operating day (40 CFR 503.25(a)).</p> <p><b>W.139.</b> As of 19 February 1994, vector attraction reduction must be done when sewage sludge or domestic septage is placed on an active sewage sludge unit (40 CFR 503.25(b) and 503.25(c)).</p>	<p>Determine if the sewage sludge meets Class A or one of the Class B pathogen requirements. (2)</p> <p>Verify that if the sludge does not meet pathogen requirements, it is covered with soil or other material at the end of each operating day. (2)</p> <p>Verify that when sewage sludge is placed on an active sewage sludge unit one of the following vector attraction reduction requirements is done: (1)</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done:             <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [86 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [86 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.139. (continued)</b></p>	<ul style="list-style-type: none"> <li>- the percent solids of sewage sludge that contains unstablized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials sewage sludge is injected below the surface of the land:               <ul style="list-style-type: none"> <li>- no significant amount of the sewage sludge is present on the land surface within 1 h after injection</li> <li>- when the sludge that is injected in Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process</li> <li>- sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process</li> </ul> </li> <li>- the sewage sludge placed on an active sewage sludge unit is covered with soil or other material at the end of each operating day.</li> </ul> <p>Verify that when domestic septage is placed on an active sewage sludge unit one of the following vector attraction reduction requirements is done: (1)</p> <ul style="list-style-type: none"> <li>- sewage sludge is injected below the surface of the land:               <ul style="list-style-type: none"> <li>- no significant amount of the sewage sludge is present on the land surface within 1 h after injection</li> <li>- when the sludge that is injected in Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process</li> </ul> </li> <li>- sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process</li> <li>- the sewage sludge placed on an active sewage sludge unit is covered with soil or other material at the end of each operating day</li> <li>- the pH of the domestic septage is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for 30 min.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Monitoring and Documentation</b></p> <p><b>W.140.</b> <i>Monitoring for pollutants, pathogens, and vector attraction reduction requirements for sewage sludge placed on an active sewage sludge unit must be done according to the frequency in Table 10-17 (40 CFR 503.26(a)).</i></p> <p><b>W.141.</b> <i>If, when domestic septage is placed on an active sewage sludge unit, the pH of the septage is raised to 12 or higher by alkali addition and remains at 12 or higher without alkali addition for 30 min, each container of domestic septage must be monitored (40 CFR 503.26(b)).</i></p> <p><b>W.142.</b> <i>In specific circumstances air in structures within a surface disposal site and at property lines of the surface disposal site are required to be monitored continuously for methane gas (40 CFR 503.26(c)).</i></p>	<p>Verify that monitoring for pollutants, pathogens, and vector attraction reduction requirements for sewage sludge placed on an active sewage sludge unit is done according to the frequency in Table 10-17. (1)</p> <p>(NOTE: The permitting authority may reduce the frequency of monitoring.)</p> <p>Verify that when domestic septage is placed on an active sewage sludge unit, the pH of the septage is raised to 12 or higher by alkali addition and remains at 12 or higher without alkali addition for 30 min, each container of domestic septage is monitored. (1)</p> <p>Verify that continuous monitoring occurs during the period that the surface disposal site contains an active sewage sludge unit on which the sewage sludge is covered and for 3 yr after a unit closes when a final cover is placed on the sewage sludge. (1)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>W.145.</b> Class I sludge management facilities, POTWs with a design flow rate equal to or greater than 1,000,000 gal/day [3,785,412 L/day], and POTWs that serve 10,000 people or more are required to submit specific information to the permitting authority on 19 February of each year (40CFR503.28).</p>	<p>Verify that the following information is submitted to the permitting authority on 19 February of each year: (1)</p> <ul style="list-style-type: none"> <li>- the concentration of arsenic, chromium and nickel in the sludge</li> <li>- a statement certifying that management practices and pathogen and vector attraction reduction requirements are being met</li> <li>- a description of how the pathogen requirements are being met when done</li> <li>- a description of how the vector attraction reduction requirements are being met when done</li> <li>- the concentrations of the pollutants listed in Table 10-18</li> <li>- a description of how the management practices are being met.</li> </ul>
<p><b>SWIMMING POOLS AND BATHING AREAS</b></p> <p><b>W.146.</b> The water quality of an installations' pool is required to meet specific standards in order to protect the health and safety of the pools' users (AFR 161-14, para 10c and para 12).</p>	<p>Verify that the water in the swimming pool is supplied from sources that meet the USEPA primary drinking water standards. (2)</p> <p>Verify that the water is kept clean by filtration and pure by disinfection. (2)</p> <p>Verify that bacteriological samples are taken at least twice a week during times of maximum bathing load. (2)</p> <p>Verify that when the membrane filter technique is used: (2)</p> <ul style="list-style-type: none"> <li>- the arithmetic mean of all standard samples examined monthly does not exceed one per 100 mL</li> <li>- coliform colonies do not exceed: <ul style="list-style-type: none"> <li>- 4 per 100 mL in two consecutive samples</li> <li>- more than one standard sample when less than 20 are examined in a month</li> <li>- more than 5 percent of the standard samples when 20 or more are examined in a month</li> </ul> </li> </ul> <p>Verify that when 10 mL standard portions are examined by the multiple tube fermentation technique, not more than 10 percent in any month show the presence of the coliform group. (2)</p> <p>Verify that when 100 mL standard portions are examined by the multiple tube fermentation, not more than 60 percent in any month show the presence of the coliform group. (2)</p>

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**Table 10-1**

**Primary Drinking Water Standards for Organic Contaminants**

**Chart 1: MCL Applicable to Community Water Systems (40 CFR 141.12)**

Contaminant	mg/L
Total Trihalomethanes (the sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform) and trichloromethane (chloroform))	0.10

(NOTE: The standard for total trihalomethanes only applies to community water systems serving greater than 10,000 individuals which add a disinfectant during treatment).

**Chart 2: MCL Applicable to Community and Nontransient, Noncommunity Water Systems (NTNCWS) (40 CFR 141.61(a))**

Contaminant	mg/L
1,1-Dichloroethylene	0.007
1,1,1-Trichloroethane	0.20
1,2-Dichloroethane	0.005
1,2-Dichloropropane	0.005
Benzene	0.005
Carbon Tetra chloride	0.005
cis-1,2-Dichloroethylene	0.07
Ethylbenzene	0.7
Monochlorobenzene	0.1
o-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1.0
trans-1,2-Dichloroethylene	0.1
Trichloroethylene	0.005
Vinyl chloride	0.002
Xylenes (total)	10.0
Dichloromethane	0.005*
1,2,4-Trichlorobenzene	.07*
1,1,2-Trichloroethane	.005*

\* The effective date for these MCLs is 17 January 1994

(continued)

**Table 10-1 (continued)**

**Chart 3: MCL For Synthetic Organic Contaminants Applicable to Community Water Systems and Nontransient, Noncommunity Water Systems (NTNCWS) (40 CFR 141.61(c))**

<b>Contaminant</b>	<b>mg/L</b>
Alachlor	0.002
Aldicarb	0.003**
Aldicarb sulfoxide	0.004**
Aldicarb sulfone	0.003**
Atrazine	0.003
Carbofuran	0.04
Chlordane	0.002
Dibromochloropropane	0.0002
2,4-D	0.07
Ethylene dibromide	0.00005
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Lindane	0.0002
Methoxychlor	0.04
Pentachlorophenol	0.001
Polychlorinated biphenyls	0.0005
Toxaphene	0.003
2,4,5-TP	0.05
Benzo(a)pyrene	0.0002*
Delapon	0.2*
Di(2-ethylhexyl) adipate	0.4*
Di(2-ethylhexyl) phthalate	0.006*
Dinoseb	0.007*
Diquat	0.02*
Endothall	0.1*
Endrin	0.002*
Glyphosate	0.7*
Hexachlorobenzene	0.001*
Hexachlorocyclopentadiene	0.05*
Oxamyl (Vydate)	0.2*
Picloram	0.5*
Simazin	0.004*
2,3,7,8,-TCDD (Dioxin)	3. x 10*

\*The effective date for these MCLs is 17 January 1994.

