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USACERL Special Report EC-93/07
September 1993



**US Army Corps
of Engineers**

Construction Engineering
Research Laboratories



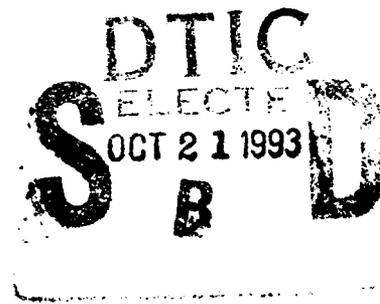
Environmental Compliance Assessment Army Reserve (ECAAR)

U.S. Army Reserve

In response to the growing number of environmental laws and regulations worldwide, the U.S. Army Reserve has adopted an environmental compliance program that identifies compliance problems before they are cited as violations by the U.S. Army Environmental Protection Agency (USEPA).

Because each Major Army Command (MACOM) was developing a separate assessment system, the Army mandated through Army Regulation 200-1 one unified Army-wide assessment mechanism. In 1991, the U.S. Army Construction Engineering Research Laboratories (USACERL), in cooperation with a steering committee representing the 416th Engineering Command, began work on the Environmental Compliance Assessment Army Reserve (ECAAR) protocol manuals. This compliance assessment system combines Federal, Department of Defense (DOD), and Army environmental regulations with documentation of good management practices and risk-assessment issues into a series of checklists that show legal requirements and list specific items or operations to review. Each assessment protocol lists an installation point of contact to help assessors review the checklists as effectively as possible.

The ECAAR manual incorporates existing checklists from USEPA and private industry. This system was tested at San Antonio, TX, and Orland Park, IL, in 1991. The manual is updated continually to address new environmental compliance laws and regulations.



93 10 19 164

93-25143



REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503

1. AGENCY USE ONLY (Leave Blank)	2. REPORT DATE September 1993	3. REPORT TYPE AND DATES COVERED Final	
4. TITLE AND SUBTITLE Environmental Compliance Assessment Army Reserve (ECAAR)			5. FUNDING NUMBERS MIPR 1213, dated 4 December 1992
6. AUTHOR(S) Donna J. Schell and Tina M. Beckler			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Construction Engineering Research Laboratories (USACERL) P.O. Box 9005 Champaign, IL 61826-9005			8. PERFORMING ORGANIZATION REPORT NUMBER SR-EC-93/07
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Command, U.S. Army Environmental Center (USAEC) ATTN: SFIM-AEC-ECC Aberdeen Proving Ground-EA, MD 21010-5401			10. SPONSORING/MONITORING AGENCY REPORT NUMBER
11. SUPPLEMENTARY NOTES Copies are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.			
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.			12b. DISTRIBUTION CODE
13. ABSTRACT (Maximum 200 words) In response to the growing number of environmental laws and regulations worldwide, the U.S. Army Reserve has adopted an environmental compliance program that identifies compliance problems before they are cited as violations by the U.S. Army Environmental Protection Agency (USEPA). Because each Major Army Command (MACOM) was developing a separate assessment system, the Army mandated through Army Regulation 200-1 one unified Army-wide assessment mechanism. In 1991, the U.S. Army Construction Engineering Research Laboratories (USACERL), in cooperation with a steering committee representing the 416th Engineering Command, began work on the Environmental Compliance Assessment Army Reserve (ECAAR) protocol manuals. This compliance assessment system combines Federal, Department of Defense (DOD), and Army environmental regulations with documentation of good management practices and risk-assessment issues into a series of checklists that show legal requirements and list specific items or operations to review. Each assessment protocol lists an installation point of contact to help assessors review the checklists as effectively as possible. The ECAAR manual incorporates existing checklists from USEPA and private industry. This system was tested at San Antonio, TX, and Orland Park, IL, in 1991. The manual is updated continually to address new environmental compliance laws and regulations.			
14. SUBJECT TERMS environmental compliance laws and regulations Environmental Compliance Assessment Army Reserve (ECAAR) environmental compliance checklists			15. NUMBER OF PAGES 844
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT SAR

FOREWORD

This work was performed for U.S. Army Environmental Center (USAEC), under military interdepartmental purchase request number 1213, dated 4 December 1992. The USAEC technical monitor was Curt Williams, SFIM-AEC-ECC.

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 Compliance Protocol Team, CECER-ECP. Tina M. Beckler, CECER-ECP, was Associate Investigator. Dr. Diane K. Mann, CECER-ECP, is Acting Team Leader. Dr. William D. Goran is Acting Chief, CECER-EC, and Dr. Edward W. Novak is Acting Chief, CECER-EL.

LTC David J. Rehbein is Commander of USACERL and Dr. L. R. Shaffer is Director.

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ERIC	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
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NOTICE

This manual is intended as general guidance for personnel at certain U.S. Army installations. It is not, nor is it intended to be, a complete treatise on environmental laws and regulations. Neither the U.S. 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 legal counsel.

ENVIRONMENTAL COMPLIANCE ASSESSMENT SYSTEM (ECAS) ASSESSMENT PROTOCOLS

INTRODUCTION

This manual provides the Environmental Compliance Assessment System (ECAS) protocols required by Army Regulation (AR) 200-1. These environmental assessment protocols are based on Federal environmental regulations and are to be supplemented locally using state and local environmental regulations that are applicable to U.S. Army installations and are more stringent than Federal regulations included in this manual. This manual, with local supplements, is intended to serve as the primary tool in conducting the environmental compliance evaluation phase of the ECAS process for the Army Reserve and is specifically referred to as the Environmental Compliance Assessment for the Army Reserve (ECAAR). Specifically, this manual:

1. Compiles applicable Federal, Department of Defense (DOD), and Army environmental regulations with Army Reserve operations and activities
2. Synthesizes environmental regulations, good management practices (GMPs), and risk management issues into consistent and easy to use checklists
3. Serves as an aid in the evaluation process and management action development phases of the ECAS.

This manual is divided into 17 sections (assessment areas). They are: Clean Air Act; Clean Water Act; Safe Drinking Water Act; Resource Conservation and Recovery Act, Subtitle C; Resource Conservation and Recovery Act, Subtitle D; Resource Conservation and Recovery Act, Subtitle I; Comprehensive Environmental Response Compensation and Liability Act / Superfund Amendment and Reauthorization Act and RCRA Corrective Actions; Toxic Substances Control Act; Federal Insecticide, Fungicide, and Rodenticide Act; National Historic Preservation Act and Cultural Resources; Natural Resources Management; Natural Environmental Policy Act; Asbestos Management Program; Noise Abatement; Radon Program; Environmental Program Management; Hazardous Materials Management.

The information in this manual applies to all Army Reserve facilities in the United States and its territories. The contents of this manual is up to date as of 17 August 1993.



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1. ENVIRONMENTAL COMPLIANCE EVALUATION PROCESS

The ECAAR program management process can be divided into three distinct phases:

- Preevaluation activities.
- Site evaluation activities.
- Post evaluation activities.

This manual incorporates the first two phases of the program management process.

Preevaluation Activities - Five key activities should be completed before an evaluation team begins the evaluation activities.

1. **Complete Previsit Questionnaire.** The purpose of the previsit questionnaire is to collect information that will familiarize the evaluation team with the facility and its operations so that they are able to review the applicable regulations and prepare a detailed evaluation schedule. The previsit questionnaire is an essential part of preevaluation activities for an external evaluation. It is also an excellent tool for ensuring internal evaluation team members are starting from the same base of information. Table 1 contains a sample previsit questionnaire.
2. **Define Evaluation Scope and Team Responsibilities.** The facility or major command may wish to place special emphasis on certain protocols or to review additional areas not covered in the manual. These goals must be stated clearly so the evaluation can be planned properly. Additionally, the duration of the evaluation, appointment of team members by the Environmental Quality Control Commission (EQCC), and handling of tenants and offpost sites must be addressed. Finally, responsibilities for each of the protocols must be assigned to team members as appropriate.
3. **Review Relevant Regulations.** Once the evaluation scope and responsibilities are known, the evaluators should undertake a thorough review of relevant federal, state, and local regulations affecting the facility. The applicable environmental regulations must be determined before evaluation begins. If not already available, checklist items for state and local requirements must be added to the checklists in the ECAAR manual.
4. **Develop Evaluation Schedule.** The team should develop a detailed evaluation schedule that includes the activities planned for each day.
5. **Review Evaluation Protocols.** Each evaluator should know the regulatory requirements, schedule, and be familiar with the evaluation checklists that will be used.

2. ECAAR PREVISIT QUESTIONNAIRE

Your facility is scheduled to be assessed by the 416th FETDA team using the Environmental Compliance Assessment System for Army Reserves (ECAAR). Fill out the previsit questionnaire as accurately as you can; if you don't understand a question, just go on to the next question.

The team will want to check the following environmental plans, surveys, and documentation:

(NOTE: Some facilities may not be required to have all of the below items, so DO NOT panic.)

- Any previous environmental reports, inspections, assistants' visits, IG reports, or CLRT reports
- Any correspondence from an Environmental Regulatory Agency, such as a warning letter or Notice of Violation (NOV)
- Air Quality Episode Plan
- Lead survey for indoor rifle ranges
- Annual CFC/Halon report
- Water pollution complaint system
- National Pollutant Discharge Elimination System (NPDES) and/or State Discharge permits
- Manifests for Hazardous Waste Disposal
- Spill Prevention, Control, and Countermeasure (SPCC) plan and/or Spill Response Plan and/or Oil & Hazardous Substance Control Plan
- Appointment orders for the Spill Response Team
- Training documentation for the Hazardous Material/Waste Handlers & Spill Response Team
- Hazardous Waste Management plan
- Waste POL recovery and management plan
- The last two annual hazardous waste inventories
- Results of asbestos survey and asbestos management plan
- Results of radon monitoring
- Location map of hazardous material/waste storage areas
- Hazardous material inventory

FACILITY DATA

**USAR ENVIRONMENTAL COMPLIANCE ASSESSMENT
PREVISIT DATA SHEET**

SCHEDULED ASSESSMENT DATE: _____

FACILITY NAME: _____

STREET ADDRESS: _____

Approx. Population of City _____

Name of County or Parish _____

What type of area surrounds the facility? Residential __, Commercial __, Industrial __, Military __,
Other __

INSTALLATION NUMBER (FFID): _____

FACILITY TYPE: USARC __ OMS __ AMSA __ ECS __ FLIGHT __ WETS __
OTHER (Specify) _____

SUPPORT INSTALLATION: _____
ARCOM: _____
MUSARC: _____

Telephone Number of Facility Manager HOME: () _____
WORK: () _____

	NAME	POSITION
Key Full Time Personnel:	_____	_____
	_____	_____
	_____	_____
	_____	_____

	UNIT	ASSD STRENGTH
List all units at the facility:	_____	_____
	_____	_____

Approximately how many pieces of equipment/vehicles (major end items) are stored at the facility?

What type of maintenance is being performed at this facility?
Organizational __, Direct Support __, General Support __.

A. Clean Air Act (CAA)

	Yes	No	N/A
1. Is the facility in an air quality attainment region (has local news ever announced an air quality alert?)	—	—	—
2. Does the facility dispense any fuel?	—	—	—
3. Is the fuel point permanent or vehicle mounted?	—	—	—
1) Leaded gasoline?	—	—	—
2) Diesel?	—	—	—
3) Unleaded gasoline?	—	—	—
4. Does the unit or facility use bulk CFCs or halon?	—	—	—
5. Does the facility have an indoor firing range?	—	—	—
6. Is the facility required to have any local air emission permits?	—	—	—
7. Is any burning conducted at the facility?	—	—	—
8. Are there any painting operations at the facility other than spot painting & facility maintenance?	—	—	—

B. Clean Water Act (CWA)

	Yes	No	N/A
1. Are vehicles washed at this facility?	—	—	—
2. Does the facility have a wash rack?	—	—	—
3. Does the facility have an oil/water separator?	—	—	—
4. Does the facility have a photographic laboratory?	—	—	—
5. Does the facility have a kitchen? If yes, does the kitchen have a grease trap?	— —	— —	— —

C. Safe Drinking Water Act (SDWA)

	Yes	No	N/A
1. What is the source of the drinking water at the facility?	—	—	—
2. Name of the utility company?	—	—	—

D. Resource Conservation and Recovery Act, Subtitle C

	Yes	No	N/A
1. What is the hazardous waste status of the facility? Large, Small, Do not know, or Conditionally Exempt Small Quantity Generator (CESQG)?	—	—	—
2. Does the facility have a hazardous waste minimization program?	—	—	—
3. Does the facility store any munitions or ordnance?	—	—	—
4. Does the facility have medical, dental, or veterinary waste?	—	—	—
5. Does the facility generate waste POL products including waste oil and fuel?	—	—	—
6. How does the facility dispose of the waste? _____ _____			
7. Does the facility burn waste oil?	—	—	—
8. Does the facility produce waste solvents?	—	—	—
9. Does the facility dispose of hazardous waste?	—	—	—

E. Resource Conservation and Recovery Act, Subtitle D

	Yes	No	N/A
1. Does the local community have a recycling program?	—	—	—
2. Does the facility have a recycling program?	—	—	—
3. How does the facility dispose of trash & refuse?	—	—	—

F. Resource Conservation and Recovery Act, Subtitle I

	Yes	No	N/A
1. Are there any underground storage tanks (USTs) at the facility?	—	—	—
2. What is stored in the USTs?	—	—	—
3. Are any of the USTs no longer in service?	—	—	—

G. CERCLA/SARA

	Yes	No	N/A
1. Are you aware of any sites that may have been contaminated in the past?	—	—	—
2. Has the facility been contacted by any outside agency regarding past contamination?	—	—	—
3. Are there any areas of known distressed (discolored) vegetation?	—	—	—

H. Toxic Substances Control Act

	Yes	No	N/A
1. Does the facility own any transformers, heat transfer, or hydraulic systems containing PCBs?	—	—	—

I. Federal Insecticide, Fungicide, and Rodenticide Act

	Yes	No	N/A
1. Does the facility store, mix, or prepare pesticides on site?	—	—	—
2. If the facility had a pest problem who would apply the pesticides?	—	—	—

J. National Historic Preservation Act and Cultural Resources

	Yes	No	N/A
1. Does the facility have any sites on the National Register of Historic sites?	—	—	—
2. Is there any evidence of archeological resources at the facility?	—	—	—
3. Does the facility have any graves or artifacts?	—	—	—

K. Natural Resources Management

	Yes	No	N/A
1. Are there any endangered or threatened plant or animal species on or near the reserve facility?	—	—	—
2. Have there been any natural resource controversies at the facility?	—	—	—

L. National Environmental Policy Act

1. The onsite interview will consider if this protocol applies.

M. Asbestos Management Program

	Yes	No	N/A
1. Has the facility-wide asbestos survey been completed?	—	—	—
2. Does the unit remove brake drums as part of its vehicle maintenance operations at this facility?	—	—	—
3. Have the maintenance personnel been trained in asbestos handling?	—	—	—

N. Noise Abatement

	Yes	No	N/A
1. Have there ever been any complaints on noise produced by Army activities and operations at the facility?	—	—	—
2. Has the facility conducted an Installation Compatible Use Zone (ICUZ) study, or does it have a statement of negligible impact?	—	—	—

O. Radon Program

	Yes	No	N/A
1. Has the facility been tested for radon?	—	—	—

P. Environmental Program Management

	Yes	No	N/A
1. Does the facility have a copy of AR 200-1 and the Commander's Guide to the Environment?	—	—	—
2. Have any other environmental assessments or inspections (i.e., ARCOM or CLRT) been conducted?	—	—	—
3. Do you have the results of the inspection?	—	—	—
4. Does the unit have its higher headquarters environmental SOPs?	—	—	—

Q. Hazardous Materials Management

	Yes	No	N/A
1. Does the uni/facility have a master listing of hazardous substances used or stored at the facility?	—	—	—
2. Does each chemical procured or stored at the facility have a Material Safety Data Sheet (MSDS)?	—	—	—
3. Does the facility have indoor flammable/combustible storage areas?	—	—	—
4. Does the facility use bulk acids?	—	—	—
5. Does the facility use compressed gas?	—	—	—

3. SITE EVALAUTION

Site Evaluation Activities - On site, the evaluators 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 evaluation findings and recommendations. An ECAAR Finding Summary is available to assist evaluators in compiling needed information during an ECAAR evaluation. A Finding Summary should be completed for each finding during the evaluation. These forms comprise the basis of the ECAS report. The format and content for ECAAR evaluation reports will be in a separate supplement. Section 4 shows a blank Finding Summary form. Section 6 shows a sample completed Finding Summary.

All items of the ECAAR Finding Summary must be filled in up to *Sampling Results* for negative findings and up to *Criteria* for positive findings. The *CONDITION* is a factual statement describing the status of the process, permit, or situation under investigation, and the *CRITERIA* is the environmental standard (Federal, state, local, DOD, Army, Good Management Practice (GMP)) the facility is being measured against. A condition may be positive if the facility is going above and beyond the requirements. *SUGGESTED SOLUTIONS* is an optional entry, and may include easily identifiable solutions to the deficiency. *COMMENTS* may include any corrective actions already taken or scheduled, or any other appropriate information pertaining to the finding.

For example, a team member assigned to evaluate the facility's SQG status hazardous waste management program visited the accumulation point at building 5000. The evaluator 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 five drums were rusted and bulging. Item 4-23 in the ECAS manual states that 40 CFR 262.34(d)(2) and 265.171 requires containers to be tightly sealed and not leaking, bulging, rusting, or badly dented. 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 evaluator is now ready to fill out a Finding Summary.

4. FINDING SUMMARY

ECAS Manual Used:

Regular Army _____
 Army Reserve _____
 Army National Guard _____
 Title of ECAS Manual: _____

Manual Edition Date: _____
 State Manual Title & Date: _____
 Local Manual Title & Date: _____

ECAS INDIVIDUAL FINDING SHEET

-For Official Use Only-

Facility/Activity Name: _____ Tenant or Host (T/H)? _____ If Tenant, give 1) Name: _____ 2) FFID: _____ Location/Facility Number: _____ If Reserve, give 1) BASOPS: _____ 2) ARCOM: _____ 3) MUSARC: _____	Facility/Activity Type (See reverse): _____
Manual Section # : _____ Question # : _____	Type of Finding (POS / NEG): _____ Finding Category: I II III H/S (See reverse)
<input type="checkbox"/> Check only if finding requires immediate action due to threat or risk.	
CONDITION (Finding Description): _____ _____ _____ _____	
CRITERIA (What is the actual requirement?): _____ _____ _____	
Basis of Finding (Citation or Regulation): _____ _____	
Existing NOV? Y / N Previous ECAS Finding? Y / N	Recurring NOV? Y / N NOV Number(s) (if applicable): _____
SUGGESTED SOLUTION(s): _____ _____	
SAMPLING RESULTS: Universe: _____ Number of Discrepancies: _____	
Sample Size: _____ Percentage of Discrepancies: _____	
PREPARED BY: _____	DATE: _____
COMMENTS: _____ _____ _____	

5. EXPLANATION OF RATINGS:

FACILITY/ACTIVITY TYPES

ACTIVE ARMY	RESERVES	GUARD
17 Troop Operations & Training Facilities (Buildings/Ranges)	1. ASF	Armory
21 Maintenance	2. AFRC	OMS
22 Production	3. AMSA (G)	CSMS
30 R&D Labs/Test Facilities	4. AMSA (W)	UTES
40 Supply & Storage/Logistics	5. DS/GS	MATES
50 Hospital/Medical	6. ECS	AASF
60 Admin/Communication	7. LTA	AVCRAD
70 Housing and Community	8. OMS	LTA
80 Utilities/Ground Improvements	9. RTS-INTEL	MTA
90 Real Estate/Site Improvements Research & Testing	10. RTS-MAINT	STARC/HQ
	11. RTS-MED	USP & FO
	12. STORAGE	
	13. USARC	
	14. OTHER	

FINDING CATEGORIES:

1. Environmental Findings I, II, & III
2. Health/Safety Findings

CLASS I FINDINGS: Noncompliance with an existing environmental regulation, compliance agreement, consent order, or operating/discharge permit. These may stem from Federal, state, or local requirements.

CLASS II FINDINGS: Noncompliance with a future deadline in an environmental regulation, compliance agreement, or consent order. These may stem from Federal, state, or local requirements.

CLASS III FINDINGS: Findings based on management practices that are not based on regulatory requirements. These include findings based on Army Regulations and DOD Directives. Class III findings may be positive or negative.

HEALTH/SAFETY FINDINGS: Findings related to OSHA, DOT, and NFPA as indicated in requirements column in the ECAS protocol. Most health/safety findings are in the Hazardous Materials Section (Section 17) if the protocol. Health/safety findings may be regulatory but are not part of the RCS 1383 reporting process and not eligible for any environmental funding. Health/safety findings are not classified I, II, or III.