\*\*The MCLs for these substances have been postponed by the USEPA.

**Table 10-2**

**Primary Drinking Water Standards for Inorganic Contaminants**

**Chart 1: MCLs Applicable to Community Water Systems  
(40 CFR 141.11, 141.12(c) and 141.62(b)(1))**

Contaminant	mg/L
Arsenic	0.05
Fluoride	4.0
Total Trihalomethanes	0.10*

\* This MCL only applies to community water systems which serve a population of 10,000 individuals or more and which add a disinfectant (oxidant) to the water in any part of the drinking water treatment process.

**Chart 2: MCLs Applicable to Community Water Systems and  
Nontransient, Noncommunity Water Systems (NTNCWS) (40 CFR 141.62(b)(2) through  
141.62(b)(6) and 141.62(b)(10) through 141.62(b)(15))**

Contaminant	mg/L
Asbestos	7 million fibers/L (longer than 10 micrometers)
Barium	2.0
Cadmium	0.005
Chromium	0.1
Mercury	0.002
Selenium	0.05
Antimony	0.006
Beryllium	0.004
Cyanide (as free Cyanide)	0.2
Nickel	0.1
Thallium	0.002

**Chart 3: MCLs Applicable to Community, Nontransient, Noncommunity and Transient  
Noncommunity Water Systems (40 CFR 141.62(b)(7) through 141.62(b)(9))**

Contaminant	mg/L
Nitrate (as N)	10.0
Nitrite (as N)	1.0
Total Nitrate and Nitrite (as N)	10.0





**Table 10-3**

**Detection Limitations for Inorganic Contaminants  
(40 CFR 141.23(a))**

<b>Contaminant</b>	<b>MCL (mg/L)</b>	<b>Analytical Method</b>	<b>Detection Limit (mg/L)</b>
Antimony	0.005	Atomic Absorption Furnace	0.003
			0.0008 <sup>6</sup>
		ICP Mass spectrometry	0.0004
Asbestos	7 million fibers/L	Hydride Atomic Absorption	0.001
		Transmission Electron Microscopy	0.01 million fibers/L
Barium	2.0	Atomic Absorption; furnace technique	0.002
		Atomic Absorption; direct aspiration	0.1
		Inductively Coupled Plasma	0.002(0.001 <sup>*</sup> )
Cadmium	0.005	Atomic Absorption; furnace technique	0.0001
		Inductively Coupled Plasma	0.001 <sup>1</sup>
Chromium	0.1	Atomic Absorption; furnace technique	0.001
		Inductively Coupled Plasma	0.007 (0.001) <sup>*</sup>
Cyanide	0.2	Distillation, Spectrophotometric <sup>4</sup>	0.02
		Distillation, Automated, Spectrophotometric <sup>4</sup>	0.05
		Distillation, Selective Electrode <sup>4</sup>	0.02
		Distillation, Amenable, Spectrophotometric <sup>5</sup>	
Mercury	0.002	Manual Cold Vapor Technique	0.0002
		Automated Cold Vapor Technique	0.0002
Nickel	0.1	Atomic Absorption, Furnace	0.001
			0.0006 <sup>6</sup>
		Inductively Coupled Plasma <sup>3</sup>	0.005
Nitrate	10 as N	ICP Mass Spectrometry	0.0005
		Manual Cadmium Reduction	0.01
		Automated Hydrazine Reduction	0.01
		Automated Cadmium Reduction	0.05
		Ion Selective Electrode	1.0
Nitrite	1 as N	Ion Chromatography	0.01
		Spectrophotometric	0.01
		Automated Cadmium Reduction	0.05
		Manual Cadmium Reduction	0.01
Selenium	0.05	Ion Chromatography	0.004
		Atomic Absorption; furnace	0.002
		Atomic Absorption; gaseous hydride	0.002
Thallium	0.002	Atomic Absorption Furnace	0.001
			0.0007 <sup>6</sup>
		ICP-Mass Spectrometry	0.0003

<sup>1</sup> Using concentration techniques in Appendix A to USEPA Method 200.7

<sup>3</sup> Using a 2x preconcentration step as noted in Method 200.7. Lower minimum detection limits (MDLs) may be achieved by using a 4x preconcentration.

<sup>4</sup> Screening method for total cyanides

<sup>5</sup> Measures "free" cyanides

<sup>6</sup> Lower MDLs are reported using stabilized temperature graphite furnace atomic absorption.



**Table 10-4**  
**Detection Limitations**  
**40 CFR 141.24(h)(18)**

Contaminant	Detection Limit
Alachlor	0.0002
Aldicarb	0.0005
Aldicarb sulfoxide	0.0005
Aldicarb sulfone	0.0008
Atrazine	0.0001
Benzo[a]pyrene	0.00002
Carbofuran	0.0009
Chlordane	0.0002
Dalapon	0.001
Dibromochloropropane (DBCP)	0.00002
Di (2-ethylhexyl) adipate	0.0006
Di (2-ethylhexyl) phthalate	0.0006
Dinoseb	0.0002
Diquat	0.0004
2,4-D	0.0001
Endothall	0.009
Endrin	0.00001
Ethylene dibromide (EDB)	0.00001
Heptachlor	0.00004
Heptachlor epoxide	0.00002
Hexachlorobenzene	0.0001
Hexachlorocyclopentadiene	0.0001
Lindane	0.00002
Methoxychlor	0.0001
Oxamyl	0.002
Picloram	0.0001
Pentachlorophenol	0.00004
Polychlorinated biphenyls	0.0001
Simazine	0.00007
Toxaphene	0.001
1,3,7,8-TCDD (Dioxin)	0.000000005
2,4,5-TP	0.0002



**Table 10-5**

**Unregulated Organic and Inorganic Contaminants  
(40 CFR 141.40(n)(11) and 141.40(n)(12))**

**Organic Contaminants**

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Aldrin

Butachlor

Carbaryl

Dicamba

Dieldrin

3-Hydroxycarbofuran

Methomyl

Metolachlor

Metribuzin

Propachlor

**Inorganic Contaminants**

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Sulfate



**Table 10-6****Coliform Bacteria Sampling Frequency  
(40 CFR 141.21(a)(2))**

<b>Population Served Per Month</b>	<b>Minimum Number of Samples Per Month</b>
25 to 1000	1
1001 to 2500	2
2501 to 3300	3
3301 to 4100	4
4101 to 4900	5
4901 to 5800	6
5801 to 6700	7
6701 to 7600	8
7601 to 8500	9
8501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40
41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90
96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330
1,520,001 to 1,850,000	360
1,850,001 to 2,270,000	390
2,270,001 to 3,020,000	420
3,020,001 to 3,960,000	450
3,960,001 or more	480





**Table 10-7**

**Notification Requirements (AFR 161-44).**

Condition	Agencies/Personnel to be Notified	Notify Within
<b>Inorganic and Organic Chemicals (except Nitrates):</b>		
- concentration exceeds maximum levels	Select Base Personnel* State	7 days
- average concentration of original and three additional samples exceeds maximum levels	Select Base Personnel* State Public	**
<b>Nitrates:</b>		
- mean of original and second analyses exceeds maximum levels	Select Base Personnel* State Public	**
<b>Turbidity:</b>		
- repeat sample confirms maximum level exceeded	Select Base Personnel* State	48 h
- monthly average of daily samples adjusted to include repeat samples	Select Base Personnel* State Public	**
<b>Radioactivity:</b>		
- average annual maximum contaminant level exceeded	Select Base Personnel* State Public	48 h
<b>Bacteriological (Coliform):</b>		
- first check sample confirms coliform colonies exceed maximum level	Select Base Personnel* State	48 h
- sample results for the month (not including check samples) exceed maximum levels	Select Base Personnel* State Public	**
<b>Bacteriological (Chlorine Residual Measurements):</b>		
- retest of water confirms free chlorine residual less than 0.2 mg/L	Base Civil Engineer* Dir of Base Medical Srvc State	48 h
<b>NOTE: Results of subsequent bacteriological analysis must be provided to the state within 48 h of receipt.</b>		
<p>* Director of Base Medical Services MAJCOM, Base Civil Engineer, Office of Information, Base Staff Judge Advocate, Base Commander</p> <p>** not specified in AFR 161-44</p>		