ARMY NATIONAL GUARD FACILITY TYPES:

ARM	Armory
OMS	Organizational Maintenance Shop
CSMS	Combined Support Maintenance Shop
UTES	Unit Training Equipment Site
MATES	Mobilization and Training Equipment Site
AASF	Army Aviation Support Facility
LTA	Local Training Area
MTA	Major Training Area
STARC/HQ	State Area Command/Headquarters
AVCRAD	Aviation Classification Repair Activity Depot
USPFO	United States Property & Fiscal Office

6. SAMPLE FINDING SUMMARY:

ECAS Manual Used:

Regular Army _____
 Army Reserve X
 Army National Guard _____
 Date of ECAS Manual: _____

Manual Edition Date: Sept 1993
 State Manual Title & Date: _____
 Local Manual Title & Date: _____

ECAS INDIVIDUAL FINDING SHEET

-For Official Use Only-

Facility/Activity Name: <u>Hazardous Waste Storage</u>		Facility/Activity Type (See reverse): <u>40</u>
Tenant or Host (T/H)? <u>H</u> If Tenant, give		
1) Name: _____		
2) FFID: _____		
Location/Facility Number: <u>Bldg 50001</u>		
If Reserve, give		
1) BASOPS: _____		
2) ARCOM: _____		
3) MUSARC: _____		
Manual Section #: <u>4</u>	Type of Finding (POS / NEG): <u>Neg</u>	<input type="checkbox"/> Check only if finding requires immediate action due to threat or risk.
Question #: <u>4-32</u>	Finding Category: <input checked="" type="radio"/> I <input type="radio"/> II <input type="radio"/> III H/S (See reverse)	
CONDITION (Finding Description): <u>Three of five drums of hazardous waste were rusted and bulging.</u>		
CRITERIA (What is the actual requirement?): <u>Containers used to store hazardous waste at SAGs must be in good condition and not leaking.</u>		
Basis of Finding (Citation or Regulation): <u>40 CFR 262.34(d)(2) and 265.171</u>		
Existing NOV? Y/ <u>N</u>	Recurring NOV? Y/ <u>N</u>	
Previous ECAS Finding? Y/ <u>N</u>	NOV Number(s) (if applicable): _____	
SUGGESTED SOLUTION(s): <u>Overpick drums that are in bad condition</u>		
SAMPLING RESULTS:		
Universe: _____	Sample Size: _____	
Number of Discrepancies: _____	Percentage of Discrepancies: _____	
PREPARED BY: <u>John Smith</u>	DATE: <u>9.10.93</u>	
COMMENTS: <u>Overpicks were ordered the same day</u>		

ACTIVE ARMY	RESERVES	GUARD
17 Troop Operations & Training Facilities (Buildings/Ranges)	1. ASF	Armory
21 Maintenance	2. AFRC	OMS
22 Production	3. AMSA (G)	CSMS
30 R&D Labs/Test Facilities	4. AMSA (W)	UTES
40 Supply & Storage/Logistics	5. DS/GS	MATES
50 Hospital/Medical	6. ECS	AASF
60 Admin/Communication	7. LTA	AVCRAD
70 Housing and Community	8. OMS	LTA
80 Utilities/Ground Improvements	9. RTS-INTEL	MTA
90 Real Estate/Site Improvements Research & Testing	10. RTS-MAINT	STARC/HQ
	11. RTS-MED	USP & FO
	12. STORAGE	
	13. USARC	
	14. OTHER	

FINDING CATEGORIES:

1. Environmental Findings I, II, & III
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CLASS I FINDINGS: Noncompliance with an existing environmental regulation, compliance agreement, consent order, or operating/discharge permit. These may stem from Federal, state, or local requirements.

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ARMY NATIONAL GUARD FACILITY TYPES:

ARM	Armory
OMS	Organizational Maintenance Shop
CSMS	Combined Support Maintenance Shop
UTES	Unit Training Equipment Site
MATES	Mobilization and Training Equipment Site
AASF	Army Aviation Support Facility
LTA	Local Training Area
MTA	Major Training Area
STARC/HQ	State Area Command/Headquarters
AVCRAD	Aviation Classification Repair Activity Depot
USPFO	United States Property & Fiscal Office

7. USING THE ECAAR MANUAL:

THE PROTOCOLS

Army Reserve facilities 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 DOD and Army directives.

After a review of these activities at Army Reserve facilities, it is apparent that there are major categories of environmental compliance into which most environmental regulations and Army activities could be grouped. This manual is divided into 17 sections that correspond to environmental acts as well as major compliance categories.

- 1 Clean Air Act
- 2 Clean Water Act
- 3 Safe Drinking Water Act
- 4 Resource Conservation and Recovery Act, Subtitle C
- 5 Resource Conservation and Recovery Act, Subtitle D
- 6 Resource Conservation and Recovery Act, Subtitle I
- 7 Comprehensive Environmental Response Compensation and Liability Act /
Superfund Amendment and Reauthorization Act and RCRA Corrective Actions
- 8 Toxic Substances Control Act
- 9 Federal Insecticide, Fungicide, and Rodenticide Act
- 10 National Historic Preservation Act and Cultural Resources
- 11 Natural Resources Management
- 12 National Environmental Policy Act and Cultural Resources
- 13 Asbestos Management Program
- 14 Noise Abatement
- 15 Radon Program
- 16 Environmental Program Management
- 17 Hazardous Materials Management.

Each section is organized in the following format:

A. Applicability

This section provides guidance on the major activities and operations included in the protocol and a brief description of the major application.

B. Federal Legislation

This section of each protocol identifies, in summary form, the key regulatory issues associated with the compliance area in the Federal law.

C. State/Local Requirements

This section of each protocol 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 questions prepared to cover these requirements. The manual is prepared in loose leaf form to allow state and local requirements to be inserted easily.

D. DOD Regulations

This section of the protocol identifies the relevant directives or requirements associated with the compliance area that are promulgated by DOD.

E. U.S. Army Regulations (ARs)

This section identifies those ARs that address requirements associated with the specific compliance category.

F. Key Compliance Requirements

This section of each protocol summarizes the significant compliance requirements associated with the regulations previously identified. It is a brief abstract summarizing the overall thrust of the regulations for that particular compliance category.

G. Key Compliance Definitions

This section of each protocol presents definitions for those key terms associated with each compliance category.

H. Compliance Assessment Mechanism

The final section of each protocol and its tables and figures contain evaluation procedures (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 questions and issues that should be investigated. Instructions are provided to direct the evaluator to the appropriate action, references, or activity that corresponds to the specific requirement or guideline.

8. MANUAL FORMAT

The protocol portion of ECAAR 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 GMP to maintain compliance, but which is not specifically mandated by regulation.

The second column gives instructions to help conduct the compliance evaluation. 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. Contact/location information in parentheses is intended to give guidance on the department or location at the installation where action items are applicable. The contact/location code given is referencing a legend at the bottom of the 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 protocols, 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.

The evaluation procedures are designed as an aid and should not be considered exhaustive. Use of the guide requires the evaluator'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 questions that reflect the substantive requirements of state/local regulations pertinent to individual installations can be included on the worksheets.

9. SUPPLEMENTAL INFORMATION

Any change or suggestion for improving this guidance manual should be forwarded to USAEC, (SFIM-AEC-ECC), Aberdeen Proving Ground, MD 21010-5401.

10. Appendix A (Glossary of Acronyms)

ABT	Aboveground Tanks
ACM	Asbestos Containing Materials
AGE	Aerospace Ground Equipment
AHERA	Asbestos Hazardous Emergency Response Act
AQCR	Air Quality Control Region
ARAR	Appropriate Requirements
ASTM	American Society for Testing and Materials
ASU	Air Space for Special Uses
BAT	Best Available Technology
BPAT	Best Practically Available Treatment
BCE	Base Civil Engineer
BCP	Base Comprehensive Planning
BEE	Bioenvironmental Engineer
BOD	Biological Oxygen Demand
CAA	Clean Air Act
CELDS	Computer-Aided Environmental Legislative Data System
CECORS	Civil Engineering Contract Reporting System
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFCs	Chlorofluorocarbons
CFC-12	chlorodifluoromethane
CFC-22	trifluoromethane
CFC-113	Trichlorotrifluoromethane
CFC-114	chloropentafluoroethane
CFC-115	dichlorotrifluoroethane
CFR	Code of Federal Regulations
CWA	Clean Water Act
DBCP	1,2-Dibromo-3-chloropropane
DBMS	Director of Base Medical Services
DEQPPM	Defense Environmental Quality Program Policy Memorandum
DERP	Defense Environmental Restoration Program
DRMO	Defense Reutilization and Marketing Office
Do	Ditto
DMR	Discharge Monitoring Report
DOD	Department of Defense
DOT	Department of Transportation
EDB	Ethylene Dibromide
EHO	Environmental Health Officer
EIAP	Environmental Impact Analysis Process
EM	Engineers Manual

Appendix A (Glossary of Acronyms) (continued)

EN	Environmental
EO	Executive Order
EPA	Environmental Protection Agency
EPA ID No.	Environmental Protection Agency Identification Number
EPC	Environmental Protection Committee
EPCRTKA	Emergency Planning and Community Right-to-Know Act of 1986
FC-23	dichlorotetrafluoroethane
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FONSI	Finding of No Significant Impact
GMP	Good Management Practice
HCFC-141c	chlorodifluoroethane
HCFC-123	tetrafluoroethane
HFC-134a	dichlorofluoroethane
HQ USAF	Headquarters United States Air Force
IBR	Institute for Basic Research
ICUZ	Incompatible Use Zone Program
IRP	Installation Restoration Program
ISS	Interim Status Standards
LATN	Low-Altitude Tactical Navigation
LDR	Land Disposal Restriction
LGT	Logistics Transportation
LGS	Logistics Supply
LTM	Long Term Requirements
MACOM	Major Command
MCL	Maximum Contaminant Level
MOA	Memorandum of Agreement
MSDS	Material Safety Data Sheet
MTR	Military Training Routes
N/A	Not Applicable
NAA	Non-Attainment Areas
NAAQS	National Ambient Air Quality Standards
NCP	National Contingency Plan
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NPL	National Priorities List
NO _x	Nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
NTNCWS	Non-Transient Non-Community Water System
OMB	Office of Management and Budget
OPR	Office of Primary Responsibility
OSC/RPM	On-Scene Coordinator/Remedial Project Manager
OSHA	Occupational Safety and Health Act
pCi/L	picoCuries per Liter
PA	Public Affairs
PAO	Public Affairs Officer
PCB	Polychlorinated Biphenyl
PDC	Programming Design and Construction

Appendix A (Glossary of Acronyms) (continued)

PMP	Pest Management Personnel
POL	Petroleum Oil and Lubricant
POTW	Publicly Owned Treatment Works
PPMB	Professional Pest Management Personnel
PQL	Practical Quantification Limits
psia	Pounds Per Square Inch Absolute
psig	Pounds Per Square Inch Gauge
RA	Remedial Action
RAC	Risk Assessment Codes
RACT	Reasonably Available Control Technology
RAMP	Radon Assessment and Mitigation Program
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
RCS	Reports Control Symbol
RD	Remedial Design
RI	Remedial Investigation
ROD	Records of Decision
RPM	Remedial Project Manager
RVP	Reid Vapor Pressure
SARA	Superfund Amendments and Reauthorization Act
SAT	Satisfactory
SDWA	Safe Drinking Water Act
SO ₂	Sulfur Dioxide
SIPs	State Implementation Plan
SPCC	Spill Prevention Control and Countermeasure
THM	Trihalomethane
TIM	Technical Information Memorandum
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, or Disposal (Facility)
TSDF	Treatment Storage Disposal Facility
TU	Turbidity Unit
UIC	Underground Injection Control or Unit Identification Code
USAF	United States Air Force
USAEHA	United States Army Environmental Health Administration
USC	United States Congress
UST	Underground Storage Tanks
VOC	Volatile Organic Compound

11. METRIC CONVERSION TABLE

1 in.	=	25.4 mm
1 ft	=	0.305 m
1 kip	=	4448 N
1 psi	=	6.89 kPa
1 psi	=	89.300 g/cm ²
1 lb	=	0.453 kg
1 lb/ h	=	0.126 g/s
1 cu ft	=	0.028 m ³
1 mi	=	1.61 km
1 sq ft	=	0.093 m ²
1 μm	=	1 × 10 ⁻⁶ m
1 gal	=	3.78 L
°F	=	(°C + 17.78) × 1.8
°C	=	0.55(°F-32)
1 yd	=	0.9144 m
1 Btu/ lb	=	0.556 cal/g
1 Btu/h	=	0.2931 watts (W)

Section 1

CLEAN AIR ACT (CAA)

SECTION 1

CLEAN AIR ACT (CAA)

A. Applicability of this Protocol

This protocol includes regulations, responsibilities, and compliance requirements associated with air pollution emissions at U.S. Army Reserve facilities. The major air pollution emissions and sources at Army Reserve facilities are:

- Particulates, sulfur dioxide (SO₂), and nitrogen oxide (NO_x), and carbon monoxide (CO) from fuel burning at steam and hot water generation plants and boilers.
- Particulate and toxic air emissions from the operation of hazardous waste, general waste, classified material and medical, pathological, and/or infectious waste incinerators.
- Particulate, CO, metals, and toxic air pollutant emissions from open burning and open detonation operations.
- CO emissions from mobile (vehicular) sources.
- The emission of volatile organic compound (VOC) vapors from the storage and transfer of certain petroleum fuels and chemicals (solvents), and the operation of incinerators, solvent use, degreasing/metal cleaning, sterilizing, and other processes (paint stripping and metal finishing) that use solvents.
- Fugitive particulate emissions from training activities and construction/ demolition operations.

Army Reserve facilities have air emissions sources in many of these six categories. Therefore this protocol is applicable to some extent at all Army Reserve facilities.

B. Federal Legislation

- *The Clean Air Act (CAA) Amendments of 1990.* This Act, 42 U.S. Code (USC) 7401-7671q, Public Law (PL) 101-549, is composed of seven major titles which address various aspects of the national air pollution control program.

Title I describes air pollution control requirements for geographic areas in the United States (U.S.) which have failed to meet the National Ambient Air Quality Standards (NAAQS). otherwise known as nonattainment areas.

Title II deals mostly with revised tailpipe emission standards for motor vehicles. These requirements compel automobile manufacturers to improve design

standards to limit carbon monoxide, hydrocarbons, and NO_x emissions. Manufacturers must also investigate feasibility and oxygenate gasolines will be required in cities with the worst ozone and carbon monoxide nonattainment.

Title III is potentially the most pervasive and costly requirement of the CAA 1990. The major elements of the Title deal with control of routine emissions of hazardous air pollutants, and contingency planning for accidental release of hazardous substances.

Title IV addresses acid deposition control and applies only to commercial utilities which produce electricity for sale.

Title V outlines the goal of having states issue Federally enforceable operating permits to applicable stationary sources. The permits are designed to enhance the ability of the USEPA, State regulatory agencies, and private citizens to enforce the requirements of the CAA 1990. Permits will also be used to classify operation and control requirements for stationary sources.

Title VI limits the emissions of chlorofluorocarbons (CFCs), halons, and other halogenated chemicals which contribute to the destruction of stratospheric ozone. These requirements closely follow the control strategies recommended in June 1990 by the 2nd Meeting of Parties to the Montreal Protocol.

Title VII describes civil and criminal penalties which may be imposed for violation of new and existing air pollution control requirements.

C. State/Local Requirements

One mechanism for mitigating air pollutant emissions are state and local regulations. These regulations will normally follow the Federal guideline 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 oxidant (ozone) problems are widespread in California and individual Air Quality Management Districts (AQMDs) in that state have stringent VOC emission requirements. North Dakota has no such problem and, therefore, has fewer and less stringent VOC regulations.

New source performance standards (NSPS) are established for particular pollutants in industrial categories based on 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:

- incinerators
- dry cleaning operations
- fuel storage and dispensing facilities
- certification requirements for boiler operators
- emissions and emission control requirements for the operation of existing fossil fuel-fired steam generators
- open burning and detonation activities
- vehicle exhaust emissions testing
- spray painting of vehicles, buildings, and/or furniture
- certification of vehicles transporting VOC liquids
- paving of roads and parking lots
- toxic air pollutants
- operation of cold cleaners, degreasers, and open top vapor degreasers
- vapor control requirements for gasoline pumps.
- fugitive dust emissions
- control of particulate emissions from woodworking shops and the transportation of refuse or materials in open vehicles.

D. Department of Defense (DOD) Regulations

- DOD Instruction 4120.14, *Environmental Pollution Prevention, Control, and Abatement*, implements within DOD policies provided by Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*, and Office of Management and Budget (OMB) Circular A-106 and establishes policies for developing and submitting plans for installing improvements needed to abate air emissions from DOD facilities.

E. U.S. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, Chapter 4, *Air Pollution Abatement Program*, sets forth policy and procedures for controlling pollutant emissions into the air. This regulation mandates compliance with all applicable Federal, state, and local regulations concerning air quality, including State Implementation Programs.

F. Key Compliance Requirements

- **New Source Performance Standards (NSPS) - Federally established NSPS emission standards are applicable to stationary sources modified or built after a date designated by regulation. There are several specific industrial facilities/ operations for which NSPS have been developed, but only the following might apply to Army Reserve facilities:**
 - steam generators with greater than 100/million British thermal units per hour (MBtu/h) but less than 250 MBtu/h heat input capacity that started construction or modification after 19 June 1984
 - steam generators with maximum design heat input capacity greater than 10 MBtu but less than 100 MBtu which started construction or modification after 3 June 1989
 - fuel burning facilities constructed or modified after 17 August 1971 with greater than 250 MBtu/h heat input
 - municipal waste combustors with a capacity greater than 250 tons/day that started construction or modification after 20 December 1989
 - incinerators with greater than 50 tons/day charging rate that started construction or modification after 17 August 1971
 - sewage sludge incinerators that combust greater than 2205 pounds (lb)/day which were constructed or modified after 11 June 1973
 - incinerators for beryllium containing waste
 - stationary gas turbines with a heat input greater than or equal to 10.7 gigajoules (gJ)/h that were constructions or modified after 3 October 1977
 - bulk gasoline terminals with greater than 75,000 gallons (gal) gasoline throughput per day that started construction or modification after 17 December 1980
 - storage vessels for petroleum liquids of greater than 40,000 gal capacity
 - sulfuric and nitric acid plants
 - pumps, compressors, pressure relief devices, flanges etc. in volatile hazardous air pollutant VHAP service
 - rotogravure printers.

Appendix 1-1 presents some of the key performance standards applicable to sources typically found at Army Reserve facilities.

- **Vehicular Emission Inspections - Many states require owners of fleet vehicles to have annual inspections of exhaust gases to determine emissions of CO and hydrocarbons. Army Reserve facilities typically have many vehicles and may be required to comply with these regulations.**

- **VOC Emissions Compliance** - Most states regulate the emission of VOCs into the atmosphere. Typical facilities at Army Reserve facilities that emit VOCs are fuel storage and dispensing facilities; organic solvent stripping, cleaning or degreasing; surface coating operations; drycleaning operations; and printing plants. Emissions limitations will vary from state to state and may vary within the same state depending on the relative attainment status of its air quality control regions. Limits are usually expressed in pounds of VOC/unit volume of substance used.
- **Particulate Emission Compliance** - Particulates emitted from fuel burning equipment and incinerators on Army Reserve facilities are typically regulated on the state level through individual permits.

Many states vary particulate emission limitations depending on the regional air quality conditions with the state. In addition, visible emissions are regulated to opacity levels in percent, i.e., 20 percent opacity. Higher levels of visible emissions (opacity) are normally permitted during certain startup and maintenance operations for short periods of time (5 minutes (min)/h).

- **Permits to Operate Air Contaminant Sources** - Army Reserve facilities must obtain permits from the appropriate state agency to operate some sources of air contaminants. Permits to operate will vary among facilities and may require the installation of monitoring devices. Also, the operator is required to maintain certain records, reports, and information as stipulated in the individual permits.
- **SO₂ Emission Compliance** - Sources burning fuel containing sulfur are typically limited to an allowable stack emission rate in pounds of SO₂ /MBtu) or the use of a fuel with a specific fuel sulfur content. Regulations and individual permits will specify these limitations. Testing, monitoring, and sampling data must be retained and available for inspection. In addition, many states set fuel sulfur limits more stringent than Federal requirements depending on the local nonattainment status.
- **CFCs and Halons** - Restrictions on the use of CFCs and Halons as well as servicing appliances containing CFCs and Halons is regulated in 40 CFR 82.

G. Key Compliance Definitions

These definitions were obtained from the various Federal, DOD, and ARs listed previously.

- **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 months 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 60.41(c)).

- *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 (82 CFR 152(a)).
- *Approved Equipment Testing Organization* - any organization which has applied for and received approval from the Administrator pursuant to 82 CFR 160 (82 CFR 152(b)).
- *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 Terminal* - any gasoline facility that receives gasoline by pipeline, ship, or barge, and has a throughput of greater than 75,700 L/day (40 CFR 60.501).
- *Bulk Gasoline Plant* - any gasoline distribution facility that has a throughput less than or equal to 75,700 L/day (40 CFR 60.111(b)).
- *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 82 CFR 158(b) or (d), equipment certified pursuant to 82 CFR 36(a), or equipment manufactured before 15 November 1993, that meets the standards in 82 CFR(c), (e), or (g) (82 CFR 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 60.51(a)).

- **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 60.41(c)).
- **Commercial Refrigeration** - means, for the purposes of 82 CFR 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 (33.75 kilograms (kg)) (82 CFR 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 60.51(a)).
- **Continuous Emissions Monitoring Systems (CEMS)** - a monitoring system for continuously measuring the emissions of a pollutant from an affected facility (40 CFR 60.51(a)).
- **Designated Volatility Nonattainment Area** - any area designated as being in nonattainment with the NAAQS for ozone pursuant to rulemaking under section 107(d)(4)(A)(ii) of the CAA (40 CFR 80.2).
- **Designated Volatility Attainment Area** - an area not designated as being in nonattainment with the NAAQS for ozone (40 CFR 80.2).
- **Diesel Fuel** - any fuel sold in any state and suitable for use in diesel motor vehicles and diesel motor vehicle engines, and which is commonly or commercially known or sold as diesel fuel (40 CFR 80.2).
- **Disposal** - the process leading to and including (82 CFR 152(e)):
 1. the discharge, deposit, dumping or placing of any discarded appliance into or onto any land or water
 2. the disassembly of any appliance for discharge, deposit, dumping or placing of its discarded component parts into or onto any land or water
 3. the disassembly of an appliance for reuse of its component parts.
- **Duct Burner** - a device that combusts fuel and that is placed in the exhaust duct from another source (such as a stationary gas turbine, internal combustion engine, kiln, etc.) to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a steam generating unit (40 CFR 60.41(c)).

- *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).
- *Emerging Technology* - any SO₂ 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 60.41(c)).
- *Federally Enforceable* - all limitations and conditions enforceable by the Administrator, including those requirements developed pursuant to 40 CFR Parts 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 60.41(b)).
- *Fuel Pretreatment* - a process that removes a portion of the sulfur in a fuel before combustion of the fuel in a steam generating unit (40 CFR 60.41(c)).
- *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 51.301(j)).
- *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).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *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 60.41(c)).
- *High-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point between -50 and 10 degrees Centigrade (°C)(-122.004 and 50.004 degrees Fahrenheit (°F) at atmospheric pressure (29.9 inches (in.))(75.946 centimeters (cm)) of mercury). This definition includes but is not limited to appliances using refrigerants -12, -22, -114, -500, or -502 (82 CFR 152(f)).

- **Household Waste** - includes material discarded by single and multiple residential dwellings, hotels, motels, and other similar permanent or temporary housing (40 CFR 60.51(a)).
- **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** - means, for the purposes of 82 CFR 156(i), complex customized appliances used in the chemical, pharmaceutical, petrochemical and manufacturing industries. This sector also includes industrial ice machines and ice rinks (82 CFR 152(g)).
- **Institutional Waste** - includes materials discarded by hospitals, schools, non-manufacturing activities at prisons, and government facilities (40 CFR 60.51(a)).
- **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 60.51(a)).
- **Lignite** - coal that is classified as lignite A or B according to the American Society for Testing and Material (ASTM) (40 CFR 60.41(a)).
- **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 (82 CFR 152(h)).
- **Low-Pressure Appliance** - an appliance that uses a refrigerant with a boiling point above 10 °C (50.004 °F) at atmospheric pressure (29.9 in. (75.946 cm) of mercury). This definition includes but is not limited to equipment utilizing refrigerants -11, -113, and -123 (82 CFR 152(i)).
- **Major Maintenance, Service, Or Repair** - any maintenance, service, or repair involving the removal of any or all of the following appliance components (82 CFR 152(j)):
 1. compressor
 2. condenser
 3. evaporator
 4. auxiliary heat exchanger coil.
- **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 60.51(a)).

- **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 RCRA-C or any household waste as defined in RCRA-C (40 CFR 60.51(a)).
- **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:
 - maintenance, repair and replacement which the Administrator determines to be routine for a source category
 - an increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility
 - an increase in the hours of operation
 - use of an alternate fuel or raw material if, prior to the date any standard under this section becomes applicable to that source type, the existing facility was designed to accommodate the alternate use. A facility will be designed to accommodate an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications as assessed prior to the change (40 CFR 60.14).
- **Motor Vehicle Air Conditioner (MVAC)** - any appliance that is a motor vehicle air conditioner as defined in 40 CFR 82, subpart B (82 CFR 152(k)).
- **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 solid waste does include motor vehicle maintenance materials, limited to vehicle batteries, used motor oil, and tires. Municipal solid waste does not include wastes that are solely segregated medical wastes, but any mixture of segregated medical wastes and other wastes that contains more than 30 percent medical waste is considered municipal solid waste (40 CFR 60.51(a)).
- **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 60.51(a)).

- *MVAC-Like Appliance* - mechanical vapor compression, open-drive compressor appliances used to cool the driver or passenger 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 (82 CFR 152(l)).
- *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 (82 CFR 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 (82 CFR 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).
- *Petroleum Dry Cleaner* - a dry cleaning facility that uses petroleum solvent in a combination of washers, dryers, filters, stills, and settling tanks (40 CFR 60.621).
- *PM₁₀* - particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (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 (82 CFR 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 (82 CFR 152(q)).
- **Recover Refrigerant** - to remove refrigerant in any condition from an appliance without necessarily testing or processing it in any way (82 CFR 152(r)).
- **Recovery Efficiency** - the percentage of refrigerant in an appliance that is recovered by a piece of recycling or recovery equipment (82 CFR 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 (82 CFR 152(t)).
- **Refuse Derived Fuel** - combustible or organic portion of municipal waste that has been separated out and processed for use as fuel (40 CFR 60.51(a)).
- **Reid Vapor Pressure** - 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 60.111(a)).
- **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 (82 CFR 152(u)).
- **Small Appliance** - any of the following products that are fully manufactured, charged, and hermetically sealed in a factory with 5 lb or less of refrigerant (82 CFR 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.

- *Stationary Gas Turbines* - any simple cycle gas turbine, regenerative cycle gas turbine, or any gas turbine portion of a combined cycle steam/electric generating system that is not self-propelled. It may be mounted on a vehicle for portability (40 CFR 60.331).
- *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 sulfur dioxide 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 (82 CFR 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 (82 CFR 152(x)).
- *True Vapor Pressure* - the equilibrium partial pressure exerted by a petroleum liquid as determined in accordance with methods described in American Petroleum Institute Bulletin 2517, *Evaporation Loss From Floating Roof Tanks*, 1962 (40 CFR 60.111(a)).
- *Very Low Sulfur Oil* - an oil that contains no more than 0.5 weight percent sulfur or that, when combusted without sulfur dioxide emission control, has a SO₂ emission rate equal to or less than 0.5 lb/MBtu heat input (40 CFR 60.41b).
- *Very High-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point below -50 °C (-122.004 °F) at atmospheric pressure (29.9 in. or 75.946 cm of mercury). This definition includes but is not limited to equipment utilizing refrigerants -13 and -503 (82 CFR 152(y)).
- *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).

- *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, CO₂, carbonic acid, metallic carbides, or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions (40 CFR 51.100).
- *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).

**CLEAN AIR ACT (CAA) PROTOCOL
GUIDANCE FOR WORKSHEET USERS**

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All facilities	1-1 through 1-7	(1)(2)
Fuel burning facilities	1-8 and 1-9	
Steam generators	1-10 through 1-18	
Gas turbines	1-19	
Municipal waste Combustors	1-20 and 1-21	
Incinerator	1-22 through 1-24	
Gasoline	1-25 through 1-30	(1)(2)
Printing presses	1-31	
POL storage vessels	1-32 through 1-35	(1)(2)

Items numbered 1-8 through 1-24, 1-30, 1-31, 1-35 through 1-38, 1-41 through 1-43, and 1-45 are not Army Reserve applicable and are not included in this manual.

(a) CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager

CLEAN AIR ACT (CAA) PROTOCOL
GUIDANCE FOR WORKSHEET USERS
(continued)

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
Dry cleaning	1-36	
Acid production units	1-37 and 1-38	
CFCs and halons	1-39 through 1-45	(1)(2)
Refrigerants	1-46 through 1-59	(2)
Recordkeeping	1-60 and 1-61	(2)
Firing ranges	1-62 and 1-63	(1)(2)

Items numbered 1-8 through 1-24, 1-30, 1-31, 1-35 through 1-38, 1-41 through 1-43, and 1-45 are not Army Reserve applicable and are not included in this manual.

(a) CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager

CLEAN AIR ACT (CAA)

Plans and Maps to Review

- Plans and procedures applicable to air pollution control
- Emergency episode plan if required by state
- Military Construction Army (MCA) development and construction plans for new facilities proposed and copies of air pollution abatement plans for these as well as existing sources requiring control. Mobile source data, number of vehicles, and traffic counts for major thoroughfares if available
- SPCC and ISCP plan

Records to Review

- State and local air pollution control regulations
- State and local protocol supply
- Agency air pollution control regulations
- Emissions inventory (OMB Form 158-R75)
- All air pollution source permits
- Emission monitoring records and sampling data
- Opacity records
- Results of air sampling at the end of a response action
- Notifications of violations to regulatory authorities
- Instrument calibration and maintenance records
- Reports/complaints concerning air quality
- State and/or Federal regulatory inspections, inquiries, or other communications
- Regulatory inspection reports
- Documentation of preventive measure or action
- Results of air sampling at the conclusion of response action
- For installations with transportation control requirements: mobile source data, number of vehicles, and traffic counts for major thoroughfares

Physical Features to Examine

- All air pollution sources (fuel burners, incinerators, VOC sources, etc.)
- Air pollution monitoring and control devices
- Air emission stacks and POL storage tank vents
- Air intake vents
- Paint spray booths
- Maintenance shops (vehicle and aircraft).

People to Interview

- MUSARC Engineer/Facility Coordinator
- Facility Manager
- Shop Foreman
- Directorate of Engineering and Housing (DEH)/DPW
- BASOPS ARCOM Environmental Managers
- Any tenant activity environmental coordinators

Air Pollution Sources Found at Army Installations

Heat/Steam/Energy Production

- coal-fired power plants
- package boilers
- diesel generators
- emergency generators
- peak shaving generators
- turbines

Petroleum Product Storage and Transport

- tank farms
- gasoline service stations
- loading racks
- tanker transfer
- underground storage tanks
- aboveground storage tanks

Graphic Arts

- letterpress
- rotogravure
- offset lithography
- silkscreening

Degreasing Operations (Opns)

- vapor degreasers
- cold solvent cleaning
- solvent dip tanks

Surface Coating Operations

- paint booths
- metal parts coating lines
- furniture refinishing
- architectural coatings
- traffic striping

Paint stripping operations

Drycleaning operations

Photoprocessing operations

Training aid support centers (TASC)

Chemical recycling and recovery

Waste Disposal

- incineration of medical/
pathological/hazardous
waste
- open burning/open detonation
- landfills
- surface impoundments
- landfarms/bioremediation

Firing Ranges

- artillery
- small caliber weapons

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

(NOTE: Emission from some of these sources are not addressed under the CAA. Checklist items pertaining to emissions from source regulated by other laws or statutes are included in the sections concerning these laws.)

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

ALL FACILITIES

1-1. Determine actions or changes since previous review of air emissions (GMP).

...

1-2. Copies of all relevant Federal regulations, DOD, Army directives, and guidance documents on air emissions should be maintained at the facility (GMP).

...

Examine copy of previous review report to determine if noncompliance issues have been resolved. (1)(2)

...

Verify that copies of the following regulations, which are applicable, are maintained and kept current at the ARCOM or Support Installation: (1)(2)

- 40 CFR 60, *Standards of Performance for New Stationary Sources.*
- 40 CFR 61, *National Emission Standards for Hazardous Air Pollution.*
- 40 CFR 80, *Regulation of Fuels and Fuel Additives.*
- DOD 4120.14, *Environmental Pollution Prevention, Control, and Abatement.*
- AR 40-5, *Preventive Medicine.*
- AR 200-1, *Environmental Protection and Enhancement.*
- AR 420-49, *Heating, Energy Selection, Fuel Storage, Distribution, and Dispensing Systems.*
- AR 750-1, *Army Material Maintenance Policies.*
- TB MED 502, *Occupational and Environmental Health: Respiratory Protection Program.*
- TB MED 513, *Occupational and Environmental Health Guidelines for the Evaluation and Control of Asbestos Exposure.*
- TM 5-815, *Air Pollution Control Systems for Boilers.*
- OMB Form 158-R75, *USEPA Air Pollutant Emissions Report.*
- Applicable state and local regulations.

...

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>1-3. Installations are required to comply with state and local air quality requirements (CAA, 42 USC 7418(a)).</p> <p align="center">...</p>	<p>Verify that the installation is complying with 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. (1)(2)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - air pollution episode standby plans - permits for construction and operation of sources of emissions - placement of control devices on fuel burning sources - incinerators with less than 50 tons per day heat input - incinerations of medical, pathological, and infectious waste - open burning and detonation - fire fighting training - motor vehicle emissions and inspections - use of vapor control systems at gas dispensing facilities - transfer of fuel in tank trucks - solvent metal cleaners such as degreasers and cold cleaners - perchloroethylene drycleaners - fugitive dust emissions - control of particulate emissions from woodworking shops - transportation of refuse or materials in open vehicles - emissions and emission control requirements for the operation of existing fossil fuel-fired steam generators - the spray painting of vehicles, buildings, and/or furniture - certification of vehicles transporting VOC liquids - certification for operators of boilers - paving of roads and parking lots - toxic air pollutants - indoor air pollution - required reduction in vehicle miles driven.) <p>(NOTE: Under 42 USC 7418(c) and 7418(d) each department, agency, and instrumentality of executive, legislative, and judicial branches of the Federal Government are required to comply with valid vehicle inspection and maintenance programs except for vehicles that are considered military tactical vehicles. Also, all employees operating vehicles on a property or a facility over which the Federal Government has jurisdiction are required to furnish proof of compliance with applicable requirements of any valid vehicle inspection and maintenance programs.)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>1-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, re-occurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation and promotes good public relations and addresses systemic weakness in the overall operation of the program(GMP).</p> <p align="center">...</p>	<p>Determine what management systems are in place. (1)(2)</p> <p>Verify that the existing system addresses the issues associated with the CAA by: (1)(2)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p>Determine if training is being conducted. (1)(2)</p> <p align="center">...</p>
<p>1-5. Installations are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p align="center">...</p>	<p>Determine if any new regulations concerning air 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>(NOTE: For findings under this item, the <i>Regulatory Requirement</i> and the <i>Basis of Finding</i> should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p align="center">...</p>
<p>1-6. Preventive Medicine personnel at each installation are required to conduct and maintain an up-to-date emissions inventory listing all stationary sources of air pollution and inspect stationary air pollution sources periodically to assess compliance with applicable standards (AR 40-5, para 11-4b and AR 200-1, para 1-25c(1)).</p> <p align="center">...</p>	<p>Determine whether an emission inventory has been completed or updated recently. (1)(2)</p> <p>Examine emission inventory for completeness and compare inventory to any permits issued to ensure all recent changes/modifications have been included. (1)(2)</p> <p>Verify that periodic updates of the air emissions inventory are conducted. (2)</p> <p>Verify that Preventive Medicine personnel inspect stationary air sources periodically to assess compliance. (2)</p> <p>Determine if all sources of contaminants are accounted for by comparing the site inventory with knowledge gained from site tour and field work. (1)(2)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>1-7. An inventory of VOCs and hazardous air pollutants should have been done at the installation (GMP).</p> <p align="center">...</p> <p>FUEL BURNING FACILITIES</p> <p>1-8.</p> <p>1-9.</p> <p>STEAM GENERATORS</p> <p>1-10.</p> <p>1-11.</p> <p>1-12.</p> <p>1-13.</p>	<p>Verify that an inventory of VOCs and hazardous air pollutants has been done. (2)</p> <p align="center">...</p> <p>This item is not Army Reserve applicable.</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

1-14.

This item is not Army Reserve applicable.

1-15.

This item is not Army Reserve applicable.

1-16.

This item is not Army Reserve applicable.

1-17.

This item is not Army Reserve applicable.

1-18.

This item is not Army Reserve applicable.

GAS TURBINES

1-19.

This item is not Army Reserve applicable.

**MUNICIPAL WASTE
COMBUSTORS**

1-20.

This item is not Army Reserve applicable.

1-21.

This item is not Army Reserve applicable.

INCINERATORS

1-22.

This item is not Army Reserve applicable.

1-23.

This item is not Army Reserve applicable.

1-24.

This item is not Army Reserve applicable.

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>GASOLINE</p> <p>1-25. 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 (40 CFR 80.22(a)).</p> <p align="center">...</p> <p>1-26. Fuel pumps are required to display specific signs (40 CFR 80.22(d) and 80.22(e)).</p> <p align="center">...</p> <p>1-27. Gasoline pumps dispensing oxygenated gasoline are required to meet specific labeling requirements (40 CFR 80.35).</p> <p align="center">...</p>	<p>Interview DOL to determine what grades of gasoline are used, where they are dispensed, and what controls are in place to ensure proper fueling of vehicles. (1)(2)</p> <p align="center">...</p> <p>Inspect the installation gas stations to ensure that: (1)(2)</p> <ul style="list-style-type: none"> - signs stating that only unleaded gas should be introduced into vehicles labeled unleaded are displayed at each pump stand - nozzles are properly sized - each fuel pump is labeled indicating the type of fuel, i.e., "unleaded gasoline" or "contains lead anti-knock compounds." <p align="center">...</p> <p>Determine if the facility is located in an area with an oxygenated gasoline program with a minimum oxygen content per gal or minimum oxygen content requirements in conjunction with a credit program. (1)(2)</p> <p>Verify that if the facility 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 carbon monoxide pollution from motor vehicles.</i> (1)(2)</p> <p>Verify that if the facility 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 CAA as part of a program to reduce carbon monoxide pollution from motor vehicles.</i> (1)(2)</p> <p>(NOTE: Consult with state and local authorities concerning control areas and control periods.)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>1-28. 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 80.80(d)).</p> <p align="center">...</p>	<p>Identify the types of facilities to be monitored at the installation and verify that they are monitored as indicated: (1)(2)</p> <ul style="list-style-type: none"> - 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). <p>Verify that a standard of 9.0 psi is not exceeded for all designated volatility attainment areas. (1)(2)</p> <p>Verify that the standards outlined in Appendix 1-8 are met for any designated volatility nonattainment areas (see 40 CFR 81). (1)(2)</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 Appendix 1-8 by 1 lb.)</p> <p align="center">...</p>
<p>1-29. As of 1 October 1993 no diesel fuel shall be distributed, transported, or dispensed for use in motor vehicles unless it is free of the dye 1,4-dialkylamino-anthraquinone and has an octane 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 align="center">...</p>	<p>Verify that the dye, which is blue green, is not used in the fuel. (1)(2)</p> <p align="center">...</p>
<p>1-30.</p>	<p>This item is not Army Reserve applicable.</p>
<p>PRINTING PRESSES</p>	
<p>1-31.</p> <p align="center">...</p>	<p>This item is not Army Reserve applicable.</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>POL STORAGE VESSELS</p> <p>1-32. Storage vessels for petroleum liquids with a storage capacity greater than 40,000 gal but less than 65,000 gal, that started construction or modification after 8 March 1974 but before 19 May 1978, or with a capacity greater than 65,000 gal and 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 align="center">...</p>	<p>Determine whether or not the installation has any petroleum storage tanks meeting these parameters. (1)(2)</p> <p>Determine the vapor pressure of the petroleum liquids being stored. (1)(2)</p> <p>Verify that if the true vapor pressure of the petroleum stored is equal to or greater than 1.5 lb per square inch absolute (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. (1)(2)</p> <p>Verify that if the true vapor pressure of the petroleum liquid being stored is greater than 11.1 psia, the storage vessel is equipped with a vapor pressure recovery system or its equivalent. (1)(2)</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. (1)(2)</p> <p>(NOTE: Facilities storing petroleum liquids with a Reid Vapor pressure of less than 1.0 psia are not required to keep records.)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>1-33. Storage vessels for petroleum liquids with a storage capacity greater than 40,000 gal constructed after 18 May 1978 are required to meet specific standards (40 CFR 60.110(a) through 60.115(a)).</p> <p align="center">...</p>	<p>Determine whether the installation has any liquid petroleum storage vessels meeting these parameters. (1)(2)</p> <p>Determine the true vapor pressure of the liquids stored. (1)(2)</p> <p>Verify that vessels storing petroleum liquid with a true vapor pressure equal to or greater than 1.5 psia but less than 11.1 psia are equipped with one of the following: (1)(2)</p> <ul style="list-style-type: none"> - an external floating roof meeting design requirements outlined in 40 CFR 60.112(a) - a fixed roof with an internal floating type cover equipped with a continuous closure device between the tank wall and edges - 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 - an equivalent, approved system. <p>Verify that vessels storing petroleum liquids with a vapor pressure greater than 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. (1)(2)</p> <p>Verify that the following testing is done: (1)(2)</p> <ul style="list-style-type: none"> - gap measurement for primary seals of external floating roofs shall be measured at least once every 5 yr - gap measurement for secondary seals of external floating roofs shall be measured at least once every year. <p>Verify that the following records are kept: (1)(2)</p> <ul style="list-style-type: none"> - records of gap measurement are to be kept for at least 2 yr following the date of measurement - 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. <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