**Table 10-8****Monitoring and Sampling Parameters for Lead and Copper in Drinking Water  
(40 CFR 141.86(c) and 141.86(d))****Number of Sampling Sites Required**

<b>System Size (people served)</b>	<b>No. of sites (standard monitoring)</b>	<b>No. of sites (reduced monitoring)</b>
> 100,000	100	50
10,001 - 100,000	60	30
3301 - 10,000	40	20
501 - 3300	20	10
101 - 500	10	5
≤ 100	5	5

**Dates for the Start of Monitoring**

<b>System Size (people served)</b>	<b>First 6 mo monitoring period begins on:</b>
> 50,000	1 January 1992
3301 - 50,000	1 July 1992
≤ 3300	1 July 1993



**Table 10-9**

**Monitoring Requirements for Water Quality Parameters  
(40 CFR 141.87)**

(NOTE: This table is for illustrative purposes, consult the text of the regulation for actual details).

Monitoring Period	Parameters <sup>1</sup>	Location	Frequency
Initial Monitoring	pH, alkalinity, orthophosphate or silica <sup>2</sup> , calcium, conductivity, temperature	Taps and at entry points in distribution system	Every 6 mo
After Installation of Corrosion Control	pH, alkalinity, orthophosphate or silica, calcium <sup>3</sup> , conductivity, temperature	Taps	Every 6 mo
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual <sup>4</sup>	Entry points to distribution system	Biweekly
After State Specifies Parameter Values For Optimal Corrosion Control	pH, alkalinity, orthophosphate or silica <sup>2</sup> , calcium <sup>3</sup>	Taps	Every 6 mo
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual <sup>4</sup>	Entry points to distribution system	Biweekly
Reduced Monitoring	pH, alkalinity, orthophosphate or silica <sup>2</sup> , calcium <sup>3</sup> ,	Taps	Every 6 mo at a reduced number of sites
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual <sup>4</sup>	Entry points to distribution system	Biweekly

1. Small and medium-size systems have to monitor for water quality parameters only during monitoring periods in which the system exceeds the lead or copper action level.
2. Orthophosphates must be measured only when an inhibitor containing a phosphate component is used. Silica must be measured only when an inhibitor containing silicate compounds is used.
3. Calcium must be measured only when calcium carbonate stabilization is used as a part of corrosion control.
4. Inhibitor dosage rates and inhibitor residual concentrations (orthophosphates or silica) must be measured only when an inhibitor is used.



**Table 10-10****Operations Exempted from Electroplating Point Source Effluent Limitations**

Operations similar to electroplating but which are specifically exempted include:

1. electrowinning and electrorefining conducted as part of nonferrous metal smelting and refining
2. metal surface preparation and conversion coating conducted as part of coil coating
3. metal surface preparation and immersion plating or electroless plating conducted as part of porcelain enameling
4. electrodeposition of active electrode materials, electroimpregnation, and electroforming conducted as a part of battery manufacturing
5. metallic platemaking and gravure cylinder preparation conducted with or for printing and publishing facilities, and continuous strip electroplating conducted within iron and steel manufacturing facilities which introduce pollutants into a publicly owned treatment works.

**Chart 1**

<b>If the maximum for any 1 day is</b>	<b>And the 4 day average is</b>	<b>Then the 30 day average is</b>
0.6	0.4	0.3
1.2	.7	.5
1.9	1	.55
4.1	2.6	1.8
4.2	2.6	1.8
4.2	2.6	1.8
4.5	2.7	1.8
5.0	2.7	1.5
7.0	4	2.5
10.5	6.8	5
20.0	13.4	10
23	16	12
47	29	20
53	36	27
74	39	21
107	65	45
169	89	49
160	100	70
164	102	70
176	105	70
273	156	98
365	229	160
374	232	160
401	241	160
410	267	195
623	257	223
935	609	445

From 40 CFR 413.04

(continued)



**Table 10-10 (continued)**

**Chart 2**

**All Subcategory Facilities Discharging Less than 38,000 L (10,000 gal)  
Per Day PSES Limitations (mg/L)**

<b>Pollutant or pollutant property</b>	<b>Maximum for any 1 day</b>	<b>Maximum average values for 4 consecutive days</b>
CN,A	5.0	2.7
Pb	0.6	0.4
Cd	1.2	0.7

From 40 CFR 413.14(b), 413.54(b), and 413.74(b)

**Chart 3**

**All Subcategory Facilities Discharging 38,000 L (10,000 gal)  
Or More Per Day Limitations (mg/L)**

<b>Pollutant or pollutant property</b>	<b>Maximum for any 1 day</b>	<b>Maximum average values for 4 consecutive days</b>
CN,T	1.9	1.0
Cu	4.5	2.7
Ni	4.1	2.6
Cr	7.0	4.0
Zn	4.2	2.6
Pb	0.6	0.4
Cd	1.2	0.7
Total metals	10.5	6.8

From 40 CFR 413.14(c), 413.54(c), and 413.74(c)

**Chart 4**

**All Subcategory Facilities Discharging 38,000 L (10,000 gal)  
or More Per Day PSES Limitations (mg/L)**

<b>Pollutant or pollutant property</b>	<b>Maximum for any 1 day</b>	<b>Maximum average values for 4 consecutive days</b>
CN,T	1.9	1.0
Pb	0.6	0.4
Cd	1.2	0.7
TSS	20.0	13.4
pH	*	*

\*Within the range 7.5 to 10.0

From 40 CFR 413.14(e), 413.54(e), and 413.74(e)

**Table 10-11****Metal Finishing Point Sources****Process Operations with Point Source Effluent Limitations**

Nonferrous metal smelting and refining  
 Coil coating  
 Porcelain enameling  
 Battery manufacturing  
 Iron and steel  
 Metal casting foundries  
 Aluminum forming  
 Copper forming  
 Plastic molding and forming  
 Nonferrous forming  
 Electrical and electronic components

**Chart 1  
Best Available Technology (BAT)**

Pollutant or pollutant property	Maximum for any 1 day	Maximum monthly average
	(mg/L)	
Cadmium (T)	0.69	0.26
Chromium (T)	2.77	1.71
Copper (T)	3.38	2.07
Lead (T)	0.69	0.43
Nickel (T)	3.98	2.38
Silver (T)	0.43	0.24
Zinc (T)	2.61	1.48
Cyanide (T)	1.20	0.65
TTO	2.13	.....

From 40 CFR 433.14(a) and 40 CFR 433.14(a)

(continued)

**Table 10-11 (continued)****Chart 2  
NSPS**

Pollutant or pollutant property	Maximum for any 1 day	Maximum monthly average
	(mg/L)	
Cadmium (T)	0.11	0.07
Chromium (T)	2.77	1.71
Copper (T)	3.38	2.07
Lead (T)	0.69	0.43
Nickel (T)	3.98	2.38
Silver (T)	0.43	0.24
Zinc (T)	2.61	1.48
Cyanide (T)	1.20	0.65
TTO	2.13	.....
Oil and Grease	52.00	26.00
TSS	60.00	31.00
pH	*	*

\* Within 6.0 - 9.0  
From 40 CFR 433.16(a)

**Chart 3  
PSNS**

Pollutant or pollutant property	Maximum for any 1 day	Maximum monthly average
	(mg/L)	
Cadmium (T)	0.11	0.07
Chromium (T)	2.77	1.71
Copper (T)	3.38	2.07
Lead (T)	0.69	0.43
Nickel (T)	3.98	2.38
Silver (T)	0.43	0.24
Zinc (T)	2.61	1.48
Cyanide (T)	1.20	0.65
TTO	2.13	.....