COMPLIANCE CATEGORY: CLEAN AIR ACT (CAA) ECAAR	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>1-34. Storage vessels for volatile organic liquids (VOLs) having a capacity of greater than or equal to 40 cubic meters (m³) for which construction, reconstruction, or modification was started after 23 July 1984 are required to meet specific standards (40 CFR 60.110(b) through 60.115(b)).</p> <p style="text-align: center;">...</p> <p>1-35.</p> <p style="text-align: center;">...</p>	<p>Determine if any of the storage vessels on the installation meet these parameters. (1)(2)</p> <p>Determine the vapor pressure of the liquids being stored in the vessels. (1)(2)</p> <p>Verify that storage vessels with a design capacity greater than or equal to 151 m³ containing VOL with a vapor pressure equal to or greater than 5.2 kPa but less than 76.6 kPa or storage vessels with a capacity greater than or equal to 75 m³ but less than 151 m³ containing VOL that has a maximum vapor pressure equal to or greater than 27.6 m³ but less than 76.6 kPa are equipped with one of the following: (1)(2)</p> <ul style="list-style-type: none"> - a fixed roof in combination with an internal floating roof - an external floating roof - a closed vent system and control device that reduces emissions by 95 percent by weight - an approved equivalent system. <p>Verify that storage vessels with a design capacity greater than or equal to 75 m³ containing a VOL with a maximum true vapor pressure greater than or equal to 76.6 kPa is equipped with one of the following: (1)(2)</p> <ul style="list-style-type: none"> - a closed vent system and control device that reduces emissions by 95 percent by weight - an approved equivalent alternative method. <p>Verify that the accumulated areas or gaps do not exceed: (1)(2)</p> <ul style="list-style-type: none"> - 21.2 cm²/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 - 21.2 cm²/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. <p>(NOTE: These standards do not apply to pressure vessels designed to operate in excess of 204.9 kPa 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 style="text-align: center;">...</p> <p>This item is not Army Reserve applicable.</p> <p style="text-align: center;">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>DRY CLEANING</p> <p>1-36.</p> <p>ACID PRODUCTION UNITS</p> <p>1-37.</p> <p>1-38.</p> <p>CHLOROFLUORO-CARBONS AND HALONS</p> <p>1-39. Facilities that procure and store CFCs and halons for mission critical applications, when substitutes are not available, or use them to service equipment, are required to produce a <i>CFC and Halon Annual Report</i> (DOD Directive 6050.9, para E3).</p> <p align="center">...</p> <p>1-40. In order to minimize atmospheric emissions of ozone-depleting substances, specific good management practices should be instituted at the installation (GMP).</p> <p align="center">...</p> <p>1-41.</p> <p>1-42.</p> <p>1-43.</p> <p align="center">...</p>	<p>This item is not Army Reserve applicable.</p> <p>This item is not Army Reserve applicable.</p> <p>This item is not Army Reserve applicable.</p> <p>Determine if the <i>CFC and Halon Annual Report</i> (DD Form 2530) has been completed by the ARCOM. (2)</p> <p>Verify that the for indicates the following: (2)</p> <ul style="list-style-type: none"> - aggregate procurement (by thousand pounds) of CFCs and halons for which they are the integrated item manager - data on significant noncentralized CFC and halon procurement. <p>Verify that in areas where CFCs and halons are used or stored the following is being done: (2)</p> <ul style="list-style-type: none"> - dependence on CFCs and halons is reduced - emissions are being minimized - conservation practices have been implemented. <p>Verify that the installation is working towards the goals in Appendix 1-9. (2)</p> <p align="center">...</p> <p>Verify that ozone-depleting substances are procured only in the absence of suitable alternatives. (2)</p> <p>Verify that there is no disposal of ozone-depleting substance by direct release to the atmosphere. (2)</p> <p>Verify that ozone-depleting substances are recycled. (2)</p> <p align="center">...</p> <p>This item is not Army Reserve applicable.</p> <p>This item is not Army Reserve applicable.</p> <p>This item is not Army Reserve applicable.</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>1-44. 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 align="center">...</p> <p>1-45.</p> <p align="center">...</p>	<p>Verify that Class I or Class II substances are not knowingly vented, released, or disposed of in the environment. (1)(2)</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> <p align="center">...</p> <p>This item is not Army Reserve applicable.</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>REFRIGERANTS</p> <p>1-46. 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 align="center">...</p> <p>1-47. 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) and 82.156(a)(5)).</p> <p align="center">...</p> <p>1-48. 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 align="center">...</p>	<p>Determine if the installation is maintaining, servicing, repairing, or disposing of appliances containing refrigerants. (2)</p> <p>Verify that class I or II substances are not being vented to the atmosphere. (2)</p> <p>(NOTE: <i>De minimis</i> 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: <ul style="list-style-type: none"> - any person servicing, maintaining, or repairing appliances except for MVACs - persons disposing of appliances, including MVACs - refrigerant reclaimers, appliance owners, recycling and recovery equipment.) </p> <p align="center">...</p> <p>Verify that the required practices outline in 40 CFR 82.156 (see checklist items 1-48 through 1-60) are met. (2)</p> <p>Verify that equipment is used that is certified for the appliance in question. (2)</p> <p align="center">...</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. (2)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>1-49. 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 align="center">...</p>	<p>Verify that the installation has submitted certification to the USEPA that it has acquired appropriate recovery equipment. (2)</p> <p align="center">...</p>
<p>1-50. 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 align="center">...</p>	<p>Verify that the installation has at least one available piece of equipment. (2)</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 align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>1-51. System dependent equipment must not be used with appliances normally containing more than 15 lb of refrigerant (40 CFR 82.156(c)).</p> <p align="center">...</p>	<p>Verify that system dependent equipment is not used with appliances normally containing more than 15 lb of refrigerant. (2)</p> <p align="center">...</p>
<p>1-52. 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 align="center">...</p>	<p>Verify that refrigerant is evacuated to either a system receiver or certified recovery or recycling machine. (2)</p> <p align="center">...</p>
<p>1-53. When appliances, except for small appliances, MVACs and MVAC-like appliance 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 align="center">...</p>	<p>Verify that if disposal is occurring, the refrigerant is being evacuated to a certified recovery or recycling machine. (2)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>1-54. When appliances, except for small appliances, MVAC 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 and 82.156(a)(1) and 82.156(a)(2)).</p> <p align="center">...</p> <p>1-55. Appliances, except for small appliances, MVACs and MVAC-like appliances, that are being disposed of must be evacuated to the levels in Appendix 1-11 (40 CFR 82.150 and 82.156(a)(3)).</p> <p align="center">...</p>	<p>Verify that evacuation is done to the levels in Appendix 1-11 prior to opening the appliance unless one of the following is met: (2)</p> <ul style="list-style-type: none"> - 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 - the evacuation limits in Appendix 1-11 are not possible because of leaks in the equipment or the refrigerant being recovered would be substantially contaminated. <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: (2)</p> <ul style="list-style-type: none"> - evacuated to a pressure no higher than 0 pounds per square inch gauge (psig) before it is opened if it is a high or very-high-pressure appliance - 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. <p>Verify that if the evacuation limits in Appendix 1-11 are not possible because of leaks in the equipment or the refrigerant being recovered would be substantially contaminated, the person opening the appliance: (2)</p> <ul style="list-style-type: none"> - isolates leaking from nonleaking components whenever possible - 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. <p align="center">...</p> <p>Verify that appliances are evacuated to the levels listed in Appendix 1-11 prior to disposal. (2)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>1-56. 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 align="center">...</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. of mercury vacuum. (2)</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. (2)</p> <p align="center">...</p>
<p>1-57. 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 align="center">...</p>	<p>(NOTE: This includes but is not limited to scrap recyclers and landfill operators.)</p> <p>Verify that installations: (2)</p> <ul style="list-style-type: none"> - recover any remaining refrigerant from the appliance - 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. <p>Verify that copies of signed statements are retained for 3 yr. (2)</p> <p align="center">...</p>
<p>1-58. Installations recovering refrigerant for purpose of disposal must meet specific standards (40 CFR 82.156(g) and 82.156(h)).</p> <p align="center">...</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. (2)</p> <p>Verify that installations recovering refrigerant from small appliances for the purpose of disposal of the appliance does one of the following: (2)</p> <ul style="list-style-type: none"> - recover 90 percent of the refrigerant when the compressor in the appliance is operating - recover 80 percent of the refrigerant in the appliance when the compressor in the appliance is not operating - evacuate the small appliance to 4 in. of mercury vacuum. <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>1-59. Leaking appliances must be repaired when specific limits are exceeded (40 CFR 82.156(i)).</p> <p align="center">...</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. (2)</p> <p>Verify that other appliances normally containing more than 50 lb 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. (2)</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. (2)</p> <p align="center">...</p>
<p>RECORDKEEPING</p> <p>1-60. 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 align="center">...</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. (2)</p> <p>Verify that records are retained for 3 yr. (2)</p> <p align="center">...</p>
<p>1-61. Facilities at the installation servicing appliances normally containing 50 or more pounds 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 align="center">...</p>	<p>Verify that documentation of servicing and amounts of refrigerant added is provided to the appliance owner and retained for 3 yr. (2)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
CLEAN AIR ACT (CAA)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

FIRING RANGES

1-62. Lead exposure must be controlled at indoor firing ranges (29 CFR 1910.1025 and AR 385-63).

Check records and if airborne lead concentrations exceed 0.03mg/m³, verify that personnel exposure does not exceed limits, and that efforts are being made to reduce the level, if appropriate. (1)(2)

Confirm that initial, detailed and annual inspections, have been made to ensure compliance with current health and safety standards. (1)(2)

Look at DA Form 5687-R and verify that annual inspection has been made within 45 days of the anniversary date of the last annual inspection and that status requirements are being met. (1)(2)

Check that ventilation system is working properly. An optimum system will include make-up air behind the firing line and exhausted air at the target line or bullet trap. (1)(2)

Verify that range air temperature is between 65 °F and 80 °F. (1)(2)

Observe or interview to establish proper housekeeping procedures are employed: (1)(2)

- ventilation system in operation during all cleanup activities
- dust, fume and mist respirators approved by NIOSH are worn during cleanup
- wet methods or vacuum (supplied with HEPA filter) used and NO dry sweeping.

...

...

1-63. Lead exposure for personnel should be within specific limits (GMP).

Determine if samples have been taken for lead exposure. (1)(2)

Verify that limits do not exceed those listed in Appendix 1-12. (1)(2)

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

Appendix 1-1

Standards of Performance, 40 CFR Part 60

Source Category	Fuel Type	Pollutant	Emission Level	Monitoring Requirement
<i>Subpart D</i>				
Steam generators* (> 250 MBtu/h) constructed or modified after 8/17/71	Solid Fossil Fuel	Particulate	0.10 lb/MBtu	None
		Opacity	20%; 27% 6 min/h	Continuous
		SO ₂	1.2 lb/MBtu	Continuous
	NO _x (except lignite and coal refuse)	0.70 lb/MBtu	Continuous	
	Liquid Fossil Fuel	SO ₂	0.80 lb/MBtu	Continuous
		NO _x	0.30 lb/MBtu	Continuous
	Gaseous Fossil Fuel	NO _x	0.20 lb/MBtu	Continuous
	Lignite	NO _x	0.60 lb/MBtu	Continuous
	Lignite mined in ND, SD, or MT, burned in a cyclone fired unit	NO _x	0.80 lb/MBtu	Continuous
<i>Subpart E</i>				
Incinerators (> 50 tons/day) constructed or modified after 8/17/71	Inciner- ators	Particulate CO ₂	0.08 gr/dscf** corrected to 12% CO ₂	Record of daily charging rates and hours of operation

*Does not include electric utility steam generating unit that started construction or modification after 18 September 1978.

**gr/dscf - grains per dry standard cubic foot



Appendix 1-2 through 1-7 are not applicable.

Appendix 1-8

**Reid Vapor Pressure (RVP)
for Installation Geographic Area
(40 CFR 80.27)**

Applicable Standards¹ 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
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

Appendix 1-8 (continued)

State	May	June	July	August	September
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	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 1993 in the Denver-Boulder nonattainment area will be 9.0 for 1 June through 15 September.

Appendix 1-9

Department of Defense Goals For Reduction Releases, Procurement, and Use of Ozone-Depleting Substances

Phase I	Phase II	Phase III	Phase IV	Phase V
Institute plans to reduce unnecessary releases during operation, maintenance, and training.	Institute plans to eliminate procurement and use.	Stop use in new procurements.	Phaseout of current applications to 50 percent of percent of 1986 levels.	Reduce use in all applications to zero.

Goals for CFCs

	Phase I	Phase II	Phase III	Phase IV	Phase V
Category III	OCT 90	OCT 92	OCT 96	OCT 96	OCT 2000
Category II	OCT 90	OCT 93	OCT 97	OCT 97	OCT 2000*
Category I	OCT 90	OCT 93	OCT 98	OCT 98	Upon available substitutes

Goals for Halons

Category III	OCT 90	OCT 90	OCT 90	---	OCT 95
Category II	OCT 90	OCT 90	OCT 90	OCT 95	OCT 2000*
Category I	OCT 90	OCT 90	OCT 95	OCT 95	Upon available substitutes

*Meet requirement from recycle or inventory.

NOTE: All phaseout goals are dependent on development of suitable substitutes for ozone-depleting substances in a timely manner. To prevent interruption of supplies for mission-critical uses (Category I), these uses will be identified and plans initiated not later than October 1990 to recycle existing stocks and to initiate stockpiling of sufficient quantities of ozone-depleting substances to allow operation for the useful life of the weapons system.

Category I: Mission-Critical Uses - The highest-priority uses will be those that are mission critical. Mission-critical uses have a direct impact on combat mission capability and include uses that are integral to combat mission assets or affect operability of these assets. Mission-critical uses include cooling operational suppression systems in tactical vehicle crew compartments to protect the lives of mission-critical personnel.

Category II: Essential Uses - Essential uses include those applications which have an indirect effect on combat mission assets and play an auxiliary role in ensuring the operability of those assets. Essential uses include process cooling applications and charging portable fire extinguishers for electronic area protection.

Category III: Non-Essential Uses - This category includes all non-essential uses. Non-essential uses include uses for comfort cooling in family housing and installation support activities.

Appendix 1-10

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

Controlled Substance	Ozone Depletion Weight
----------------------	------------------------

Class I

Group I

CFCl ₃ - Trichlorofluoromethane (CFC-11)	1.0
CCl ₂ F ₂ - Dichlorodifluoromethane (CFC-12)	1.0
CCl ₂ F-CClF ₂ - Trichlorotrifluoroethane (CFC-113)	0.8
CF ₂ Cl-CClF ₂ - Dichlorotetrafluoroethane (CFC-114)	1.0
CClF ₂ -CF ₃ - (Mono)chloropentafluoroethane (CFC-115)	0.6

All isomers of the above chemicals

Group II

CF ₂ BrCl - Bromochlorodifluoromethane (Halon 1211)	3.0
CF ₃ Br - Bromotrifluoromethane (Halon 1301)	10.0
C ₂ F ₄ Br ₂ - Dibromotetrafluoroethane (Halon 2402)	6.0

All isomers of the above chemicals

Group III

CF ₃ Cl - Chlorotrifluoromethane (CFC-13)	1.0
C ₂ FCl ₅ - (CFC-111)	1.0
C ₂ F ₂ Cl ₄ - (CFC-112)	1.0
C ₃ FCl ₇ - (CFC-211)	1.0
C ₃ F ₂ Cl ₆ - (CFC-212)	1.0
C ₃ F ₃ Cl ₅ - (CFC-213)	1.0

All isomers of the above chemicals

Appendix 1-10 (continued)

Controlled Substance Ozone Depletion Weight

Group III (continued)

$C_3F_4Cl_4$ - (CFC-214) 1.0

All isomers of the above chemicals

$C_3F_5Cl_3$ - (CFC-215) 1.0

$C_3F_6Cl_2$ - (CFC-216) 1.0

C_3F_7Cl - (CFC-217) 1.0

Group IV

CCl_4 - Carbon Tetrachloride 1.1

Group V

$C_2H_3Cl_3$ - 1,1,1-Trichloroethane (Methyl Chloroform) 0.1

Class II

$CHFCl_2$ - Dichlorofluoromethane (HCFC-21) *[res.]

CHF_2Cl - Chlorodifluoromethane (HCFC-22) 0.05

CH_2FCI - Chlorofluoromethane (HCFC-31) [res.]

C_2HFCl_4 - (HCFC-121) [res.]

$C_2HFCl_2Cl_3$ - (HCFC-122) [res.]

$C_2HF_3Cl_2$ - (HCFC-123) 0.02

C_2HF_4Cl - (HCFC-124) 0.02

$C_2H_2FCl_3$ - (HCFC-131) [res.]

$C_2H_2F_2Cl_2$ - (HCFC-132b) [res.]

$C_2H_2F_2Cl$ - (HCFC-133a) [res.]

$C_2H_3FCl_2$ - (HCFC-141b) 0.12

$C_2H_3F_2Cl$ - (HCFC-142b) 0.06

Appendix 1-10 (continued)

Controlled Substance

Ozone Depletion Weights

Class II (continued)

C_3HFCl_6 - (HCFC-221)	[res.]
$C_3HF_2Cl_5$ - (HCFC-222)	[res.]
$C_3HF_3Cl_4$ - (HCFC-223)	[res.]
$C_3HF_4Cl_3$ - (HCFC-224)	[res.]
$C_3HF_5Cl_2$ - (HCFC-225ca)	[res.]
(HCFC-225cb)	[res.]
C_3HF_6Cl - (HCFC-226)	[res.]
$C_3H_2FCl_5$ - (HCFC-231)	[res.]
$C_3H_2F_2Cl_4$ - (HCFC-232)	[res.]
$C_3H_2F_3Cl_3$ - (HCFC-233)	[res.]
$C_3H_2F_4Cl_2$ - (HCFC-234)	[res.]
$C_3H_2F_5Cl$ - (HCFC-235)	[res.]
$C_3H_3FCl_4$ - (HCFC-241)	[res.]
$C_3H_3F_2Cl_3$ - (HCFC-242)	[res.]
$C_3H_3F_3Cl_2$ - (HCFC-243)	[res.]
$C_3H_3F_4Cl$ - (HCFC-244)	[res.]
$C_3H_4FCl_3$ - (HCFC-251)	[res.]
$C_3H_4F_2Cl_2$ - (HCFC-252)	[res.]
$C_3H_4F_3Cl$ - (HCFC-253)	[res.]
$C_3H_5FCl_2$ - (HCFC-261)	[res.]
$C_3H_5F_2Cl$ - (HCFC-262)	[res.]
C_3H_6FCl - (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.

Appendix 1-11

**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

Appendix 1-12

Lead Exposure Limits

Personnel Exposure Limits for Intermittent Atmospheric Lead Exposures

Airborne lead concentrations (mg/m ³)	Maximum Hours of Allowable Exposure per day	
	Firing 30 or more days per year	Firing less than 30 days per year
0.0 to 0.03	8	8
0.03 to 0.04	6	8
0.04 to 0.05	4.5	8
0.05 to 0.06	4	6.5
0.06 to 0.08	3	5
0.08 to 0.10	2.25	4
0.10 to 0.15	1.5	2.5
0.15 to 0.20	1	2
0.20 to 0.30	0.75	1.25
0.30 to 0.40	0.5	1
0.40 to 0.50	0.5	0.75
0.50 to 0.75	0.25	0.50
0.75 to 1.00	0.25	0.25
> 1.00	0	0

INSTALLATION:	COMPLIANCE CATEGORY: CLEAN AIR ACT (CAA) ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

Section 2

CLEAN WATER ACT (CWA)

SECTION 2

CLEAN WATER ACT (CWA)

A. Applicability of this Protocol

This protocol includes regulations, responsibilities and compliance requirements associated with wastewater discharge at Army Reserve facilities.

- Wastewater discharge can include, but is not limited to, any of the following:
 - Sanitary or industrial wastewater discharge directly to a receiving stream, or through an onsite treatment facility
 - Sanitary or industrial wastewater discharge to an offsite Publicly Owned Treatment Works (POTW) or to a treatment plant of another Department of Defense (DOD) or Federal activity
 - Stormwater discharge associated with industrial activity on the facility going to a receiving stream or water body or to a receiving stream or water body
 - Industrial or storm wastewater drained to an industrial waste reservoir.

Most Army Reserve facilities have wastewater discharge of one type or another, and therefore this protocol will be applicable to most facilities.

Wastewater discharge is primarily regulated on the Federal level by the U.S. Environmental Protection Agency (USEPA) and/or by state regulatory agencies. This protocol integrates all wastewater related compliance requirements from Federal, state, DOD, and Army Regulations (ARs). However, because the focus of wastewater discharge compliance is a facility's specific permits, many of the review items in this protocol are presented in a generic manner.

It also contains information on petroleum, oil, and lubricant (POL) regulations and requirements. This protocol applies to Army Reserve facilities which store, transport, dispose, or utilize petroleum-based fuels or lubricants aboveground. The protocol presents review action items that correspond to regulations, procedures, and organizational mechanisms designed to prevent or limit the accidental release of POL materials to surface water, groundwater, or soils.

This protocol covers management of aboveground POL bulk storage tanks, organizational tanks, pipeline delivery systems, truck fill stands, immediate operating storage areas, and fueling/ defueling flight line operations. POL materials addressed include jet fuel (JP-4), AVGAS, MOGAS, diesel fuel, and lubricating oils.

POL Management is regulated by Federal (USEPA) and state regulatory agencies. The implementation of the required regulatory responses at the facility level are based on DOD and U.S. ARs and technical orders (TOs). The primary focus of the review protocol worksheets is the organizational mechanisms which control or prevent environmental releases at the source.

B. Federal Legislation

- *The Federal Water Pollution Control Act*, commonly known as the *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 *CWA* is to restore and maintain the chemical, physical and biological integrity of the nation's waters. To achieve this objective, the following must be done:
 - the discharge of pollutants into the navigable waters be eliminated by 1985
 - wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by 1 July 1983
 - the discharge of toxic pollutants in toxic amounts be prohibited
 - Federal financial assistance be provided to construct POTWs/Federally owned treatment works (FOTW)
 - areawide waste treatment management planning processes be developed and implemented to assure adequate control of sources of pollutants in each state
 - a major research and demonstration effort be made to develop technology necessary to eliminate the discharge of pollutants into the navigable waters, waters of the contiguous zone, and the oceans;
 - programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of this Act to be met through the control of both point and nonpoint sources of pollution (33 USC 1251).

Each department, agency, or instrument of the executive, legislative, and judicial branches of the Federal Government, and each officer, agent, or employee of such organization, must comply with all Federal, state, interstate, and local requirements, administrative authority, and process and sanctions regarding the control and abatement of water pollution in the same manner and to the same extent as any nongovernmental entity including the payment of reasonable service charges (33 USC 1323(a)).

The USEPA will coordinate with the head of each department, agency, or instrument of the Federal Government to develop a program of cooperation for utilizing wastewater control systems using those innovative treatment processes and techniques. Such program will include an inventory of property and facilities which could use such processes and techniques (33 USC 1323(b)(1)).

- *The Water Quality Improvement Act of 1974* is the primary Federal law governing the discharge of oil into navigable waters. This regulation prohibited 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 on adjoining shorelines, or a sludge or emulsion to be deposited beneath the surface of the water or violates a regulatory water quality standard.
- *The Oil Pollution Act 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. These requirements are not addressed in this manual.

C. State/Local Requirements

- States normally have wastewater discharge legislation and regulations that require permitting similar to the NPDES program. The state is often delegated the 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 (SPDES) even though a NPDES permit has been issued by the USEPA. The states and the USEPA normally cooperate in the permit issuance process to ensure 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 may also have more stringent requirements for wastewater treatment plant operations. Some states have sanitary treatment plant (STP) operator licensing and certification programs that require operators to pass an exam and have a required level of experience.

Local entities (counties, cities) also may 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 subject to pretreatment permits issued by the POTW, state, or USEPA as appropriate.

In some cases, another DOD activity may stipulate effluent discharge limitations for discharges to their treatment plant if the Army Reserve facility discharges to the DOD facility.

Many states and some major metropolitan and regional planning agencies have developed legislation and implemented regulations which closely parallel the Federal statutes. Some, however, may differ in important ways, and the evaluator should obtain copies of the state or local requirements for Oil and Hazardous Substances Contingency Plan (OHSPC) and Spill Prevention Control and Countermeasure (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. In all cases the most stringent regulations should be followed.

D. DOD Regulations

- DOD Instruction 4120.14, *Policies for Improvements Needed to Abate Water Pollution Emanating from DOD Facilities*, (NOTAL) implements within DOD policies provided by Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*, and OMB Circular A-106, and establishes policies for developing and submitting plans for installing improvements needed to abate water pollution emanating from DOD facilities.
- DOD Directive 4140.25M, *Procedures for the Management of Petroleum Products*, describes procedures for the management of petroleum products on military installations.
- DOD Directive 5030.41, *Oil and Hazardous Substances Pollution Prevention and Contingency Program*, addresses requirements for compliance with the National OHSPC.
- Defense Environmental Quality Program Policy Memorandum (DEQPPM) 79-3, *Management of Recoverable and Waste Liquid Petroleum Products*, addresses the management of recoverable and waste liquid petroleum products.

E. U.S. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, directs all Army Reserve facilities to comply with the provisions of the CWA. Chapter 3 outlines the Water Resources Management Program, which includes regulation and guidance beyond the limits of the CWA and the *Safe Drinking Water Act (SDWA)* (discussed in Section 3 of this manual). The Water Resources

Management Program requires the Army Reserve to conserve all water resources, control or eliminate all sources of pollutants, cooperate with Federal, state, regional, and local authorities in forming and carrying out water pollution control plans, control runoff and erosion, and consider nonpoint source abatement in all construction, operation, and land management activities.

The paragraph on the CWA (para 3-3) provides specific instructions for meeting compliance requirements. It covers discharge permits under NPDES, site inspections, connection to municipal/regional wastewater systems, pretreatment standards, investigation of complaints, and notification procedures.

Chapter 8 of AR 200-1 addresses Oil and Hazardous Substances Spill Contingency Planning, Control, and Emergency Response. It prescribes the policy and procedure for prevention and control of spills of oil and hazardous substances, and sets out guidance in accordance with regulations implemented by the CWA.

- AR 420-46, *Water and Sewage*, establishes policies and procedures governing facilities that supply water and dispose of sewage and industrial waste. It requires that cooperation be given to Federal, state, and local regulatory authorities in the abatement and control of pollution of surface and underground waters by sewage and industrial wastes from installations and activities.

F. Key Compliance Requirements

- Discharge Permits - NPDES permits are required for all point source discharges to "navigable waters." Discharges shall comply with all terms and conditions of an USEPA or state issued permit under the SPDES. Stormwater points issued under the NPDES program are often needed for maintenance facilities.
- Monitoring, Recordkeeping, and Reporting - Discharge permits usually require monitoring that includes the installation, use, and maintenance of equipment for influent and effluent and receiving water sampling. Recordkeeping and reporting, including scheduled discharge monitoring reports (DMR), are also required.
- Discharges to Army Reserve POTWs/FOTWs or treatment plant of another DOD activity - Discharges to offsite treatment facilities shall meet all applicable general and categorical pretreatment standards in 40 CFR 401-471. Army Reserve facilities that discharge to offsite treatment facilities must adhere to the discharge limitations that are stipulated in local ordinances. However, many local POTW/FOTW authorities have not yet developed pretreatment programs.
- Industrial Pretreatment - The USEPA has set effluent standards for many industries that discharge to POTWs/FOTWs. These categorical standards are

contained in 40 CFR 404 to 471, and are implemented through local pretreatment programs established by POTWs/FOTWs. In some instances, a state may assume this local responsibility. Industrial discharge limitations may also be stipulated in local ordinances. Facilities can control discharges and impose their own pretreatment requirements on discharges to their collection system through the facility wastewater regulation.

Industrial activities on Army Reserve facilities which may be subject to categorical discharge limitations are:

- electroplating (40 CFR 413)
 - steam electric power generating (40 CFR 423)
 - metal finishing (40 CFR 433)
 - a hospital (40 CFR 460).
- Operator Certification/Training - state regulatory agencies require all superintendents and operators of waste treatment facilities to be certified by the state. Periodic refresher training is also required of treatment plant personnel to maintain their certification.
 - Sludge Disposal - Sludge from wastewater treatment plants and pretreatment septicics must be disposed of in accordance with state regulations. Normally, testing of sludge is required to ensure that it does not have heavy metal concentrations that would render it a hazardous waste. Permits are normally required to dispose of sludge by land application.
 - Bulk aboveground storage tanks (over 660 gallons (gal)) - These tanks 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 Control and Countermeasure (SPCC) Plan - Army Reserve facilities that operate POL facilities are required to prepare a SPCC Plan (40 CFR 112). This plan must be prepared in accordance with the guidelines set forth in 40 CFR 112.7, and the plan must be reviewed every 3 years (yr) and modified within 6 months (mo) of significant changes in POL facilities, or if new, field proven technology has been developed which will significantly reduce the likelihood of a spill (40 CFR 112.5).
 - Spill Response Training - All Army Reserve personnel involved with the management and handling of oil and hazardous substances must take part in periodic spill prevention and response training programs (40 CFR 112.7).

G. Key Compliance Definitions

These definitions were obtained from the Federal, DOD, and U.S. ARs cited previously, and from 40 CFR 122 and Section 402 of the CWA.

- *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 carbon dioxide 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 carbon dioxide 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 equaled once in 100 yr) (40 CFR 503.9(b)).
- *Blowdown* - the minimum discharge of recirculating water for the purpose of discharging materials contained in the water, the further buildup of which would cause concentration in amounts exceeding limits established by best engineering practices (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)).
- *CN_A* - cyanide amenable to chlorination (40 CFR 413.02).
- *CN_T* - cyanide, total (40 CFR 413.02).
- *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/FOTW, as defined in 40 CFR 501.2, required to have an approved pretreatment program under 40 CFR 403.8(a) (including any POTW/FOTW 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 Environmental Protection Agency (EPA) 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 (g) of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than three Most Probable Number/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), (c), (e), or (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 seven percent or higher, the temperature of the sewage sludge shall be 50 degrees Celsius ($^{\circ}\text{C}$) or higher; the time period shall be 20 minutes (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.

$$D = \frac{131,700,000}{10 \cdot 0.1400t} \quad \text{Eq. (2)}$$

Where, D=time in days. t=temperature in $^{\circ}\text{C}$.

When the percent solids of the sewage sludge is seven 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 $^{\circ}\text{C}$ or higher; the time period shall be 15 seconds (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 seven 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 seven percent; the temperature of the sewage sludge is 50 $^{\circ}\text{C}$ or higher; and the time period is 30 min or longer, the temperature and time period shall be determined using the below equation.

$$D = \frac{50,070,000}{10 \cdot 0.1400t} \quad \text{Eq. (3)}$$

Where, D=time in days. t=temperature in $^{\circ}\text{C}$.

- Alternative 2. Either the density of fecal coliform in the sewage sludge is less than 1000 Most Probable Number/g of total solids (dry weight basis), or the density of Salmonella sp. bacteria in the sewage sludge shall be less than three Most Probable Number/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), (c), (e), or (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 hour (h).

The temperature of the sewage sludge shall be above 52 °C 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 Most Probable Number/g of total solids (dry weight basis), or the density of Salmonella sp. bacteria in sewage sludge shall be less than three Most Probable Number/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), (c), (e), or (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 four grams 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 four grams 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 four grams 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 Most Probable Number/g of total solids (dry weight basis), or the density of Salmonella sp. bacteria in the sewage sludge shall be less than three Most Probable Number/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), (c), (e), or (f).

The density of enteric viruses in the sewage sludge shall be less than one 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), (c), (e), or (f), unless otherwise specified by the permitting authority.

The density of viable helminth ova in the sewage sludge shall be less than one per four grams 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), (c), (e), or (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 Most Probable Number/g of total solids (dry weight basis), or the density of Salmonella, sp. bacteria in the sewage sludge shall be less than three Most Probable Number/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), (c), (e), or (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 Most Probable Number/g of total solids (dry weight basis), or the density of Salmonella, sp. bacteria in the sewage sludge shall be less than three Most Probable Number/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), (c), (e), or (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 2,000,000 Most Probable Number/g of total solids (dry weight basis) or 2,000,000 Colony Forming Units/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.

- *Contaminate An Aquifer* - to introduce a substance that causes the maximum contaminant level 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 maximum contaminant label for nitrate in 40 CFR 141.11 (40 CFR 503.21(c)).
- *Contiguous Zone* - the entire zone established or to be established by the United States under Article 24 of the Convention on the Territorial Sea and Contiguous Zone (40 CFR 110.1).
- *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)).
- *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)).
- *Direct Discharge* - the discharge of a pollutant (40 CFR 122.2).
- *Discharge* - when used in relation to Section 311 of the Act, includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping, but excludes:
 1. discharges in compliance with a permit
 2. discharges resulting from circumstances identified and reviewed and made a part of the public record with respect to an issued permit and subject to a condition in the permit

3. continuous or anticipated intermittent discharges from a point source, identified in a permit application that are caused by events occurring within the scope of relevant operating or treatment systems (40 CFR 110.1).
- *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 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 Limitation* - 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 PCBs equal to greater than 50 milligrams per kilograms (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 (i.e., 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).

- *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)).
- *Fiber Crops* - crops such as flax and cotton (40 CFR 503.9(k)).
- *Final Cover* - the last layer of soil or other material placed on a sewage sludge unit at closure (40 CFR 503.21(g)).
- *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)).
- *Food Crops* - crops consumed by humans. These include, but are not limited to, fruits, vegetables, and tobacco (40 CFR 503.9(l)).
- *Forest* - a tract of land thick with trees and underbrush (40 CFR 503.11(g)).
- *FOTW* - Federally Owned Treatment Works.
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *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)).
- *Hourly Average* - the arithmetic mean of all measurements, taken during an hour. At least two measurements must be taken during the hour (40 CFR 503.41(f)).

- *Indirect Discharge* - the introduction of pollutants into a POTW/FOTW from any non-domestic 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, byproducts 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, Subtitle 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 scrap-yards, battery reclaimers, salvage yards, and automobile junkyards, including but not 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 per day 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 to 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)).
- *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 that, alone or in conjunction with one or more discharges from other sources, inhibits or disrupts the POTW/FOTW and causes a violation of any requirement of the POTW's/FOTW's NPDES permit (40 CFR 403.3(j)).
- *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 (i.e., a construction site located in a city) (40 CFR 503.31(d)).
- *Land With A Low Potential For Public Exposure* - land the the public uses infrequently. This includes, but is not limited to, agricultural land, forest, and a reclamation site located in an unpopulated area (i.e., a strip mine located in a rural area) (40 CFR 503.31(e)).
- *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)).
- *Liner* - soil or synthetic material that has a hydraulic conductivity of 1×10^{-7} centimeters (cm/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)).
- *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 integrated 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** - the waters of the United States, including the territorial seas. The terms includes:
 1. all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide
 2. interstate waters, including interstate wetlands
 3. all other waters such as intra-state lakes, rivers, streams (including intermittent streams), mudflats, sandflats, and wetlands, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
 - that are or could be used by interstate or foreign travelers for recreational or other purposes
 - from which fish or shellfish are or could be taken and sold in interstate or foreign commerce
 - that are used or could be used for industrial purposes by industries in interstate commerce.
 4. all impoundments of waters otherwise defined as navigable waters under this section
 5. tributaries of waters identified above, including adjacent wetlands
 6. wetlands adjacent to waters identified above (40 CFR 110.2).
- **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: - after promulgation of standards of performance under Section 306 of CWA which are applicable to such sources, or - 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:

- it is constructed at a site at which no other source is located, or
 - it totally replaces the process or production equipment that causes the discharge of pollutants at an existing sources, or
 - 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 standard of performance under Section 306 of the Act, which will be applicable to such source if such standard is thereafter promulgated in accordance with Section 305 of the Act (40 CFR 401.11(e)).

- *Noncontact Cooling Water* - water used for cooling which does not come into direct contact with any raw material, intermediate product, waste product, or finished product (40 CFR 401.44(o)).
- *NPDES Permit* - a permit issued to a POTW/FOTW pursuant to Section 402 of the Act. NPDES means National Pollutant Discharge Elimination system (40 CFR 403.3(l)).
- *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).
- *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).
- *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/FOTW into waters in quantities or concentrations which, alone or in conjunction with a discharge from other sources, is a cause of a violation of any requirement of the POTW's/FOTW'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 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)).

- *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).
- *Place Sewage Sludge or Sewage Sludge Placed* - means disposal of sewage sludge on a surface disposal site (40 CFR 503.9(s)).
- *Point Source* - any discernible confined and discrete conveyance including but not limited to a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater (40 CFR 122.2 and 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/FOTW (40 CFR 403.3(q)).
- *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, by-product, or waste product (40 CFR 401.44(q)).
- *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)).
- *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 Individual* - an English-speaking representative of an operator, located in the United States, available on a 24 h basis, with full authority to: activate and contract with required oil spill removal organizations; activate personnel and equipment maintained by the operator; act as liaison with the On Scene Coordinator; and obligate any funds required to carry out all required or directed oil response activities (49 CFR 194.5).
- *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 groundwater 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)).
- *Response Activities* - the containment and removal of oil from the water and shorelines, the temporary storage and disposal of recovered oil, or the taking of other actions as necessary to minimize or mitigate damage to the environment (49 CFR 194.5).
- *Response Area* - the inland zone or coastal zone, as defined in the National Contingency Plan, in which response activity is occurring (49 CFR 194.5).
- *Response Plan* - the operator's core plan and the response zone appendices for responding, to the maximum extent practicable, to a worst case discharge of oil, or the substantial threat of such a discharge (49 CFR 194.5).
- *Response Zone* - a geographic area, either along a length of pipeline or including multiple pipelines, containing one or more adjacent line sections, for which the operator must plan for the deployment of, and provide, spill response capabilities (49 CFR 194.5).
- *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)).
- *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)).
- *Sheen* - an iridescent appearance on the surface of the water (40 CFR 110.2).
- *Sludge* - an aggregate of oil or oil and other matter of any kind in any form other than dredged spoil having a combined specific gravity equivalent to or greater than water (40 CFR 110.2).
- *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)).
- *Spill Event* - a discharge of oil into or upon the navigable waters of the United States or adjoining shorelines in harmful quantities (40 CFR 112.3).
- *SPCC Plan* - The SPCC plan shall be a carefully thought-out plan prepared in accordance with good engineering practices, and which has the full approval of management at a level with authority to commit the necessary resources (40 CFR 112.3).
- *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 (214.5 feet (ft)). When the difference is greater than 65 m (214.5 ft), stack height is the creditable stack height determined in accordance with 40 CFR 51.100(ii) (40 CFR 503.41(l)).

- *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 numbers 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 number 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).
- *Surface Disposal Site* - an area of land that contains one or more active sewage sludge units (40 CFR 503.21(p)).
- *Total Toxic Organics* - TTO (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)).
- *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)).
- *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)).
- *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)).
- *Vector Attraction* - the characteristic of sewage sludge that attracts rodents, flies, mosquitos, or other organisms capable of transporting infectious agents (40 CFR 503.31(k)).
- *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)).
- *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 ground water 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)).
- *Wetlands* - those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in

saturated soil conditions. Wetlands generally include playa lakes, swamps, marshes, bogs, and similar areas such as sloughs, prairie potholes, wet meadows, prairie river overflows, mudflats, and natural ponds (40 CFR 110.2).

- *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)).
- *Worst Case Discharge* - the largest foreseeable discharge of oil, including a discharge from fire or explosion, in adverse weather conditions (49 CFR 194.5).

CLEAN WATER ACT (CWA)
GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All facilities	2-1 through 2-6	(1)(2)(5)(12)(19)
Wetlands	2-7 and 2-8	(2)
NPDES permits	2-9 through 2-16	(1)(2)(5)(12)(19)
Discharges to POTWs/FOTWs FOTW Operations	2-17 through 2-23 2-24 through 2-26	(2)(5)
Effluent Limitations		
Steam electric generating sources	2-27 through 2-33	
New sources	2-34 through 2-38	
Existing sources	2-39	
Electroplating point sources	2-40 through 2-46	
Metal finishing point sources	2-47 through 2-49	
Existing metal finishing point sources	2-50	
New metal finishing point sources	2-51 and 2-52	
Photo labs	2-53	
Hospitals	2-54	
Petroleum Products	2-55 through 2-68	(2)(5)
Discharge/spills	2-69 through 2-71	(2)(5)(12)
Petroleum products storage/containment	2-72 through 2-81	(1)(2)(5)
Pipelines	2-82 through 2-84	(1)(2)(5)

The following items are not Army Reserve applicable, and are not included in this manual: 2-24 through 2-54, 2-77, and 2-85 through 134.

(a)CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager
- (5) Directorate of Engineering and Housing (DEH)/DPW
- (12) Environmental Coordinator (EC)
- (19) Utilities Division

CLEAN WATER ACT (CWA)
GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
Land Application of Sludge		
General	2-85 through 2-91	
Vectors and Pathogens	2-92 through 2-96	
Notification	2-97 through 2-101	
Monitoring	2-102 and 2-103	
Recordkeeping and Reporting	2-104 through 2-111	
Surface Disposal of Sludge		
General	2-112 through 2-118	
Monitoring and Documentation	2-119 through 2-124	
Sludge Incineration	2-125 through 2-132	
Swimming pools	2-133 and 2-134	

The following items are not Army Reserve applicable, and are not included in this manual: 2-24 through 2-54, 2-77, and 2-85 through 134.

(a)CONTACT/LOCATION CODE:

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CLEAN WATER ACT (CWA)

Plans and Maps to Review

- SPCC Plan
- Sewer and storm drain layout
- Design plans for wastewater and industrial waste treatment plants
- Utility and general site maps/diagrams - plumbing (maintenance shops)
- Stormwater pollution prevention plan
- Pollution prevention plans
- Facility response plan required by OPA

Records to Review

- NPDES/SPDES Permits
- NPDES/SPDES Permit renewal applications (if expire within 180 days)
- Discharge monitoring reports for the past 2 yr
- 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
- All records required by SPCC Plan
- Oil transfer manual (33 CFR parts 154 and 156)
- All notices of noncompliance
- *All notices of violations*
- NPDES state or Federal inspection reports and citations/violations
- Sewage treatment plant operator certification
- Administrative Orders
- Local sewer ordinance
- Local service use permit
- Notification to local POTW/FOTW
- Old Spill Reports
- Repair/Maintenance records for the wastewater treatment system
- Names and phone numbers of operator of sewage treatment plant/central vehicle wash facilities
- Lab operators (wastewater analysis)
- Stormwater permits
- Swimming pool/beach operator
- Federal Facility Compliance Agreements
- Pretreatment permits

Physical Features to Examine

- Discharge to POTW/FOTW
- Discharge outfall pipes (i.e., maintenance shops, hardstands, parking lots)
- Wastewater treatment facilities
- Industrial treatment facilities (from inlet to outfall)
- Stormwater ditches around motorpools
- Streams, rivers, open waterways
- Floor & sink drains (especially in industrial and maintenance areas)
- Stormwater collection points (especially in industrial and maintenance areas)
- POL storage tanks

- Oil/water separators and other pretreatment devices such as sand and grit traps, grease traps, and sand interceptors
- Fire Training Pit
- Nonpoint source discharge areas (parking lots and vehicle/aircraft hardstands)
- Motor pools and vehicle maintenance stands, plumbing, drains, and discharges (end of pipe)
- Wash racks (centralized facilities, individual and areas in vicinity of maintenance shops)
- Catch basins, drop inlets, holding/retention ponds
- Wastewater generation points/sources
- Electrical grease racks and inspection racks
- Waste and sump collection points
- Detention ponds from vehicle washing operations (especially I.D. POL products)
- Vehicle maintenance inspection pits and ramps
- Sludge disposal areas (especially from vehicle wash racks and central facilities)
- Battery and radiator repair operations
- Ash disposal areas from incinerators (i.e., pathological)

People to Interview

- MUSARC/Engineer/Facility Coordinator
- Facility Manager
- Directorate of Engineering and Housing (DEH)/DPW
- Environmental Coordinator (EC)
- Utilities Division
- Safety
- Entomologist/Pest Shop
- Spill Response Team
- DRMO Personnel
- BASOPs ARCOM Environmental Managers

**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

ALL FACILITIES

2-1. Determine actions or changes since previous review of wastewater discharges (GMP).

...

2-2. The facility should maintain current and effective regulations on wastewater discharge requirements (GMP).

...

Examine copy of previous review report to determine if noncompliance issues have been resolved. (1)(2)

...

Verify current copies of the following, which are applicable, are maintained at the ARCOM or Support Installation: (1)(2)(5)(12)

- 40 CFR 122, *The National Pollutant Discharge Elimination System.*
- 40 CFR 136, *Test Procedures for the Analysis of Pollutants.*
- 40 CFR 403, *General Pretreatment Regulations for Existing and New Sources.*
- 40 CFR 413, *Electroplating Point Source Category.*
- 40 CFR 423, *Steam Electric Power Generating Point Source Category.*
- 40 CFR 433, *Metal Finishing Point Source Category.*
- 40 CFR 459, *Photographic Point Source Category.*
- 40 CFR 460, *Hospital Point Source Category.*
- EO 12088, *Federal Compliance with Pollution Standards.*
- DOD Instruction 4120.14, *Policies for Improvements Needed to Abate Water Pollution Emanating from DOD Facilities.*
- AR 200-1, *Environmental Protection and Enhancement.*
- AR 420-46, *Water and Sewage.*
- TM 5-665, *Operations and Maintenance of Domestic and Industrial Wastewater Systems.*
- TM 5-814-3, *Domestic Wastewater Treatment.*
- TM 5-814-8, *Evaluation Criteria Guide for Water Pollution Prevention, Control, and Abatement Programs.*
- TB MED 575, *Occupational and Environmental Health: Swimming Pools and Bathing Facilities.*
- *Standard Methods for Water/Wastewater Analysis.*
- Applicable state and local regulations.