From 40 CFR 433.17(a)

**Table 10-12**

**Chart 1  
Effluent Standards for Hospitals**

Effluent characteristic	Effluent limitations Maximum for any 1 day	Maximum average values for 30 consecutive days
Metric units (kg/1000 occupied beds)		
BOD5	41.0	33.6
TSS	55.6	33.8
pH	*	*
English units (lb/1000 occupied beds)		
BOD5	90.4	74.0
TSS	122.4	74.5
pH	*	*

\* Within the range 6.0-9.0  
From 40 CFR 460.10

**Chart 2  
Effluent Limitations for Photographic Point Sources**

Effluent characteristic	Effluent limitations Maximum for any 1 day	Maximum average values for 30 consecutive days
Metric units (kg/1000 m <sup>2</sup> of product)		
Ag	0.14	0.07
CN	0.18	0.09
pH	*	*
English units (lb/1000 ft <sup>2</sup> of product)		
Ag	0.030	0.015
CN	0.038	0.019
pH	*	*

\* Within the range 6.0-9.0  
From 40 CFR 459.12



**Table 10-13**

**Cumulative Pollutant Loading Rates for Sludge  
(40 CFR 503.13(b)(2))**

<b>Pollutant</b>	<b>Cumulative Pollutant Loading Rate (kg/hectare)</b>
Arsenic	41
Cadmium	39
Chromium	3000
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2600



**Table 10-14**

**Ceiling Concentrations for Sludge  
(40 CFR 503.13(b)(1))**

<b>Pollutant</b>	<b>Ceiling Concentration (mg/kg, dry weight basis)</b>
Arsenic	75
Cadmium	85
Chromium	3000
Copper	4300
Lead	640
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7500





**Table 10-15**

**Pollutant Concentrations for Sludge  
(40 CFR 503.13(b)(3))**

<b>Pollutant</b>	<b>Monthly Average Concentrations (mg/kg, dry weight basis)</b>
Arsenic	41
Cadmium	39
Chromium	1200
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	36
Zinc	2800



**Table 10-16**

**Annual Pollutant Loading Rates  
(40 CFR 503.13(b)(2))**

<b>Pollutant</b>	<b>Annual Pollutant Loading Rates (kg/hectare/365 day period)</b>
Arsenic	2.0
Cadmium	1.0
Chromium	150
Copper	75
Lead	15
Mercury	0.85
Nickel	21
Selenium	5.0
Zinc	140



**Table 10-17**

**Frequency of Monitoring - Land Application, Surface Disposal, and Incineration  
(40 CFR 503.16, Table 1, 503.26, Table 1, 503.46, Table 1)**

<b>Amount of Sewage sludge* (metric tons/ 365 day period) [long ton/365 days]</b>	<b>Frequency</b>
Greater than zero but less than 290 [285.42]	Once per yr
Equal to or greater than 290 [285.42] but less than 1500 [1476.31]	Once per quarter (four times per yr)
Equal to or greater than 1500 [1476.31]but	Once per 60 days (six times less than 15,000 [14,763.1] per yr
Equal to or greater than 15,000 [14,763.1]	Once per mo

\* Either the amount of bulk sewage sludge applied to the land or the amount of sewage sludge received by a person who prepares sewage sludge that is sold or given away in a bag or other container for application to the land (dry weight basis).



**Table 10-18**

**Pollutant Concentrations for an Active Sewage Sludge Unit  
(40 CFR 503.23, Table**

<b>Unit Boundary to Property Site</b>	<b>Pollutant Concentration <sup>1</sup></b>		
<b>Distance (meters)</b>	<b>Arsenis mg/kg</b>	<b>Chromium mg/kg</b>	<b>Nickel mg/kg</b>
0 to less than 25	30	200	210
25 to less than 50	34	220	240
50 to less than 75	39	260	270
75 to less than 100	46	300	320
100 to less than 125	53	360	390
125 to less than 150	62	450	420

<sup>1</sup> Dry weight basis





<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>WATER QUALITY MANAGEMENT</b> <b>U.S. ECAMP</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA   C   RMA	<b>REVIEWER COMMENTS:</b>		

**Section 11**

**POLLUTION PREVENTION MANAGEMENT**

## SECTION 11

### POLLUTION PREVENTION MANAGEMENT

#### A. Applicability

The U.S. Environmental Protection Agency (USEPA) has developed a hierarchy of options regarding environmental management. The highest priority in this hierarchy of management methods is source reduction as a means of preventing pollution. Source reduction includes reuse or closed-loop recycling. The hierarchy then proceeds to recycling, treatment and disposal as management methods of decreasing priority.

The concept of pollution prevention, as defined by the USEPA, is the maximum feasible reduction at the source of all wastes generated. This reduction is accomplished by the judicious use of resources through source reduction, materials substitution, energy efficiency, reuse of input materials during production, and reduced water consumption.

Some of the benefits of pollution prevention are:

1. reducing operating costs (materials, waste management and disposal, production, energy, and facility cleanup)
2. reducing risk of liability
3. enhancing public image
4. protecting the environment and public health.

Air Force policy on pollution prevention seeks to demonstrate environmental leadership to meet all Federal pollution prevention objectives by eliminating or reducing, to as near zero as feasible, hazardous substance use and waste releases to the environment.

The Air Force will reduce and prevent at the source, to the greatest extent possible, environmentally harmful discharges to the air, land, surface water, and groundwater. Wastes that cannot be prevented at the source will be recycled. Wastes that cannot be recycled will be treated in an environmentally sound manner. Waste disposal or releases to the environment are only permitted after all other pollution prevention alternatives have been exhausted.

#### B. Federal Legislation

- *1980 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* - generators of hazardous wastes must evaluate and document their procedures for controlling the environmental impact of their operations.
- *1984 Hazardous and Solid Waste Amendments (HSWA)* - all regulated generators of hazardous waste are required to develop waste minimization programs.
- *1988 Resource Conservation and Recovery Act (RCRA)* - it shall be a condition of any permit issued under this section for the treatment, storage, or disposal of hazardous waste on the premises where such waste was generated that the permittee certify, no less often than annually, that the generator of the hazardous waste has a program in place to reduce the volume or quantity and toxicity of such waste to the degree determined by the generator to be economically practicable.

- **1990 The Pollution Prevention Act** - facilities required to report releases to the USEPA for the Toxic Release Inventory (TRI) must provide documentation of their procedures for preventing the release of or for reusing these materials.
  1. **Data reporting requirements for TRI chemicals:**
    - a. Amount entering any waste stream (or otherwise released into the environment before recycling, treatment, or disposal, and the percent change from the previous year.
    - b. Amount recycled onsite or offsite during each calendar year, the percent change for the previous year, and the recycling process used.
    - c. Source reduction practices used during each year.
    - d. Amount expected to be reported under the first two data items above for the 2 calendar years right after the reporting year (reported as percent change).
    - e. Ratio of reporting year's production to previous year's production.
    - f. Techniques used to identify source reduction opportunities.
    - g. Amount released into the environment from a catastrophic event, remedial action, or other one-time event and not associated with the production process.

*The Pollution Prevention Act* encourages looking at wastes more broadly within the scope of reducing pollution. All pollutants need to be minimized, and waste creation should be controlled not just during the production process, but also in the design of products that will have less impact on the environment while in use and after disposal.