Determine if current state/local wastewater discharge regulations are maintained and followed at the facility. (1)

...

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>2-3. Facilities are required to comply with all applicable state and local requirements (EO 12088, Section 1-1).</p> <p align="center">...</p>	<p>Verify that the facility is complying with state and local requirements. (1)(2)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (1)(2)</p> <p>(NOTE: Issues which are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - nonpoint sources - wastewater - monitoring and recordkeeping for NPDES permitted sources - certification requirements for laboratories analyzing samples - wastewater treatment plant operator certification - sludge disposal - pretreatment standards - discharges to sewage treatment facilities - industrial wastewater - septic tanks - stormwater discharge - stormwater pollution prevention plan - certification requirements for employees.) <p align="center">...</p>
<p>2-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, reoccurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation, promotes good public relations and addresses systemic weakness in the overall operation of the program (GMP).</p> <p align="center">...</p>	<p>Determine what management systems are in place. (1)(2)</p> <p>Verify that the existing system addresses the issues associated with the CWA by: (1)(2)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p>Determine if training is being conducted. (1)(2)</p> <p align="center">...</p>
<p>2-5. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p align="center">...</p>	<p>Determine if any new regulations concerning the CWA have been issued since the finalization of the manual. (1)</p> <p>Verify that the facility is in compliance with newly issued regulations. (1)</p> <p>(NOTE: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>2-6. Each facility is required to have a system for investigating water pollution complaints and allegations from individuals and water pollution control authorities (AR 200-1, para 3-3g(1) and 3-3g(2)).</p> <p align="center">...</p>	<p>Determine procedures for investigating water pollution complaints and allegations. (1)(2)(5)(12)(19)</p> <p>Verify that any cases of legal or potential legal action were reported immediately through Judge Advocate channels to Army Reserve Headquarters. (1)(2)(5)(12)(19)</p> <p align="center">...</p>
<p>WETLANDS</p> <p>2-7. Facilities that dredge and fill wetlands must have a permit from the Corps of Engineers (33 CFR 323.3(a)(b)).</p> <p align="center">...</p>	<p>Determine if the facility has wetlands. (2)</p> <p>Verify that any activities involving dredging and filling wetlands is permitted by the Army Corps of Engineers (COE). (2)</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> <p align="center">...</p>
<p>2-8. Wetlands and waters of the United States should be noted on facility planning maps (GMP).</p> <p align="center">...</p>	<p>Verify that wetlands and water of the United States are noted on facility planning maps. (2)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>NPDES PERMITS</p> <p>2-9. Facilities with point source discharges and/or treatment works treating domestic sewage are required to have a Federal NPDES permit if located in states without an USEPA approved NPDES permit program (40 CFR 122.1(b)(3)).</p> <p align="center">...</p> <p>2-10. Facilities 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 align="center">...</p> <p>2-11. Samples required by the NPDES permit must be processed using proper collection, preservation, testing, and shipping procedures (40 CFR 136.1 through 136.4).</p> <p align="center">...</p>	<p>Determine if the facility is located in a state with an USEPA approved NPDES permit program. (1)(2)</p> <p>Verify that the facility has obtained the proper permits for point source discharges and/or treatment works treating domestic sewage. (1)(2)</p> <p>Verify that the facility is operating according to permit requirements such as: (1)(2)</p> <ul style="list-style-type: none"> - monitoring/sampling - concentrations of discharge constituents - recordkeeping - reports. <p>(NOTE: The Regional Administrator may require the facility to have a permit for the use/disposal of sewage sludge as necessary to protect public health.)</p> <p>(NOTE: The NPDES permit may also address issues of stormwater runoff.)</p> <p align="center">...</p> <p>Determine if the facility is discharging stormwater associated with an industrial activity. (1)(2)</p> <p>Verify that an application has been submitted for a permit. (1)(2)</p> <p align="center">...</p> <p>Verify the following: (2)(5)(19)</p> <ul style="list-style-type: none"> - proper sample containers are used - samples refrigerated during compositing - proper test procedures are used - proper preservation techniques are used. <p align="center">...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

2-12. Analytical testing must be done in accordance with USEPA approved analytical procedures (40 CFR 136.3).

Determine if: (1)(2)

- an USEPA approved analytical testing lab was used
- proper approval was obtained from state/USEPA if alternate analytical procedures are used
- parameters other than those required by the permit are analyzed
- satisfactory calibration and maintenance of instruments and equipment is done
- quality control procedures are used
- duplicate samples are analyzed
- spiked samples are used
- a commercial laboratory is used
- the commercial laboratory is state certified (states with formal certification program).

...

...

2-13. Each permitted discharge point should be free of contaminants/ pollutants (GMP).

Check each permitted effluent discharge point on facility. Note appearance, odors, or other observed characteristics (oil sheen, visible foam, visible floating solids, color). (2)(5)(12)

...

...

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>2-14. Facilities with NPDES permits are required to meet specific reporting requirements (40 CFR 122.41(1)).</p> <p align="center">...</p>	<p>Verify that the facility gives notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility when: (2)(5)</p> <ul style="list-style-type: none"> - the alteration or addition might meet one of the criteria for determining if the facility is a new source (see definitions) - 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) - the alteration or addition results in a significant change in the facility's sludge use or disposal practices. <p>Verify that the facility notifies the Director of any planned changes at the permitted facility or activity which may result in noncompliance with permit requirements. (2)(5)</p> <p>Verify that monitoring is reported as required on the permit. (2)(5)</p> <p>Determine if the facility is monitoring more frequently than required. (2)(5)</p> <p>Verify that if the facility is monitoring more frequently than required by permit these results are also being reported. (2)(5)</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. (2)(5)</p> <p>Verify that noncompliance which might endanger health or the environment is reported as follows: (2)(5)</p> <ul style="list-style-type: none"> - orally within 24 h from the time the facility becomes aware of noncompliance - in writing within 5 days of the time the facility becomes aware of noncompliance. <p align="center">...</p>
<p>2-15. Noncompliance must be reported (AR 200-1, para 3-3a(4)).</p> <p align="center">...</p>	<p>Determine if potential problems that might cause facility to be in non-compliance with permits are reported. (2)(5)</p> <p>Verify that NOV reports are sent through command channels to USAEC, ATTN: SFIM-AEC-ECS. (2)(5)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>2-16. Even where not covered by NPDES permit, stormwater discharge on the facility should be uncontaminated and periodic surveillance of these discharges should be completed (GMP).</p> <p>...</p>	<p>Check stormwater surveillance locations. (19)</p> <p>Determine if there have been any instances of elevated readings for any parameters by reviewing the analytical records. (19)</p> <p>Check the plans for the storm sewer system and locations of all outfalls and discharge points. (19)</p> <p>Check areas of stormwater discharge physically for evidence of contamination (oil sheen, discoloration, etc.). (19)</p> <p>Verify that oil/water separators on the facility that discharge into the storm sewer are operating properly and are being maintained. (19)</p> <p>Check major industrial shops or industrial areas physically and look for evidence of contaminated waste streams discharging to floor drains, to storm system, or to catch basins. Key shops to be visited include: (19)</p> <ul style="list-style-type: none"> - battery shop - corrosion control - engine shop - motor pool - paint shop - plating shop - petroleum, oils, and lubricants (POL) area - pesticide shop - DRMO. <p>...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>DISCHARGES TO POTW's/FOTW's</p> <p>2-17. Facilities 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 align="center">...</p> <p>2-18. Facilities shall not introduce specific pollutants into a POTW/FOTW (40 CFR 403.5(b)).</p>	<p>Determine the following: (2)(5)</p> <ul style="list-style-type: none"> - what point source discharges are at the facility - what drains in the facility leading to the treatment works - what personnel pour down the drains leading to the treatment works - what types of materials are located in areas where spills may reach the drains to the treatment works. <p>Verify that the facility is not discharging to a POTW/FOTW, pollutants which would cause a "pass through" or "interference" (see definitions). (2)(5)</p> <p>Determine if the POTW/FOTW has imposed any pretreatment or reporting requirements on the facility. (2)(5)</p> <p>Verify that any pretreatment standards or reporting requirements imposed upon the facility by the POTW/FOTW are being met. (2)(5)</p> <p align="center">...</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 facility to a POTW/FOTW. (2)(5)</p> <p>Verify that pollutants which will cause corrosive structural damage to the POTW/FOTW are not being discharged from the facility to a POTW/FOTW. (2)(5)</p> <p>Verify that in no case are discharges below a pH of 5.0 released. (2)(5)</p> <p>Verify that solid or viscous pollutants in amounts which will cause obstruction to the flow are not being discharged to the POTW/FOTW. Examples are: (2)(5)</p> <ul style="list-style-type: none"> - fish cleaning stations - pieces of metals, rubber, and wood from shops - sand and sediment.

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>2-18. (continued)</p> <p>...</p> <p>2-19. Facilities are required to notify the POTW/FOTW immediately of any discharge, including slug loading, that could cause problems to the POTW/FOTW (40 CFR 403.12(f)).</p> <p>...</p> <p>2-20. Industrial users that are not required to meet a categorical pretreatment standard are required to submit specific reports (40 CFR 403.12(h)).</p> <p>...</p>	<p>Verify that no pollutants, including oxygen demand pollutants, are released at a flow rate or concentration that will cause interference with the POTW/FOTW. (2)(5)</p> <p>Verify that heat in amounts that would inhibit biological activity at the POTW/FOTW resulting in interference is not discharged. Examples are: (2)(5)</p> <ul style="list-style-type: none"> - scrubber water - boiler blow down. <p>(NOTE: In no case will the temperature of the discharge result in a temperature at the POTW/FOTW of greater than 104 °F.)</p> <p>Verify that petroleum, oil, nonbiodegradable cutting oil, or products of mineral oil origin are not discharged in amounts that would result in a pass through or interference (specifically check maintenance areas and oil/water separators hooked up to the sanitary sewer). (2)(5)</p> <p>Verify that pollutants which would result in the presence of toxic gases, vapors, or fumes within the POTW/FOTW in quantities that would cause acute worker health and safety problems are not discharged. (2)(5)</p> <p>Verify that no trucked or hauled pollutants are discharged except at discharge points designated by the POTW/FOTW. (2)(5)</p> <p>Determine if the facility has been granted any exemptions or variances concerning its discharges. (2)(5)</p> <p>...</p> <p>Verify that personnel at the facility are aware of the need to notify the POTW/FOTW of any discharge that would cause problems. (2)(5)</p> <p>...</p> <p>Verify that if the facility is a significant noncategorical industrial user, it submits a description of the nature, concentration, and flow of the pollutants required by the Control Authority to the Control Authority. (2)(5)</p> <p>(NOTE: The Control Authority is 1) the POTW/FOTW if the POTWs/FOTWs submission for its pretreatment program has been approved, 2) the Approval Authority if the submission has not been approved.)</p> <p>...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>2-21. Industrial users are required to notify the POTW/FOTW, the USEPA Regional Waste Management Division Director and State hazardous waste authorities in writing of any discharge into the POTW/FOTW of a substance which would be a hazardous waste (40 CFR 403.12(p)).</p> <p align="center">...</p>	<p>Determine if the facility is discharging any substance to a POTW/FOTW which would be classified as a hazardous waste if disposed of by any other method. (2)(5)</p> <p>Verify that if they are discharging a hazardous waste to the POTW, the correct people have been notified of the following: (2)(5)</p> <ul style="list-style-type: none"> - the name of the waste - the type of discharge (batch, continuous, or other). <p>Verify that if the discharge is more than 100 kg per month the following information is also included to the extent that it is known and readily available: (2)(5)</p> <ul style="list-style-type: none"> - identification of the hazardous constituents - an estimate of the mass and concentrations of the constituents in the waste discharges during the calendar month. <p align="center">...</p>
<p>2-22. All industrial users are required to notify the POTW/FOTW in advance of any substantial change in the volume of character of pollutants in their discharge (40 CFR 403.12(j)).</p> <p align="center">...</p>	<p>Verify that sources of industrial discharge on the facility notify the POTW/FOTW in advance of any substantial change in the volume or character of pollutants in their discharge, including the listed or characteristic hazardous wastes for which the industrial user has submitted an initial notification under 40 CFR 403.12(p). (2)(5)</p> <p align="center">...</p>
<p>2-23. Industrial users and POTWs/FOTWs are required to keep specific reports (40 CFR 403.12(o)).</p> <p align="center">...</p>	<p>Verify that the facility and the POTW/FOTW keeps records of all information resulting from monitoring activities. (2)(5)</p> <p>Verify that the records include for all samples the following information: (2)(5)</p> <ul style="list-style-type: none"> - the date, exact place, methods, and time of sampling and the names of the person or persons taking the samples - the dates analyses were performed - who performed the analyses - the analytical techniques/methods used - the results of the analyses. <p>Verify that records are kept for 3 yrs. (2)(5)</p> <p align="center">...</p>
<p>FOTW OPERATIONS</p> <p>2-24.</p> <p>2-25.</p>	<p>This item is not Army Reserve applicable.</p> <p>This item is not Army Reserve applicable.</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

2-26.

**EFFLUENT
LIMITATIONS**

**Steam Electric Power
Generating Sources**

2-27.

2-28.

2-29.

2-30.

2-31.

2-32.

2-33.

New Sources

2-34.

2-35.

2-36.

2-37.

2-38.

Existing Sources

2-39.

This item is not Army Reserve applicable.

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>Electroplating Point Sources</p> <p>2-40.</p> <p>2-41.</p> <p>2-42.</p> <p>2-43.</p> <p>2-44.</p> <p>2-45.</p> <p>2-46.</p> <p>Metal Finishing Point Sources</p> <p>2-47.</p> <p>2-48.</p> <p>2-49.</p> <p>Existing Metal Finishing Point Sources</p> <p>2-50.</p> <p>New Metal Finishing Point Sources</p> <p>2-51.</p> <p>2-52.</p> <p>Photo labs</p> <p>2-53.</p> <p>Hospitals</p> <p>2-54.</p>	<p>This item is not Army Reserve applicable.</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

**PETROLEUM
PRODUCTS**

2-55. Army Reserve facilities that store, transport, or dispense petroleum products are required to prepare a SPCC Plan (40 CFR 112.3).

Verify that the facility has a Spill Prevention Control and Countermeasure Plan. (1)(2)

(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:

- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:
 - 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
 - equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the Department of Transportation (DOT)
- both of the following criteria are met:
 - the underground buried storage capacity of the facility is 42,000 gal or less of oil
 - the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal (40 CFR 112.1(d)(2).)

(NOTE: This applies to onshore and offshore facilities, including onshore and offshore mobile or portable facilities, such as onshore drilling or work-over rigs, barge mounted offshore drilling or work-over rigs, and portable fueling facilities.)

...

...

2-56. The DOD requires SPCC plans to be developed for a broader range of activities than the *Code of Federal Regulations* (DOD Directive 5030.41, para D; AR 200-1, para 8-4a).

Verify that a SPCC plan has been developed for each facility or activity, including Government-owned contractor-operated (GOCO) facilities, which has discharged or could reasonably discharge oil in harmful quantities into or upon the waters of the United States or its shorelines. (1)(2)

Verify that a SPCC Plan has been developed if the facility: (1)(2)

- has the potential to spill oil or hazardous substance in a quantity that would be harmful to human health or welfare or to the environment
- meets at least one of the following criteria:
 - aggregate aboveground oil storage on the facility is greater than 1320 gal
 - any single aboveground oil storage tank on the facility exceeds 660 gal
 - total underground oil storage on the facility is greater than 42,000 gal
- one or more hazardous substances are stored in quantities that would be harmful to human health or welfare, or to the environment if a spill were to occur.

...

...

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>2-57. The SPCC Plan is required to contain specific information (40 CFR 112.7).</p> <p align="center">...</p>	<p>Determine if the SPCC plan has been prepared and reviewed for the following: (1)(2)</p> <ul style="list-style-type: none"> - command approval - spill reporting procedures - pre-spill planning for major potential spill areas - spill containment and cleanup equipment/facilities - oil spill contingency plan - training procedures - spill response exercises - plan review and update procedures. <p>Verify that the SPCC Plan contains: (1)(2)</p> <ul style="list-style-type: none"> - general information about the facility including: <ul style="list-style-type: none"> - name - type of function - location of facility drainage patterns - location maps - name and title of designated coordinator - inventory of all storage, handling, and transfer facilities that could produce a significant spill. For each listing include: <ul style="list-style-type: none"> - prediction of direction and rate of flow - total quantity of oil that could be spilled as a result of major failure. <p align="center">...</p>
<p>2-58. Each SPCC plan must be reviewed at least once every 3 yr (40 CFR 112.5(b)).</p> <p align="center">...</p>	<p>Verify that the SPCC plan has been reviewed at least once every 3 yr. (1)(2)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - 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 - equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the Department of Transportation. - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal or less of oil - the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal (40 CFR 112.1(d)(2).) <p align="center">...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

2-59. Army Reserve facilities are required to review the SPCC Plan every 2 yr or when there is a change in facility design, construction, operation, or maintenance that affects the potential for spills of oils or hazardous substances (AR 200-1, para 8-4c(4)).

Verify that the SPCC Plan is reviewed every 2 yr. (1)(2)

2-60. The SPCC must be reviewed and/or amended under specific circumstances (40 CFR 112.4 and 112.5(a)).

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)

Verify that the plan was sent to the USEPA for review if: (1)(2)

- there was a discharge of more than 1000 gal into navigable waters in a single spill event
- oil was discharged in harmful quantities into navigable waters in two reportable spill events within any 12 mo period.

Verify that the plan was amended and recertified by a professional engineer. (1)(2)

(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:

- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:
 - 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
 - equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT
- both of the following criteria are met:
 - the underground buried storage capacity of the facility is 42,000 gal or less of oil
 - the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal (40 CFR 112.1(d)(2).)

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>2-61. 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 align="center">...</p> <p>2-62. A copy of the SPCC plan is required to be available at sites that normally have personnel onsite at least 8 h per day, and where there is a potential for a discharge (40 CFR 112.3(e)).</p> <p align="center">...</p>	<p>Verify that the SPCC Plan has been certified. (1)(2)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - 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 - equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal or less of oil - the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal (40 CFR 112.1(d)(2).) <p align="center">...</p> <p>Verify that a copy of the SPCC is available at facilities that have personnel onsite at least 8 h a day. (1)(2)</p> <p>(NOTE: If personnel are not onsite for 8 h a day the plan may be kept at the nearest field office and the plan should be made available to the Regional Administrator.)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>2-63. The facility must have a spill contingency plan (ISCP) that addresses specific issues (AR 200-1, para 8-5a through 8-5c).</p> <p align="center">...</p> <p>2-64. The ISCP is required to be updated every 3 yr and approved by a professional engineer (AR 200-1, para 8-5d(1)).</p> <p align="center">...</p>	<p>Verify that the ISCP contains the following: (1)(2)</p> <ul style="list-style-type: none"> - provisions specifying the responsibilities, duties, procedures and resources to be used to contain and cleanup spills - a description of immediate response actions that should be taken when a spill is discovered - identification of resources for possible use - the name, responsibilities, and duties of the IOSC - the specifications, composition, and training of the IRT - procedures for IRT alert and mobilization - a current list of persons and alternates who are on call to receive notice of an oil or hazardous substance spill - surveillance procedures for early detection of discharges - quantities and locations of personnel equipment, vehicles, supplies and material resources - additional resources available for spill cleanup - procedures and techniques used to identify, contain, disperse, reclaim, and remove oil and hazardous substances used in bulk quantity on the facility - procedures for reporting by telephone and in writing - a description of safety precautions for known hazardous substances on the facility - a public affairs appendix that describes the procedures, responsibilities, and methods for releasing information in the event of a spill. <p>Verify that copies of the ISCP are kept on file at the DEH, the emergency operations center, Preventive Medicine, the safety office, the security office, the Public Affairs Office (PAO), and each site that stores, handles, or transfers oil or hazardous substances for which there is a reasonable possibility of a significant spill. (2)(5)</p> <p align="center">...</p> <p>Verify that the ISCP portion of any spill response documentation is updated every 3 yr. (2)(5)</p> <p>Verify that the ISCP has been approved by a professional engineer. (2)(5)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>2-65. An IOSC and an IRT must be appointed by the facility commander (AR 200-1, para 1-25(i)(13)).</p> <p align="center">...</p> <p>2-66. Facilities should have a process for the management of reclaimed, recoverable, and waste liquid petroleum products (GMP).</p> <p align="center">...</p> <p>2-67. All facility personnel involved with the management and handling of oil and hazardous substances must take part in periodic training in spill prevention and response (40 CFR 112.7(e)(10)).</p> <p align="center">...</p> <p>2-68. Yearly training is required to test the effectiveness of ISCP personnel and equipment (AR 200-1, para 5-4d(2)).</p> <p align="center">...</p>	<p>Verify that the support facilities spill response plan indicates the IOSC and the IRT for the reserve facility. (2)(5)</p> <p>Confirm that they are trained and knowledgeable of contingency plan. (2)(5)</p> <p align="center">...</p> <p>Verify that the facility has identified sources of reclaimed, recovered, and waste liquid petroleum products and are managing these products appropriately. (2)(5)</p> <p align="center">...</p> <p>Verify that proper training has been conducted by reviewing training records and interviewing the staff. (2)(5)</p> <p>Verify that training addresses the procedures to follow when a spill occurs, such as: (2)(5)</p> <ul style="list-style-type: none"> - notification - containment - safety practices. <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - 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 - equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal or less of oil - the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal (40 CFR 112.1(d)(2).) <p align="center">...</p> <p>Verify that yearly training is being done. (2)(5)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>DISCHARGES/SPILLS</p> <p>2-69. Discharges of oil into or upon the 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 align="center">...</p> <p>2-70. Any spill of petroleum products must be reported to the IOSC immediately (AR 200-1, para 8-3(a)).</p> <p align="center">...</p> <p>2-71. Facilities are not allowed to add dispersants or emulsifiers to oil to be discharged (40 CFR 110.8).</p> <p align="center">...</p>	<p>Determine if the facility has had any discharges of oils. (2)(12)</p> <p>(NOTE: Discharges of oil are defined as those which violate applicable water quality standards or cause a film or a sheen upon 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. (2)(12)</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>(NOTE: Discharges of oil from a properly functioning vessel engines are not considered harmful, but discharges from a vessel's bilge are not allowed.)</p> <p>(NOTE: See the definition of navigable waters.)</p> <p align="center">...</p> <p>Verify that spills of petroleum products have been reported to the IOSC. (2)(5)</p> <p align="center">...</p> <p>Verify that facilities do not add dispersants or emulsifiers to discharges. (2)(5)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

**PETROLEUM
PRODUCTS -
STORAGE/
CONTAINMENT**

2-72. Appropriate containment and/or diversionary structures, and cleanup equipment to prevent discharged petroleum products from reaching navigable water course are required to be readily available on the facility (40 CFR 112.7 (c)).

Determine that at onshore facilities one of the following preventive systems or an equivalent is used: (1)(2)(5)(12)

- absorbent material
- sand bags/temporary curbing devices
- dikes, berms, or retaining walls sufficiently impervious to contain spilled oil
- culverting gutters or other drainage system
- weirs, booms, or other barriers
- spill diversion ponds
- retention ponds.

Verify that at offshore facilities one of the following, or any equivalent, is available: (1)(2)(5)(12)

- curbing, drip pans
- sumps and collection systems.

(NOTE: See definition of "navigable water.")

(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:

- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:
 - 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
 - equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT
- both of the following criteria are met:
 - the underground buried storage capacity of the facility is 42,000 gal or less of oil
 - the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal (40 CFR 112.1(d)(2).)

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>2-73. All bulk storage tanks must be provided with a secondary means of containment for the entire contents of the largest tank plus sufficient free board to allow for precipitation (40 CFR 112.7(e)(2)(ii)).</p>	<p>Verify that adequate containment is provided for bulk storage tanks (over 660 gal) by viewing the tanks. (1)(2)</p> <p>Verify that diked areas are impervious enough to contain spilled oil. (1)(2)</p> <p>(NOTE: Dikes, containment curbs, and pits are commonly employed for this purpose, but they may not always be appropriate. An alternate system could consist of a complete drainage trench, enclosure arranged so that a spill could terminate and be safely confined in an in-plant catchment basin or holding pond.)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - 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 - equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal or less of oil - the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal (40 CFR 112.1(d)(2).) <p>...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

2-74. Drainage of rain water from diked areas must be controlled by a valve that is closed when not in active use (other positive means may be used) (40 CFR 112.7(e)(1) and 112.7(e)(2)).

Verify that valves are closed when not in use by inspecting the drainage valves at each diked area. (1)(2)

Verify that drainage valves are attended when open by interviewing personnel. (1)(2)

Verify that water drained from diked areas does not cause a harmful discharge as defined in 40 CFR 110.6. (1)(2)

Verify that personnel draining the diked area understand the meaning of a harmful discharge. (1)(2)

Determine if drainage water was inspected to determine if it would represent a harmful discharge. (1)(2)

(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:

- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:
 - 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
 - equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the Department of Transportation.
- both of the following criteria are met:
 - the underground buried storage capacity of the facility is 42,000 gal or less of oil
 - the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal (40 CFR 112.1(d)(2).)

...

...

2-75. Drainage water that is determined to contain petroleum products in harmful quantities must be treated before discharge to meet applicable water quality standards (40 CFR 112.7(e)(2)).

Determine if discharges containing harmful quantities of petroleum products were properly treated, recovered, or disposed of by interviewing personnel. (1)(12)

Verify that records are kept of treatment and disposal methods. (1)(12)

...

...

2-76. A product recovery system should be installed at the tank water drain-off valve for tanks storing aviation fuels (GMP).

Verify that product recovery systems are in place and operating correctly on aviation fuel tanks. (1)(12)

(NOTE: Federal regulations do not require product recovery system for ground use petroleum products; however, state and local regulations may require such systems.)

...

...

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>2-77.</p> <p>...</p> <p>2-78. Wastewater and fuel sludges resulting from periodic tank cleaning should not be discharged to surface waters, sewers, or to the ground (GMP).</p> <p>...</p> <p>2-79. Aboveground storage tanks must undergo periodic integrity testing (40 CFR 112.7 (e)(2)(vi)).</p> <p>...</p>	<p>This item is not Army Reserve applicable.</p> <p>...</p> <p>Determine if residues from tank cleaning operations are properly disposed of, including testing for hazardous characteristics as needed. (1)(2)</p> <p>...</p> <p>Verify that periodic leak tests have been conducted and check the results (a decrease in converted fuel volume equal to or greater than 1/4 inch constitutes a suspected leak). (1)(2)(5)</p> <p>Verify that DEH Director, Environmental Coordinator, and Safety Officer have been notified of all confirmed leaks by interviewing them. (1)(2)</p> <p>Verify that leaking tanks have been repaired or replaced. (1)(2)</p> <p>(NOTE: Periodic testing should take tank design into account and involve such techniques as hydrostatic testing, visual inspection, or a system of nondestructive shell thickness testing.)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - 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 - equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal or less of oil - the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal (40 CFR 112.1(d)(2).) <p>...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>2-80. 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 align="center">...</p>	<p>Verify that new underground storage tanks are appropriately protected from corrosion by inspecting records and interviewing personnel. (1)(2)</p> <p>Verify that the tanks are pressure tested regularly. (1)(2)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - 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 - equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal or less of oil - the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal (40 CFR 112.1(d)(2).) <p>(NOTE: For additional requirements on USTs, see Section 6, RCRA-I.)</p> <p align="center">...</p>
<p>2-81. Periodic inspection of MOGAS, diesel, kerosene, and aviation fuel test cell storage tanks should be done (GMP).</p> <p align="center">...</p>	<p>Determine if inspections have been conducted as required. (2)</p> <p>Verify that leaking or deteriorated tanks have been repaired or replaced. (1)(2)</p> <p>Confirm leaks were reported to the DEH Director, EC, and Safety Officer. (1)(2)</p> <p align="center">...</p>
<p>PIPELINES</p> <p>2-82. Buried fuel piping at transfer operations, pumping and in-plant processing operations is required to have a protective wrapping and coating or be cathodically protected if soil conditions warrant (40 CFR 112.7 (e)(3)(i)).</p> <p align="center">...</p>	<p>Verify through interviews and records review that buried fuel piping is properly protected from corrosion. (2)(5)</p> <p>Verify that the voltage is greater than -0.85, but not more than -3.0 volts (V) (monthly) for impressed current systems. (2)(5)</p> <p>Verify that the voltage is greater than -0.85, but not more than -3.0 V (biannually) for sacrificial anode systems. (2)(5)</p> <p>Verify that leak detection and failure are reported. (2)(5)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

2-83. All Army Reserve operated aboveground and belowground fuel piping systems at transfer operations, pumping and in-plant processing operations, operated by the USAR are required to be regularly examined and any suspected leaks should be investigated immediately (40 CFR 112.7(e)(3)(iv)).

...

Verify that regular inspections, including a periodic pressure test, records check, and interviews have been conducted. (2)

Verify that aboveground general condition of items, such as flange joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces have been assessed. (5)

Verify that confirmed leaks have been reported and leaking pipes repaired or replaced. (1)(2)(5)

(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:

- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:
 - 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
 - equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT
 - both of the following criteria are met:
 - the underground buried storage capacity of the facility is 42,000 gal or less of oil
 - the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal (40 CFR 112.1(d)(2).)
- ...

2-84. Army Reserve operated off-facility pipelines should be inspected regularly (GMP).

...

Determine if inspections were performed. (1)(2)

Verify that detected leaks and failures have been reported and leaking pipes repaired or replaced. (5)

...

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>LAND APPLICATION OF SLUDGE</p> <p>General</p> <p>2-85.</p> <p>2-86.</p> <p>2-87.</p> <p>2-88.</p> <p>2-89.</p> <p>2-90.</p> <p>2-91.</p> <p>Vectors and Pathogens</p> <p>2-92.</p> <p>2-93.</p> <p>2-94.</p> <p>2-95.</p> <p>2-96.</p> <p align="center">...</p>	<p>(NOTE: Checklist items 2-85 through 2-132 apply only to sludge generated during the treatment of domestic sewage in a treatment works. For exclusions see the definitions of the term <i>Excluded Sludge</i>. A summary of the important compliance dates is found in Appendix 2-5.)</p> <p>This item is not Army Reserve applicable.</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

Notifications

- 2-97. This item is not Army Reserve applicable.
- 2-98. This item is not Army Reserve applicable.
- 2-99. This item is not Army Reserve applicable.
- 2-100. This item is not Army Reserve applicable.
- 2-101. This item is not Army Reserve applicable.

Monitoring

- 2-102. This item is not Army Reserve applicable.
- 2-103. This item is not Army Reserve applicable.

**Recordkeeping and
Reporting**

- 2-104. This item is not Army Reserve applicable.
- 2-105. This item is not Army Reserve applicable.
- 2-106. This item is not Army Reserve applicable.
- 2-107. This item is not Army Reserve applicable.

...

...

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
2-108.	This item is not Army Reserve applicable.
2-109.	This item is not Army Reserve applicable.
2-110.	This item is not Army Reserve applicable.
2-111.	This item is not Army Reserve applicable.
SURFACE DISPOSAL OF SLUDGE	
General	
2-112.	This item is not Army Reserve applicable.
2-113.	This item is not Army Reserve applicable.
2-114.	This item is not Army Reserve applicable.
2-115.	This item is not Army Reserve applicable.
2-116.	This item is not Army Reserve applicable.
2-117.	This item is not Army Reserve applicable.
2-118.	This item is not Army Reserve applicable.
Monitoring and Documentation	
2-119.	This item is not Army Reserve applicable.
2-120.	This item is not Army Reserve applicable.
2-121.	This item is not Army Reserve applicable.
2-122.	This item is not Army Reserve applicable.
...	...

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**COMPLIANCE CATEGORY:
CLEAN WATER ACT (CWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
2-123.	This item is not Army Reserve applicable.
2-124.	This item is not Army Reserve applicable.
SLUDGE INCINERATION	
2-125.	This item is not Army Reserve applicable.
2-126.	This item is not Army Reserve applicable.
2-127.	This item is not Army Reserve applicable.
2-128.	This item is not Army Reserve applicable.
2-129.	This item is not Army Reserve applicable.
2-130.	This item is not Army Reserve applicable.
2-131.	This item is not Army Reserve applicable.
2-132.	This item is not Army Reserve applicable.
SWIMMING POOLS	
2-133.	This item is not Army Reserve applicable.
2-134.	This item is not Army Reserve applicable.

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INSTALLATION:	COMPLIANCE CATEGORY: CLEAN WATER ACT (CWA) ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (19) Utilities Division

Section 3

SAFE DRINKING WATER ACT (SDWA)

SECTION 3

SAFE DRINKING WATER ACT (SDWA)

A. Applicability of this Protocol

This protocol identifies rules, regulations, and requirements for any U.S. Army Reserve facility 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:

- any collection, treatment, storage, and distribution facilities under control of the operator of such system, and
- 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 Code of Federal Regulations (CFR) 141.2).

- Army Reserve facilities that meet all the criteria listed below are not required to comply with the requirements of the 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-Army Reserve).
 3. Facility does not sell water to any party.

Even though the above criteria may apply to an Army Reserve facility, as a practical matter, Army regulations require compliance with drinking water standards and monitoring requirements. Therefore, this protocol should be used to determine compliance with drinking water requirements even though some items may be noted as not applicable (N/A) by the evaluator.

B. Federal Legislation

- *The SDWA*, as amended, Public Law (PL) 99-339, 42 U.S. Code (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.

The sections that follow will selectively list the major terms defined in this act, and summarize the key requirements to be observed by all agencies and organizations of the Federal Government.

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, underground water 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:

1. to any rules substantive or procedural (including any recordkeeping or reporting, permits, and other requirements)
2. to the exercise of any Federal, state, or local authorities
3. to any process or sanction, whether enforced in Federal, state, or local courts or in any other manner (42 USC 300j-6(a)).

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:

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
4. which is not a carrier which conveys passengers in interstate commerce (42 USC 300(g)).

C. State/Local Requirements

- States have primary responsibility ("primacy") 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. It is very important to remember that Army Reserve public water systems in these states are required to comply with these additional requirements. The standards identified in the questions of this section are minimum, Federal requirements. Generally speaking, most states that have primacy adopt drinking water regulations that 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

- DOD Directive 6230.1, *Safe Drinking Water*, 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. Army Regulations (ARs)

- AR 40-5, *Preventive Medicine*, establishes practical measures for the preservation and promotion of health and the prevention of disease and injury. Among other things, it explains the Army Preventive Medicine Program, establishes military occupational and environmental health standards, and provides a basic guide for commanders, the installation medical authorities (IMAs), and other interested persons and agencies.
- AR 200-1, *Environmental Protection and Enhancement*, mandates Army compliance with SDWA.
- AR 420-46, *Water and Sewage*, establishes policies and procedures governing installations that supply water and dispose of sewage and industrial wastes. It applies to all Department of the Army (DA) installations. In general, it addresses the following facilities engineering activities: the furnishing of sewage services; operations of water and sewage pumping and treatment plants;

the maintenance, repair, and alteration of facilities and appurtenances required for the production, pumping, treatment, and distribution of water; and the collection and disposal of sewage and industrial waste.

- AR 700-136, *Land Based Water Resources Management in Contingency Operations*, sets policy and procedures for water resources management in support of contingency operations. It defines the Army Reserve role in joint contingency operations and outlines responsibilities for water support. This regulation does not apply to fixed installation water support operations or civil works emergency water management.

F. Key Compliance Requirements

- National Primary Drinking Water Standards - Contaminant limitations, monitoring requirements, and enforcement procedures are contained in the National Drinking Water Standards, 40 CFR 141.
- Sampling and Analysis - Sampling and analytical requirements for public water systems are also promulgated in 40 CFR Part 141 or in applicable state regulations. Initial sampling to characterize each specified contaminant (and any required subsequent sampling) shall be conducted within required time frames and at the frequencies specified. Sample analyses shall be performed in laboratories certified by USEPA or approved by the state.
- Reporting and Recordkeeping - Results of tests, analyses, and measurements required for compliance shall be forwarded within prescribed times to appropriate USEPA regional offices or approved state agencies, as applicable. Records of bacteriological analyses shall be retained for 5 years (yr); chemical/ physical analyses, for 10 yr.
- Noncompliance Monitoring and Reporting - Installations operating public water systems shall report to USEPA regional offices or the approved state any instances of noncompliance with primary drinking water standards, variances, or exemptions, including failure to comply with sampling/monitoring requirements. Noncompliance conditions shall also be reported to all persons served by the public water system. The timing and means for all notifications shall be as prescribed in 40 CFR 141 or applicable state/local regulations.
- Operating Out of Compliance - Variances (and exemptions) may be granted by USEPA or approved by the states subject to public notice and hearing requirements to enable noncomplying public water systems to continue operating. Variances (and exemptions) must include schedules and methods for attaining compliance.

- **Water System Operator Certification** - Army Reserve water system operators shall meet operator certification requirements of the state in which the system is located. Job descriptions for new or vacant Army Reserve water system operator positions shall require a state certification or license as a condition of employment at all facilities where state certification requirements are applicable.

G. Key Compliance Definitions

These definitions were obtained from the Federal, DOD, and U.S. ARs cited previously, and from 40 CFR 141, 142, and the SDWA and its amendments.

- **Action Level** - the concentration of lead or copper in the water specified in 40 CFR 141.80(c) which determines, in some cases, the treatment requirements that a water system is required to complete (40 CFR 141.2).
- **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).
- **Coagulation** - a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs (40 CFR 141.2).
- **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).
- **Conventional Filtration Treatment** - a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal (40 CFR 141.2).
- **Diatomaceous Earth Filtration** - a process resulting in substantial particulate removal in which (40 CFR 141.2):
 - a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum), and

- 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 Filtration* - a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal (40 CFR 141.2).
- *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 microorganisms (40 CFR 141.2).
- *Disinfection* - a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents (40 CFR 141.2).
- *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).
- *Exempted Public Water systems* - the following are public water systems which are not required to meet the standards outlined in 40 CFR 141:
 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 are 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 carriers that convey passengers in interstate commerce (40 CFR 141.3).
- *Filtration* - a process for removing particulate matter from water by passage through porous media (40 CFR 141.2).
- *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).
- *Good Management Practice (GMP)* - schedules of activities, prohibitions of practices, maintenance procedures, and other management procedures, to prevent or reduce the pollution of "water of the United States." GMPs also include the treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

- *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:
 - significant occurrence of insects or other macro-organisms, algae, or large-diameter pathogens such as *Giardia lamblia*, or
 - 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).

- *Halogen* - one of the chemical elements chlorine, bromine, or iodine (40 CFR 141.2).
- *Initial Compliance Period* - the first full 3 yr compliance period which begins at least 18 months (mo) after promulgation, except for Dichloromethane, 1,2,4-Trichlorobenzene, 1,1,2-Trichloroethane, Benzo(a)pyrene, Delapon, 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).
- *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).
- *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).

- **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. MCLGs are nonenforceable health goals (40 CFR 141.2).
- **Maximum Total Trihalomethane Potential** - means the maximum concentration of total trihalomethanes produced in a given water sample containing a disinfectant residual after 7 days at a temperature of 25 degrees Celsius ($^{\circ}\text{C}$) 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).
- **Near the First Service Connection** - means at 1 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).
- **Non-Community Water System** - a public water system that is not a community water system (40 CFR 141.2).
- **Non-Transient, Non-Community 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).
- **Person** - an individual, corporation, company, association, partnership, municipality, or state, Federal, or tribal agency (40 CFR 141.2).
- **PicoCurie (pCi)** - quantity of radioactive material producing 2.22 nuclear transformations/minute (min) (40 CFR 141.2).
- **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).
- *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:
 - any collection, treatment, storage, and distribution facilities under control of the operator of such system, and
 - 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).

- *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 milligrams per liter (mg/L) in a representative sample of water (40 CFR 141.2).
- *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).
- *Slow Sand Filtration* - a process involving passage of raw water through a bed of sand at low velocity (generally less than 0.4 meters per hour (m/h)) resulting in substantial particulate removal by physical and biological mechanisms (40 CFR 141.2).
- *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 act (42 USC 300g-2), the term "state" means the Regional Administrator of the USEPA (40 CFR 141.2).

- *Supplier of Water* - any person who owns or operates a public water system (40 CFR 141.2).
- *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).
- *Total Trihalomethanes (TTHM)* - the sum of the concentration in mg/L of the trihalomethane compounds rounded to two significant figures (40 CFR 141.2).
- *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).
- *Virus* - means a virus of fecal origin which is infectious to humans by waterborne transmission (40 CFR 141.2).
- *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).

**SAFE DRINKING WATER ACT (SDWA)
GUIDANCE FOR WORKSHEET USERS**

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All facilities	3-1 through 3-11	(1)(2)
Drinking water standards	3-12 through 3-14	
Monitoring/sampling of drinking water	3-15 through 3-34	
Disinfection and filtration	3-35 through 3-42	
Notification and reporting requirements	3-43 through 3-46	
Lead and copper in drinking water systems	3-47 through 3-59	
Sole source aquifer	3-60	

Items 3-6 through 3-60 are not Army Reserve applicable and are not included in this manual.

(a) CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager

SAFE DRINKING WATER ACT (SDWA)

Plans and Maps to Review

- Sanitary surveys of the water system conducted by the facility, a private consultant, or any local, state, or Federal agency
- Design plans for potable water treatment plant

Records to Review

- 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
- 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
- Name and phone number of operator of drinking water plant
- Lab operator's water quality
- Potable water wells data
- Permits
- Waivers from the state

Physical Features to Examine

- Drinking water collection, treatment, and distribution facilities
- Onsite laboratory analysis facilities
- Underground injection wells

People to Interview

- MUSARC Engineer/Facility Coordinator
- Facility Manager
- Directorate of Engineering and Housing (DEH)/DPW
- Preventive Medicine Officer/Health Physician
- Utilities Division
- BASOPs ARCOM Environmental Managers

**COMPLIANCE CATEGORY:
SAFE DRINKING WATER ACT (SDWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ALL FACILITIES</p> <p>3-1. Determine actions or changes since previous review of drinking water (GMP).</p> <p align="center">...</p> <p>3-2. The facility should maintain a current file of applicable Federal, DOD, U.S. Army and state regulations on drinking water (GMP).</p> <p align="center">...</p>	<p>Examine copy of previous review report to determine if noncompliance issues have been resolved. (1)(2)</p> <p align="center">...</p> <p>Verify that the following, which are applicable, are current and readily available at the ARCOM or Support Installation: (1)</p> <ul style="list-style-type: none"> - Executive Order (EO) 12088, <i>Federal Compliance with Pollution Standards.</i> - 40 CFR 141, <i>National Primary Drinking Water Regulations.</i> - 40 CFR 143, <i>National Secondary Drinking Water Regulations.</i> - 40 CFR 149, <i>Sole Source Aquifer.</i> - DOD Directive 6230.1, <i>Safe Drinking Water.</i> - AR 40-5, <i>Preventive Medicine.</i> - AR 200-1, <i>Environmental Protection and Enhancement.</i> - AR 420-46, <i>Water and Sewage.</i> - AR 700-136, <i>Land Based Water Resources Management in Contingency Operations.</i> - Appropriate state and local regulations. <p>Check contract for purchase of water to determine compliance with its conditions (i.e., quality, quantity, connections, etc.). (1)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
SAFE DRINKING WATER ACT (SDWA)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

3-3. Facilities are required to comply with all applicable state and local requirements (EO 12088, Section 1-1, SDWA, and 42 USC 300h-7(h)).