- **Executive Order (EO) 12856 of August 3, 1993** - EO 12856, *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*, states that the head of each Federal agency is responsible for ensuring that all necessary steps are taken for meeting compliance with the pollution prevention and emergency planning and community right to know provisions resulting from *Emergency Planning and Community Right-to-Know Act of 1986* (EPCRA) and the *Pollution Prevention Act*.
- **EO 12873 of 20 October 1993** - the head of each Executive agency is required to incorporate waste prevention and recycling into the agency's daily operations and to work to increase and expand markets for recovered materials, particularly USEPA Guideline Items. The agencies must comply with executive branch policies for the acquisition and use of environmentally friendly products and services. They must implement cost-effective procurement preference programs favoring these products and services, and each agency must establish goals for solid waste prevention, for recycling, and for increased procurement of recycled and other environmentally preferable product.
- **EO 12902 of 8 March 1994** - charges the Department of Energy with implementing this order through a Federal Energy Management Program (FEMP). The order requires each Federal agency to develop and implement a program with the intent of reducing energy consumption by 30 percent by the year 2005. The goal is to increase the use of solar and other renewable energy sources while reducing the use of petroleum.

### **C. State/Local Regulations**

Increasingly state legislators are promoting pollution prevention. State legislation is known to have been passed in the following states promoting pollution prevention: Alaska, Arizona, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Massachusetts, Minnesota, Mississippi, New Jersey, New York, North Carolina, Oregon, Rhode Island, Tennessee, Texas, Vermont, Washington, and Wisconsin.

### **D. Department of Defense (DOD) Regulations**

- DOD Directive 4210.15, *Hazardous Material Pollution Prevention*, states the DOD policy that hazardous materials should be selected, used, and managed over their life cycle so that the DOD incurs the lowest cost required to protect human health and the environment. The preferred method of doing this is to avoid or reduce the use of hazardous material. Emphasis must be on less use of hazardous materials in processes and products, as distinguished from end-of-pipe management of these wastes.

### **E. U.S. Air Force Regulations (AFRs)**

- Air Force Instruction (AFI) 32-7080, *Pollution Prevention Program*, outlines the requirements for the Air Force's Pollution Prevention Program. It provides instruction in the areas of program management, ozone depleting chemicals (ODC) reductions, hazardous substance management and minimization, solid waste management, affirmative procurement, and energy conservation.
- Air Force Pollution Prevention Program Action Memorandum outlines the steps that need to be taken by the Air Force personnel to prevent future pollution by reducing hazardous material use and releases of pollutants into the environment to as near to zero as possible.
- Air Force Policy on ODCs governs the purchase, use, and management of controlled ODCs. It outlines the ODCs and equipment that use them that cannot be purchased and it outlines the steps that should be taken to replace ODCs currently in use.

### **F. Key Compliance Requirements**

- **Generator Requirements** - The generator of hazardous waste who is issued any permit under RCRA for the treatment, storage, or disposal of hazardous waste on their premises, must certify at least annually, that they have a program in place to reduce the volume or quantity and toxicity of such waste to the degree determined to be economically practicable.
- **Hazardous Substance Release Requirements** - As part of spill contingency plans and procedures, all practical effort should be made to prevent pollution by:
  1. reducing or eliminating waste at the source
  2. considering potential pollution control problems when selecting chemical compounds and materials to be used in operations
  3. including pollution abatement in specifications.

- **Pollution Prevention Management Plan** - The preferred method for managing hazardous materials is to avoid or reduce their use. Installations must develop their own pollution prevention program plan following procedures outlined by the MAJCOMs. The plan should address:
  1. the process required to run a pollution prevention program at the installation
  2. the program required to fund pollution prevention projects
  3. the road map to achieve Air Force pollution prevention goals
  4. the actions required to execute the program.
- **Hazardous Materials** - Substances listed as hazardous need to be selected, used, and managed over their life-cycle so as to economically protect human health and the environment.
- **Solid Waste** - As with hazardous waste, substances considered to be solid waste also need to be selected, used, and managed over their life-cycle. In this case, the objective is to reduce the quantities of solid waste than are eventually disposed in landfills.

### **G. Responsibility for Compliance**

- **Installation Commander**. The installation commander must establish and maintain an active program to survey the use, generation, and disposal of hazardous and radioactive waste. The commander must identify requirements and execute the programs to comply with Air Force policy.
- **Deputy Commander for Maintenance/Chief of Maintenance**. The Deputy Commander for Maintenance (DCM) ensures nonhazardous/nontoxic materials are used where possible, maintains a list of hazardous materials used in the work area by shop and maintenance related task, ensures personnel are properly trained in ordering, using, handling, controlling, and storing hazardous materials and wastes, ensures hazardous waste is properly labeled, works with civil and bioenvironmental engineers to develop the installation's waste management plan, and notifies applicable headquarters when a nonhazardous substitute can be used.
- **Civil Engineer (BCE)**. The Base Civil Engineer (BCE) is responsible for the maintenance and operation of incinerators, fuel burners (boilers), and all installed petroleum storage and dispensing systems. The BCE is also responsible for the storage and handling of all hazardous materials and fuels used by civil engineering shops.
  1. The BCE or designated Environmental Management Office (EMO) develops installation-specific policy for all aspects of hazardous waste and pollution prevention management for all activities on the installation including Air Force and non-Air Force tenants. The BCE/EMO also manages the pollution prevention program and serves as the Office of Primary Responsibility (OPR) for developing and implementing the pollution prevention plan.
  2. The Water and Waste Shop within Base Civil Engineering has responsibility for operations and maintenance of treatment plants, pretreatment facilities, pump stations, oil/water separators, and other associated facilities around the installation.
- **Bioenvironmental Engineering Services (BES)**. Bioenvironmental Engineering Services installation technical expertise on hazardous waste identification and, along with the Environmental Manager and the Environmental Protection Committee, establishes the baseline inventory of industrial toxics project (ITP) chemical quantities. The BES identifies pollution prevention opportunities based on workplace surveys and recommends substitute processes. The BES reviews all substitutions to ensure substituted materials do not introduce new hazards.

- **Supply Officer.** The Supply Officer has primary responsibility to receive, store, and issue all items ordered. It serves as the equipment approval authority, administers the supply improvement program, provides technical guidance and assistance on supply matters to agencies across the installation, and services as the primary stock fund manager.
- **Environmental Manager (EM).** The Environmental Manager is responsible for managing the installation hazardous waste (HW) management program. The EM, along with the BES and the EPC, establishes the baseline inventory of ITP chemical quantities. The EM then tracks the issue of these chemicals and sends the information to the MAJCOM.
- **Environmental Protection Committee (EPC).** The Environmental Protection Committee is comprised of representatives from all activities involved in pollution prevention management. It reviews and coordinates the installation commander's pollution prevention management program. The committee will review summary data on waste generation and personnel exposure. The EPC helps with establishing the baseline inventory of ITP chemical quantities. It should also adopt a policy recommending against the procurement of hazardous materials containing any USEPA ITP chemicals.
- **Hazardous Waste Generators.** Generators manage hazardous waste in their custody including proper storage, inspection, recordkeeping, labeling of containers, and transfer for disposal.

#### **G. Key Compliance Definitions**

These definitions were obtained from the Federal and Air Force regulations.

- **Affirmative Procurement** - required by RCRA Section 6002 and EO 12783. Federal agencies must establish programs to encourage purchase of products containing recycled materials, in particular, USEPA Guideline Items. Affirmative procurement programs must establish preference for products containing recycled material, must include a promotion plan to place emphasis on buying recycled, and must have procedures for obtaining and verifying estimates and certifications of recycled content (AFI 32-7080).
- **Alternatives** - ways of reducing adverse effects of hazardous materials (HM). Alternatives, as applied to HM decision making, include, but are not limited to, such possibilities as substituting less hazardous or nonhazardous material; redesigning a component such that HM is not needed in its manufacture, use, or maintenance; modifying processes or procedures; restricting users; consumptive use; on-demand supply; direct ordering; extending shelf life; regenerating spent material; downgrading and reuse of spent material; use of waste as raw material in other manufacturing and combinations of those factors. Alternatives are to be analyzed in a "could cost" approach, considering what the lowest amount the decision could cost by overcoming barriers to getting the job done, while ensuring protection of human health and the environment (AFI 32-7080).
- **Baseline** - quantified starting points from which progress is measured. For the purposes of this instruction, baselines are quantities of material purchased or generated over a specified period of time (AFI 32-7080).
- **CERCLA** - *Comprehensive Environmental Response Compensation and Liability Act of 1980* as amended (40 CFR 280.12).



- *Characteristic Waste* - a waste that exhibits any of the characteristics listed in 40 CFR 261, Subpart C (i.e., toxicity, corrosiveness, ignitability, reactivity) (AFI 32-7080).
- *Cost Factors* - the expense and cost avoidance associated with hazardous materials that may be reduced to monetary terms, which includes future liability. Cost factors refer to direct and indirect costs attributable to hazardous materials that are encountered in operations such as acquisition, manufacture, supply use, supply, use, storage inventory control, treatment, recycling, emission control, training, work place safety, labeling, hazard assessments, engineering controls, personal protective equipment, medical monitoring, regulatory overhead, spill contingency, disposal, remedial action, and liability (AFI 32-7080).
- *Economic Analysis* - an evaluation of the costs associated with the use of hazardous materials and potential alternatives. An economic analysis is not a specific, step-by-step procedure that can be applied by rote to all cases of analyzing whether to use a hazardous material. Rather, organizations shall be guided by basic principles of economics and informed judgment (AFI 32-7080).
- *Environmental Manager* - the Base environmental management function supervisor or designated representative. Synonymous with the term Environmental Coordinator (AFI 32-7080).
- *Environmentally Preferable* - products or services that are less harmful to human health and the environment to use, reuse, operate and maintain, and dispose of in comparison with competing products or services of equal value (AFI 32-7080).
- *Hazardous Material Pharmacy* - single point control of hazardous material (AFI 32-7080).
- *Hazardous Materials* - any substances or materials that pose a threat to human health or the environment typically due to their toxic, corrosive, ignitable, explosive, or chemically reactive nature. More specific definitions may be found in various federal regulations which implement statutes (i.e., *Hazardous Material Transportation Act*, CERCLA) (AFI 32-7080).
- *Hazardous Waste* - any waste by-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed; possess at least one of five characteristics (toxic, corrosive, ignitable, explosive, or chemically reactive) or are listed in Title 40 CFR 261.3 or applicable state or local waste management regulations (AFI 32-7080).
- *Hazardous Waste Characterization* - hazardous waste characterization is the identification, description, and quantification of a hazardous waste stream (AFI 32-7080).
- *Landfill* - a disposal facility or part of a facility where hazardous waste is placed in or on land and that is not a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, underground mine, or a cave (40 CFR 260.19).
- *Life Cycle Economic Analysis* - an evaluation of the costs associated with the use of hazardous materials and potential alternatives over the life of the investment or hazardous material. The analysis is not a specific, step-by-step procedure that can be applied by rote to all cases. Analysis shall be guided by basic principles of economics and informed judgement (AFI 32-7080).
- *Life Cycle of Hazardous Material* - the period starting when the use or potential use of hazardous material is first encountered and extending as long as the actual material or its after effects, such as a

discarded residual in a landfill, have a bearing on cost. In the case of weapon system acquisition, the life cycle starts when the system is first envisioned. Effects of the use of hazardous material on later operations and maintenance are to be considered. This also holds true for a new use of a hazardous material. Where the hazardous material is already in general use, the life cycle starts when the material is first encountered by any organization that must deal with it (AFI 32-7080).

- *Material Safety Data Sheet (MSDS)* - written or printed material that contains information on hazardous chemicals such as common name, physical hazards, and health hazards (29 CFR 1200(c)).
- *Municipal Solid Waste (MSW)* - wastes generated by administrative and domestic activities. MSW does not include hazardous wastes (AFI 32-7080).
- *Media* - the term referring to air, land, water, and groundwater (AFI 32-7080).
- *Nonpoint or Nonstationary Source (NPS) Pollution* - a diffuse source of pollution that does not discharge through a single point, such as:
  1. for water - runoff from construction activities and agricultural, silvicultural, urban areas, and industrial areas including airfield operating areas
  2. for air - aircraft test stands, vehicles, AGE, and aircraft operations (AFI 32-7080).
- *Oil* - oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse (40 CFR 122.2).
- *Opportunity Assessment* - a systematic procedure to identify and assess ways to prevent pollution by reducing or eliminating wastes (AFI 32-7080).
- *Ozone Depleting Chemicals (ODCs)* - chlorofluorocarbons, halons, and other substances that deplete the stratospheric ozone layer as classified by the *Clean Air Act (CAA)* Amendment of 1990 (AFI 32-7080).
- *Pollution Prevention* - all the actions necessary, to include use of processes, practices, products or management actions that eliminate or reduce undesirable impacts on human health and the environment. These actions are a hierarchy of source reduction, recycling, treatment, and disposal or means "source reduction" and other practices that reduce or eliminate the creation of pollutants through increased efficiency in the use of raw materials, energy, water, or other natural resources, and the protection of natural resources (AFI 32-7080).
- *Recycling* - the use, reclamation and reuse of a material. Use/reuse includes return of the recovered waste to the original process or when the waste is substituted for a raw material in another process. Waste reclamation includes processing of residual waste to recover a useful product and generation of waste material (AFI 32-7080).
- *Solid Waste* - any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial or mining and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved materials in irrigation return flows, or industrial discharges which are point sources subject to permits under Section 402 of the *Federal Water Pollution Control Act* as amended (86 Statute 880), or source, special nuclear, or byproduct materials as defined by the *Atomic Energy Act of 1954*, as amended (68 Stat. 923) (RCRA - Section 1004[27]).

- *Source Reduction* - any practice which reduces or eliminates any hazardous material, pollutant, or contaminant entering any waste stream or otherwise residual waste generation at the source, usually within the generation process. The term includes equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, feedstock substitutions, improvements in feedstock purity, shipping and packaging modifications, improvements in housekeeping, maintenance, training, and management practices, increases in machinery efficiency, and recycling within a process (AFI 32-7080).
- *Toxic Chemicals* - those chemicals listed in Section 313 of *Emergency Planning and Community Right-to-Know Act* (EPCRA) as of 1 December 1993 (AFI 32-7080).
- *Treatment* - any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste nonhazardous, or less hazardous, safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume (40 CFR 260.10).
- *Used Oil* - any oil that has been refined from crude oil, used, and as a result of such use is contaminated by physical or chemical impurities. This term also includes used oil fuels that have been blended or mixed (RCRA).
- *Volat Organic Compounds (VOCs)* - organic substances that react rapidly with nitrogen oxides in the atmosphere and in the presence of sunlight to form oxidants or smog (AFI 32-7080).
- *Waste Reduction* - is defined as in-plant practices that reduce, avoid, or eliminate the generation of hazardous or other wastes so as to reduce risks to health and environment. Onsite recycling is considered waste reduction, however, actions taken away from the waste generating activity (i.e., offsite recycling) are not (Water Pollution Control Federation).

**POLLUTION PREVENTION MANAGEMENT  
GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>CONTACT THESE PERSONS OR GROUPS: (A)</b>	<b>REFER TO PAGE NUMBER:</b>
All Installations	PPM.1 through PPM.5	(1)(4)	11-13
Opportunity Assessments	PPM.6	(4)(7)	11-14
Pollution Prevention Management Plan	PPM.7 and PPM.8	(4)(6)(7)	11-14
Ozone Depleting Chemicals (ODCs)	PPM.9 through PPM.18	(1)(2)(4)(6)(7)(8)	11-15
Hazardous Substances (Waste and Material)	PPM.19 through PPM.21	(2)(3)(4)(5)(7)	11-18
Solid Waste	PPM.22 and PPM.23	(1)(2)(4)(7)(8)	11-19

**(A) CONTACT/LOCATION CODE:**

- (1) Base Civil Engineer (BCE)
- (2) Base Supply
- (3) Bioenvironmental Engineering Services (BES)
- (4) Environmental Manager
- (5) Generation Activities
- (6) Water and Waste Shop
- (7) Environmental Protection Committee
- (8) Contracting



## **POLLUTION PREVENTION MANAGEMENT**

### **Records to Review During an ECAMP Assessment**

- Inventory records
- Supply/distribution procedures
- Opportunity assessments
- Baseline records
- Pollution Prevention Management Plan
- Stormwater Pollution Prevention Plan
- Records of any waste reduction/pollution prevention programs
- Records of resource recovery practices including the sale of materials for the purpose of recycling
- Equipment maintenance and inspection records
- Records of waste recovery equipment (i.e., solvent distillation equipment)
- Plans and procedures applicable to air pollution control
- Air emission inventories
- National Pollutant Discharge Elimination System (NPDES) discharge monitoring reports

### **Physical Features to Inspect During an ECAMP Assessment**

- Shop activities
- Hazardous materials and wastes storage areas
- Firefighting equipment
- Vehicle maintenance areas/motor pool
- Supply area
- Waste recovery areas
- Reuse facility
- VOC sources
- Recycling Area

### **People to Interview During an ECAMP Assessment**

- Accumulation Point Managers/Operators
- Base Civil Engineer
- Bioenvironmental Engineering Services
- Chief of Maintenance
- Environmental Manager
- Hazardous Waste Generators
- Supply Officer



**COMPLIANCE CATEGORY:  
POLLUTION PREVENTION MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL INSTALLATIONS</b></p> <p><b>PPM.1.</b> Actions or changes since previous evaluation of pollution prevention management should be examined (MP).</p> <p><b>PPM.2.</b> Copies of all relevant Federal, state, and local regulations on pollution prevention are required to be maintained at the installation (AFR 19-1, para 11f).</p> <p><b>PPM.3.</b> Copies of all relevant DOD and U.S. Air Force directives and guidance documents on pollution prevention should be maintained at the installation (MP).</p> <p><b>PPM.4.</b> Installations are required to comply with state and local regulations and compliance agreements negotiated with Federal, state, and local governments concerning pollution prevention (EO 12088, Section 1-1).</p> <p><b>PPM.5.</b> Installations will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if noncompliance issues have been resolved by obtaining prior assessment report. (1)(4)</p> <p>Verify that the Base Staff Judge Advocate reviews Federal, state, and local regulations that may affect ongoing and proposed activities and keeps the EPC informed as needed. (1)(4)</p> <p>Determine whether copies of the following pollution prevention regulations are maintained and kept current at the installation and are ready: (1)(4)</p> <ul style="list-style-type: none"> <li>- Air Force Instruction 32-7080, <i>Pollution Prevention Program</i>, Draft of 11 March 1994.</li> <li>- Air Force Policy Letter, <i>Air Force Ban on Purchases of Ozone Depleting Chemicals (ODCs)</i>, 7 January 1993.</li> </ul> <p>Verify that the installation is complying with state and local requirements concerning pollution prevention. (1)(4)</p> <p>Verify that actions detailed in compliance agreements are being taken according to the schedule established in the agreement. (1)(4)</p> <p>Determine if any new regulations concerning pollution prevention have been issued since the finalization of the manual. (1)(4)</p> <p>Verify that the installation is in compliance with newly issued regulations. (1)(4)</p>

(1) Base Civil Engineer (BCE) (2) Base Supply (3) Bioenvironmental Engineering Services (BES) (4) Environmental Manager (5) Generation Activities (6) Water and Waste Shop (7) Environmental Protection Committee (8) Contracting





**COMPLIANCE CATEGORY:  
POLLUTION PREVENTION MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>PPM.7. (continued)</b>	Verify that the plan identifies and programs projects needed to achieve stated objectives. (4)(7)
<p><b>PPM.8.</b> Installations should include additional strategies in the Pollution Prevention Management Plan to further improve the pollution prevention program (MP).</p>	<p>Verify that the plan includes the following information: (4)(6)(7)</p> <ul style="list-style-type: none"> <li>- plans to crossfeed information to the rest of the Air Force</li> <li>- plans to brief the base EPC</li> <li>- plans to implement Opportunity Assessments</li> <li>- oil/water separator management strategies</li> <li>- useable measures of success</li> <li>- programming and budgeting strategies.</li> </ul>
<b>OZONE DEPLETING CHEMICALS (ODCs)</b>	
<p><b>PPM.9.</b> Installations are required to eliminate dependence on ODCs (Air Force Policy on Ozone Depleting Chemicals).</p>	<p>Determine whether the installation uses any of the substances listed in Table 11-3. (2)(4)(6)(7)</p> <p>Verify that the installation's dependence on CFCs, halons, and other substances that deplete the stratospheric ozone layer is being reduced. (2)(4)(6)(7)</p> <p>Verify that any new system or modification to an existing system may not include the use of ODCs as a solvent, unless approved by the proper waiver approval authority. (2)(4)(6)(7)</p>
<p><b>PPM.10.</b> Installations must follow specific requirements during the period of transition away from ODC dependence (Air Force Policy on Ozone Depleting Chemicals and AFI 32-7080 3.1.2).</p>	<p>Verify that when non-ODC substitutes need long research and development lead times, existing uses are converted to ODCs with lower ozone depletion potential as interim substitutes, (i.e., HCFCs). (2)(4)(6)(7)</p> <p>Verify that inventory reserves, after production has been outlawed, are used only to aid a transition from ODCs, not as a substitute for changing to nonozone depleting practices. (2)(4)(6)(7)</p> <p>Verify that if reserves are used to extend the service life of ODC dependent equipment, conservation, recovery, and reuse are practiced. (2)(4)(6)(7)</p>

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POLLUTION PREVENTION MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PPM.11.</b> Installations must initiate certain ODC replacement programs (Air Force Policy on Ozone Depleting Chemicals).</p>	<p>Verify that halon systems on crash/rescue vehicles are disabled and a phased program is in place to replace them with nonhalon fire fighting agents. (1)(4)</p> <p>Verify that a phased replacement program has been initiated to replace halon in the 150 lb flightline extinguishers. (1)(4)</p> <p>(NOTE: Halon removed from crash/rescue vehicles, or from existing installation stock, may be used to service flightline extinguishers until the phased replacement program is complete).</p> <p>Verify that existing halon fire extinguishers for facilities are replaced through attrition. (1)(4)</p> <p>Verify that refrigerators and other domestic equipment are replaced at the end of their economic life with non-ODC equipment. (1)(4)</p> <p>(NOTE: Existing airborne cooling systems and subsystems that require ODC refrigerants are considered mission critical).</p>
<p><b>PPM.12.</b> Installations must follow specific requirements regarding contract writing for the use of ODCs (Air Force Policy on Ozone Depleting Chemicals).</p>	<p>Verify that contracts awarded after 1 June 1993 do not include a requirement to use ODCs or any requirement that can be met only through the use of ODCs, without approval of the waiver approval authority (AF/LG, AF/CE, or SAF/AQ). (4)(7)(8)</p>
<p><b>PPM.13.</b> Installations are required to reduce the atmospheric discharge of ODCs (Air Force Policy on Ozone Depleting Chemicals).</p>	<p>Verify that the discharge of ODCs is reduced to zero as soon as possible. (4)(7)</p> <p>Verify that one of the following is being used to reduce discharges: (4)(7)</p> <ul style="list-style-type: none"> <li>- modify operating, training, and testing practices</li> <li>- implement conservation measures such as: <ul style="list-style-type: none"> <li>- recovery</li> <li>- recycling</li> <li>- reuse</li> <li>- material substitution.</li> </ul> </li> </ul> <p>Verify that existing halon systems which discharge to the atmosphere for other than actual fire situations, such as fuel tank inerting systems, are used only in actual combat or in in-flight emergencies. (4)(7)</p> <p>Verify that fire warning systems and operational procedures operate so that there are no false alarms or false discharges. (4)(7)</p>

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U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>PPM.13. (continued)</b>	<p>Verify that automatic discharge extinguisher systems in facilities are disabled and placed on manual activation. (4)(7)</p> <p>Verify that all servicing of aircraft halon systems capture the halon for recycling with no atmospheric discharge, other than <i>de minimis</i> amounts. (4)(7)</p> <p>Verify that leaking systems are corrected quickly. (4)(7)</p>
<p><b>PPM.14.</b> Installations must eliminate purchases of ODCs (Air Force Policy on Ozone Depleting Chemicals and AFI 32-7080 3.1.3).</p>	<p>Verify that policies and procedures are in place to eliminate purchases of ODCs. (2)(4)(7)</p> <p>Verify that the following are no longer purchased: (2)(4)(7)</p> <ul style="list-style-type: none"> <li>- newly produced halon</li> <li>- halon extinguishers for facilities</li> <li>- facility air conditioning systems, AGE equipment, and other refrigeration and support equipment using ODCs</li> <li>- commercial vehicles with ODC air conditioning equipment</li> <li>- ODC solvents and the equipment/systems/products requiring these solvents for maintenance or operation.</li> </ul> <p>(NOTE: ODC needed to meet the mission critical applications will be obtained by using stocks, or from the Defense Logistics Agency (DLA) Defense Reserve, or purchased from commercial sources if the reserve is not able to fill a request).</p> <p>Verify that ODC containing products are not purchased or obtained from the Defense Reserve without an approved waiver. (2)(4)(7)</p>
<p><b>PPM.15.</b> Installations should follow specific procedures for the processing of reclaimed ODCs (MP).</p>	<p>Verify that processes are in place to ensure that reclaimed and excess ODC halons, refrigerants, and solvents are routed to the DLA Defense Reserve. (2)(4)(7)</p>
<p><b>PPM.16.</b> Installations must manage halons in existing systems in a specific manner (Air Force Policy on Ozone Depleting Chemicals).</p>	<p>Verify that halons are removed from aircraft being retired from service. (2)(4)(7)</p> <p>Verify that these halons are redeployed or added to the Air Force account at the DLA Defense Reserve. (2)(4)(7)</p>

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POLLUTION PREVENTION MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PPM.17.</b> Installations must maintain equipment and inventories at a certain level (Air Force Policy on Ozone Depleting Chemicals).</p>	<p>Verify that chillers are well maintained and repaired promptly. (2)(4)</p>
<p><b>PPM.18.</b> Installations must have a refrigerant management plan (MP).</p>	<p>Verify that the installation has a plan for managing the use and disposal of refrigerant. (2)(4)</p>
<p><b>HAZARDOUS SUBSTANCES (WASTE AND MATERIAL)</b></p>	
<p><b>PPM.19.</b> Installations must develop procedures to centrally control the purchase and use of hazardous materials (AFI 32-7080 2.4).</p>	<p>Verify that the purchase of hazardous materials, including ODCs, is under centralized control. (2)(4)</p> <p>Verify that the issuance and distribution of hazardous materials is centrally controlled. (2)(4)</p> <p>Verify that hazardous materials are issued in the smallest quantity necessary to meet the customer's need. (2)(4)</p>
<p><b>PPM.20.</b> Installations must work to minimize hazardous waste generation (AFI 32-7080 3.3 and 2.4.3).</p>	<p>Verify that hazardous waste from industrial, maintenance, and cleanup operations are minimized to the most economically practical extent. (4)(5)(7)</p> <p>Verify that installations strive to reduce hazardous waste generation at the source. (4)(5)(7)</p> <p>Verify that alternatives to hazardous materials and processes are used whenever possible. (4)(5)</p> <p>Verify that when technical orders require the use of many hazardous substances or out-of-date technology, the installation submits an Air Force Technical Order (AFTO) Form 22 to change it if alternative substances/technology are known to exist. (2)(3)(4)(5)</p>

(1) Base Civil Engineer (BCE) (2) Base Supply (3) Bioenvironmental Engineering Services (BES) (4) Environmental Manager (5) Generation Activities (6) Water and Waste Shop (7) Environmental Protection Committee (8) Contracting

**COMPLIANCE CATEGORY:  
POLLUTION PREVENTION MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PPM.21.</b> Installations should encourage complete use of hazardous materials (MP).</p> <p><b>SOLID WASTE</b></p> <p><b>PPM.22.</b> Installations are required to institute pollution prevention procedures as part of their solid waste management (AFI 32-7080 3.4.1 and 3.4.1.1).</p>	<p>Verify that a reuse facility of some type is established. (2)(4)(7)</p> <p>Verify that cost-effective waste reduction and recycling programs have been integrated into the Municipal Solid Waste Management program. (4)</p> <p>Verify that the installation operates a composting program for yard wastes, or it participates in a regional composting program, unless the program can be shown to be cost prohibitive. (4)</p> <p>Verify that the installation establishes a Qualifying Recycling Program (QRP).</p> <p>Verify that recycling includes the following: (4)</p> <ul style="list-style-type: none"> <li>- high quality copier paper</li> <li>- plastic</li> <li>- metals</li> <li>- glass</li> <li>- used oil</li> <li>- lead acid batteries</li> <li>- cardboard</li> <li>- newspaper</li> <li>- tires.</li> </ul> <p>Verify that contracts awarded after 20 October 1993 for government owned, contractor operated (GOCO) facilities include provisions that obligate the contractor to participate with a DOD installation or establish their own qualified recycling program. (4)</p> <p>Verify that where economically feasible and to the extent required by law, existing contracts covering GOCOs are modified to incorporate these recycling provisions. (4)</p> <p>Verify that the installation conducts an annual opportunity assessment of the solid waste stream to identify source reduction potential and additional recyclable materials. (4)</p>

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**COMPLIANCE CATEGORY:  
POLLUTION PREVENTION MANAGEMENT  
U.S. ECAMP**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>PPM.23.</b> Installations must actively purchase recycled products (AFI 32-7080 1.5).	Verify that the installation is proactive in the purchasing of all recycled products. (1)(2)(4)(7)(8)

(1) Base Civil Engineer (BCE) (2) Base Supply (3) Bioenvironmental Engineering Services (BES) (4) Environmental Manager (5) Generation Activities (6) Water and Waste Shop (7) Environmental Protection Committee (8) Contracting

**Table 11-1**

**Opportunity Assessment Team Composition**

- Raw material supplier
- QA/QC officer
- Consultant
- Civil engineer
- Bioenvironmental engineer
- Supply officer
- Maintenance shop worker
- Chief of maintenance





**Table 11-2**

**USEPA Industrial ITP Targeted Chemicals**

(AFI 32-7080 Attachment 2)

1. Benzene
2. Cadmium and compounds
3. Carbon Tetrachloride
4. Chloroform
5. Chromium and compounds
6. Cyanides
7. Dichloromethane
8. Lead and compounds
9. Mercury and compounds
10. Methyl Ethyl Ketone
11. Methyl Isobutyl Ketone
12. Nickel and compounds
13. Tetrachloroethylene
14. Toluene
15. Trichloroethane
16. Trichloroethylene
17. Xylene(s)



**Table 11-3**

**ODCs Subject to Air Force Policy Letter, 7 January 1993**

<p style="text-align: center;"><b>HALONS</b></p> <p>Halon 1211, Halon 1301, Halon 1202, and Halon 1011 are used primarily as firefighting agents.</p>
<p style="text-align: center;"><b>CFCs</b></p> <p>CFCs -11, -12, -13, -111, -112, -113, -114, -115, -211, -213, -214, -215, -216, and -217 are used primarily as refrigerants and cleaning solvents.</p>
<p style="text-align: center;"><b>OTHER CONTROLLED SUBSTANCES</b></p> <p>Carbon Tetrachloride and Methyl Chloroform are used primarily as cleaning solvents. Methyl Bromide is used as pesticide and fumigant.</p>



<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>POLLUTION PREVENTION MANAGEMENT</b> <b>U.S. ECAMP</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA   C   RMA	<b>REVIEWER COMMENTS:</b>		