Verify that the facility is complying with Federal, state, regional, and local requirements. (1)(2)

Verify that the facility is operating according to permits issued by the state or local agencies. (1)(2)

(NOTE: Issues which are typically regulated by state and local agencies include:

- more stringent contaminant level requirements
- certification and training requirements
- water system surveys
- reporting requirements
- monitoring frequency
- use of groundwater
- use and maintenance of well
- wellhead protection programs
- cross connection control and backflow prevention
- O & 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
- UIC programs.)

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
SAFE DRINKING WATER ACT (SDWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>3-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, reoccurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation, promotes good public relations and addresses systemic weakness in the overall operation of the program (GMP).</p> <p align="center">...</p>	<p>Determine what management systems are in place. (1)(2)</p> <p>Verify that the existing system addresses the issues associated with the SDWA by: (1)(2)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p>Determine if training is being conducted. (1)(2)</p> <p align="center">...</p>
<p>3-5. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p align="center">...</p>	<p>Determine if any new regulations concerning SDWA have been issued since the finalization of the manual. (1)(2)</p> <p>Verify that the facility is in compliance with newly issued regulations. (1)(2)</p> <p>(NOTE: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
SAFE DRINKING WATER ACT (SDWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
3-6. 3-7. 3-8. 3-9. 3-10. 3-11.	This item is not Army Reserve applicable. This item is not Army Reserve applicable.
DRINKING WATER STANDARDS 3-12. 3-13. 3-14.	This item is not Army Reserve applicable. This item is not Army Reserve applicable. This item is not Army Reserve applicable.
MONITORING/ SAMPLING OF DRINKING WATER 3-15. 3-16. 3-17. 3-18. 3-19. 3-20. 3-21. 3-22. 3-23. 3-24. 3-25. 3-26. 3-27. 3-28. 3-29.	This item is not Army Reserve applicable. This item is not Army Reserve applicable.

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
SAFE DRINKING WATER ACT (SDWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>3-30. 3-31. 3-32. 3-33. 3-34.</p>	<p>This item is not Army Reserve applicable. This item is not Army Reserve applicable.</p>
<p>DISINFECTION AND FILTRATION</p> <p>3-35. 3-36. 3-37. 3-38. 3-39. 3-40. 3-41. 3-42.</p>	<p>This item is not Army Reserve applicable. This item is not Army Reserve applicable.</p>
<p>NOTIFICATION AND REPORTING REQUIREMENTS</p> <p>3-43. 3-44. 3-45. 3-46.</p>	<p>This item is not Army Reserve applicable. This item is not Army Reserve applicable. This item is not Army Reserve applicable. This item is not Army Reserve applicable.</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
SAFE DRINKING WATER ACT (SDWA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>LEAD AND COPPER IN DRINKING WATER SYSTEMS</p> <p>3-47.</p> <p>3-48.</p> <p>3-49.</p> <p>3-50.</p> <p>3-51.</p> <p>3-52.</p> <p>3-53.</p> <p>3-54.</p> <p>3-55.</p> <p>3-56.</p> <p>3-57.</p> <p>3-58.</p> <p>3-59.</p> <p>SOLE SOURCE AQUIFER</p> <p>3-60.</p>	<p>This item is not Army Reserve applicable.</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

INSTALLATION:	COMPLIANCE CATEGORY: SAFE DRINKING WATER ACT (SDWA) ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

Section 4

**RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE C
(RCRA-C)**

SECTION 4

RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE C (RCRA-C)

A. Applicability of this Protocol

This protocol applies to Army installations that generate, store, treat, or dispose of any type of hazardous waste. The Federal regulations which an installation is required to meet are based on the amount of waste generated at the installation during 1 month (mo) and whether or not the installation is operating a transportation, storage, or disposal facility.

This protocol and its associated evaluation worksheets are necessarily more complex than other protocols in this volume. All evaluation items will not be applicable to all installations. Guidance is provided on the worksheets to direct the evaluator to the evaluation questions related to the type of hazardous waste activities/facilities on the installation. This protocol focuses on the hazardous waste 40 Code of Federal Regulations (CFR) 260-279 since these are the primary regulations that affect most Army installations. However, installation environmental coordinators should determine the additional requirements mandated by their respective state regulations (if appropriate) and include evaluation questions on worksheets in the same format as shown in this protocol.

B. Federal Legislation

- *The Resource Conservation and Recovery Act (RCRA), Subtitle C, as amended.* This law, Public Law (PL) 98-616 (42 U.S. Code (USC) 6921-6939b) established standards and procedures for the handling, storage, treatment, and disposal of hazardous waste. For example, 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 mile (mi) of an underground source of drinking water.
- *The Federal Facilities 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.

C. State/Local Requirements

Many states have met U.S. Environmental Protection Agency (USEPA) requirements as outlined in 40 CFR 271 and have been authorized to manage their own state programs. Many states have adopted the USEPA regulations by reference or have promulgated regulations identical to the USEPA regulations. Several other states have developed hazardous waste regulatory programs that are substantially equivalent to the Federal program or have implemented programs significantly more stringent than the USEPA program. 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 protocol worksheets 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

There are two DOD Policy Memorandums that address hazardous waste and are applicable to Army installations:

- Defense Environmental Quality Program Policy Memorandum (DEQPPM) 80-5, *DOD Hazardous Material Disposal Policy*, designates the Defense Logistics Agency (DLA) as the single manager for disposal of hazardous materials within DOD. This policy is implemented through regional Defense Reutilization and Marketing Offices (DRMOs) around the country that are responsible for managing the offsite disposal of hazardous wastes for Army installations.
- DEQPPM 80-8, *RCRA Hazardous Waste Management Regulations*, establishes management procedures for implementing the DOD Hazardous Waste Management Program (HWMP).

E. U.S. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990. Chapter 6 defines Army policy and procedures for managing hazardous waste, including resource recovery, recycling, waste reduction, and training programs.

The hazardous waste management program requirements of AR 200-1 are that Army, U.S. Army Reserves, and Army National Guard (ARNG) installations and tenants will be aware of and comply with all applicable laws (Federal, state, and local); ensure that program and budget requests identify resource requirements to carry out management duties; encourage the use of joint or

regional facilities to minimize costs; minimize generation and land disposal of hazardous wastes; prohibit the storage of hazardous wastes in underground storage tanks; conform to all laws, including international laws, on ocean dumping; and in general, "generate, transport, treat, store, and dispose of wastes such as pesticides, hazardous chemical stocks, medical, dental, and veterinary supplies, radioactive materials, propellant, explosive, and pyrotechnic materials (PEP), explosive ordnance, or chemical warfare agents in a manner that protects public health and the environment" (para 6-2).

F. Key Compliance Requirements

- **Generator Requirements - Responsibilities of Army 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 kilograms (kg) of hazardous waste or 1 kg of acutely hazardous waste in a 1 mo time period. They also do not accumulate onsite more than 1000 kg of waste at any one time. When either the volume of waste produced in 1 mo exceeds 100 kg or more than 1000 kg of waste has accumulated onsite, the installation is required to comply with the more stringent standards applicable to a Small Quantity Generator (SQG).

(NOTE: Using water, which weighs approximately 8 pounds (lb)/gallon (gal) (3.67 kg/gal) as a basis of measurement, 100 kg would equal about 28 gal, 1000 kg would equal about 273 gal.)

2. A SQG produces between 100 and 1000 kg 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 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 of waste accumulated at the installation. When the volume of waste generated exceeds 1000 kg, the accumulation time onsite is exceeded, or more than 6000 kg of waste is onsite, the installation is required to comply with the standards for a Generator.

3. A Generator (also referred to as a Large Quantity Generator (LQG)) produces more than 1000 kg of hazardous waste in a month. The waste cannot accumulate onsite for more than 90 days. If the waste is kept onsite for more than 90 days, the generator is required to obtain a permit and operate as a TSDF.

Whether the installation is a conditionally exempt small quantity generator, a SQG, or a generator (LQG) determines the type of records the installation is required to keep and design standards for storage areas. Small storage areas connected with a generation point are often referred to as accumulation points.

Regardless of the amount of hazardous waste generated, every Army installation is required to test or use prior knowledge of its solid waste to determine if it has hazardous characteristics. Every Army installation is also required to store and/or accumulate hazardous waste in containers that are compatible with the waste, undamaged, and labeled to indicate the contents.

Comparison of RCRA Generator Requirements

Requirement	Conditionally Exempt	Small Quantity Generator	Generator
Identify HW	Yes	Yes	Yes
Quantity Limits	<or= 100 kg/mo	100 - 1000 kg/mo	>1000 kg/mo
Acute Waste Limits	<or= 1 kg/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	Required	Required
Onsite Accumulation Limits (without permit)	<or= 1000 kg	<or= 6000kg	Any quantity
Accumulation Time Limits (without permit)	None	<or= 180 days or <or= 270 days (> 200 miles)	<or= 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

- **Installation Hazardous Waste Management Plan (IHWMP)** - 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. The Directorate of Engineering and Housing (DEH) will prepare the plan and provide copies to all facility personnel that generate, transport, treat, store, and dispose of hazardous waste. The plan will be signed by the IC and will:
 - include responsibilities of installation organizations and personnel in generating, treating, storing, and disposing of hazardous waste
 - show USEPA and state ID No. to generate, treat, store, dispose of, transport, or offer for transportation hazardous wastes
 - specify the type and quantity of hazardous waste for each hazardous waste generating activity (including tenants)
 - describe waste minimization projects, funds, and saving
 - identify the location of all hazardous waste TSDFs
 - describe installation procedures to treat, store, dispose of, transport onpost, or offer for transport offpost hazardous waste, consistent with the requirements of 40 CFR 260-271, *Hazardous Waste Management*, including requirements of a RCRA permit
 - include procedures to analyze hazardous wastes; include procedures to inspect the hazardous waste units for malfunction and deterioration, operator errors, and discharges that may be causing, or may lead to release of hazardous waste constituents to the environment, or a threat to human health
 - include procedures to prevent unauthorized entry to the hazardous waste units
 - describe the program to train all applicable facility personnel with Federal, state, and Army requirements to ensure compliance with RCRA
 - include procedures of the contingency plan to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water, consistent with requirements of 40 CFR 264 Subpart D
 - include procedures to temporarily treat, store, and dispose of hazardous waste if the use of existing facilities is unavailable, identifying temporary storage facilities, alternate disposal site, and handling procedures
 - include a copy of the RCRA operating record, if applicable
 - include a copy of the RCRA permit, if applicable
 - reference the location of the Spill Prevention Contingency and Countermeasure (SPCC) Plan and the Installation Contingency Spill Plan (ICSP), and summarize emergency reporting information for reporting and containing spills and illegal dumping (see Section 7 of this manual)
 - include references for obtaining technical information on determining if a waste is hazardous; the location of offsite RCRA approved TSDFs; the

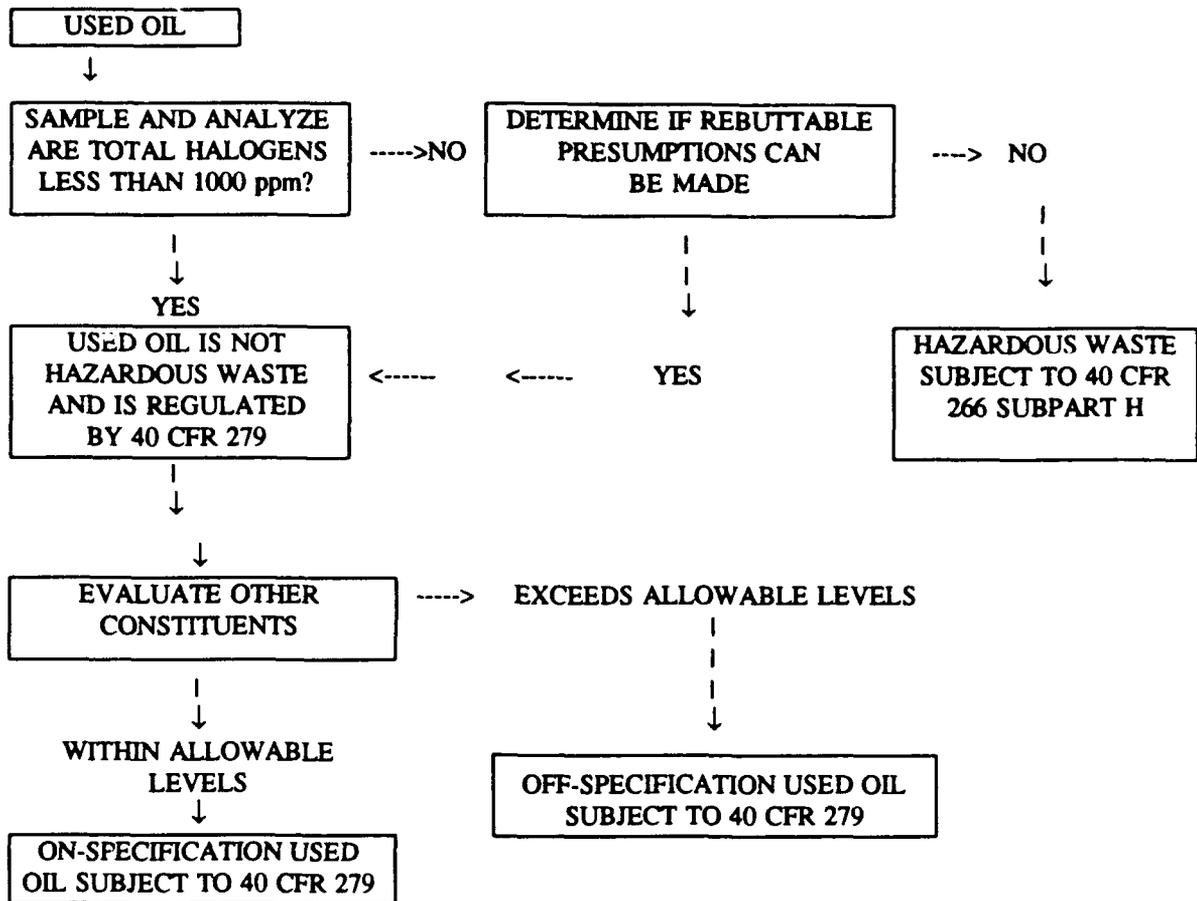
names of state and Federally approved hazardous waste transporters; and the names and addresses of state and Federal regulatory agencies administering the RCRA program.

- **Transport Requirements** - Containers of hazardous waste shipped offpost must be labeled identifying the waste and its hazard class. Shipments from the installation to a DRMO offpost must also be accompanied by manifests and are subject to the full transportation requirements as stipulated in Department of Defense (DOT) hazardous materials transportation regulations.
- **Satellite Accumulation Point Management** - A satellite accumulation point is where no more than 55 gal of a hazardous waste or 1 quart (qt) of acute hazardous waste is accumulated. The satellite accumulation point is under the control of one operator. When the 55 gal 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 treatment, storage, and/or disposal facility is subject to regulation and permitting under Federal or state regulations. These regulations are both administrative and technical. The administrative standards require that various plans be developed to ensure that emergencies can be dealt with, that waste received is properly identified, and that 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, that records of operations are compiled and maintained, and that 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 onhand, and updated frequently.

The technical standards applicable to treatment, storage, and disposal facilities fall into two classes: general standards that apply to all TSDF and specific standards that 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 not been issued an RCRA permit are considered to be in interim status if they have 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). These ISS (which are contained in 40 CFR 265) are similar in scope to the permit standards contained in 40 CFR 264, but are generally less stringent and require less facility modifications or improvements.

- **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. The following flow chart can aid in determining if the used oil generated at the facility is subject to 40 CFR 279.



G. Key Compliance Definitions

These definitions were obtained from the Federal, DOD, and ARs cited previously.

- **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).

- *Active Life* - the period from the initial receipt of hazardous waste at the facility until the Regional Administrator receives certification of final closure (40 CFR 260.10).
- *Active Portion* - that portion of a facility where treatment, storage, or disposal operations are being or have been conducted and which is not a "closed portion" (40 CFR 260.10).
- *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:
 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 (40 CFR 260.10).
- *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).
- *Chemical Warfare Agent* - a substance, which because of its chemical properties is used in military operations to kill, seriously injure, or incapacitate humans or animals or deny use of indigenous resources (AR 200-1, Glossary).

- *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).
- *Container* - in relation to used oil, any portable device in which material is stored, transported, treated, disposed of, or otherwise handled (40 CFR 279.1).
- *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 40 CFR 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 40 CFR 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 millimeter (mm) particle size that is intended for disposal and that is: a manufactured object; or 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 treatment, storage, or disposal facility 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).
- *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 onto 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).
- *Do-It-Yourself Use Oil Collection Center* - any site or facility that accepts aggregates and stores used oil collected only from household do-it-yourselfers (40 CFR 279.1).
- *Existing Tank* - a tank that is used for the storage or processing of used oil and that is in operation, or 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).
- *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 Acknowledgement 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 Portion* - the land surface area of an existing waste management unit, included in the original Part A permit application, on which wastes have been placed prior to the issuance of a permit (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:
 1. A continuous onsite physical construction of the site or installation program has begun, or
 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 (40 CFR 260.20).
- *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 (i.e., 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).
- *Food-Chain Crops* - tobacco, crops grown for human consumption, and crops grown for feed for animals whose products are consumed by humans (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 installation producing hazardous waste in quantities greater than 1000 kg/mo.
- *Good Management Practice (GMP)* - schedules of activities, prohibitions of practices, maintenance procedures, and other management procedures, to prevent or reduce hazards to the environment.
- *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 4-9 (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).

- **Household "Do-It-Yourself" Used Oil** - oil that is derived from households, such as used oil generated by individuals through the maintenance of their personal vehicles (40 CFR 279.1).
- **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 :
 1. placement in a particular device or facility because it may cause corrosion or decay of containment materials (i.e. 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, mists, fumes, or gases, or flammable fumes or gases (40 CFR 260.10).
- **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).
- **In-ground 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).
- ***Landfill Cell*** - a discrete volume of a hazardous waste landfill which uses a liner to provide isolation of wastes from adjacent cells or wastes. Examples are trenches and pits (40 CFR 260.10).
- ***Large Quantity Generator (LQG)*** - 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 (i.e., 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 (HWM)* - the systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous waste (40 CFR 260.10).
- *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 ID No. assigned to the generator plus a unique 5-digit document 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).
- *National Response Center (NRC)* - the Washington D.C. Headquarters that coordinates activities relative to pollution emergencies. It is located at Headquarters U.S. Coast Guard (USCG) (AR 200-1, Glossary).
- *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* - in relation to used oil, 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 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. For the purpose of 40 CFR 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).

- **Off-specification Used 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 degrees F minimum
Total halogens	4000 ppm maximum

- **On-Ground 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).
- **Open Burning** - the combustion of any material without the following characteristics:
 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 combustion
 3. Control of emission of the gaseous combustion products (40 CFR 260.10).
- **Partial Closure** - the closure of a hazardous waste management unit in accordance with the applicable closure requirements of 40 CFR 264 and 265 at a facility that contains other active hazardous waste management units. For example, partial closure may include the closure of a tank (including its associated piping and underlying containment systems) while other units of the same facility continue to operate (40 CFR 260.10).
- **Pile** - any noncontainerized accumulation of solid, nonflowing hazardous waste that is used for treatment or storage that is not a containment building (40 CFR 260.10).
- **Point Source** - any discernible, confined, and discrete conveyance, including, but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure,

container, rolling stock, concentrated animal feeding operation, or vessel or floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture (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, which specifies the TSDF 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).
- *Processing* - means chemical or physical operations designed to produce from used oil, or to make used oil more amenable for the 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).
- *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).
- *Pump Operating Level* - a liquid level proposed by the owner or operator and approved the Regional Administrator based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump (40 CFR 264.226(d)(3)).
- *Qualified Groundwater Scientist* - a scientist or engineer who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and 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 courses that enable that individual to make sound professional judgements regarding groundwater monitoring and contaminant fate and transport (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).
- *Replacement Unit* - a landfill, surface impoundment or waste pile unit:
 1. from which all or substantially all of the waste is removed, and
 2. that is subsequently reused to treat, store, or dispose of hazardous waste.

This does not apply to a unit from which waste is removed during closure, if the subsequent reuse solely involves the disposal of waste from that unit and other closing units or corrective action areas at the facility, in accordance with an approved closure plan or USEPA or state approved corrective action (40 CFR 260.10).

- *Representative Sample* - a sample of a universe or whole (i.e., waste pile, lagoon, groundwater) which can be expected to exhibit the average properties of the universe or whole (40 CFR 260.10).
- *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 feedback (40 CFR 279.1)
- *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 of hazardous waste in a calendar month but more than 100 kg (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 storage, treatment, or disposal facilities; 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, manmade 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 (i.e., wood, concrete, steel, plastic) which provide structural support (40 CFR 260.10).
- *Tank* - in relation to used oil, 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 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 areas 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:
 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, or
 5. the characteristics and volumes of residuals from a particular treatment process (40 CFR 260.10).

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).
- *Treatment Zone* - a soil area of the unsaturated zone of a land treatment unit within which hazardous constituents are degraded, transformed, or immobilized (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 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).
- *Unsaturated Zone or Zone of Aeration* - the zone between the land surface and the water table (40 CFR 260.10).
- *United States* - the 50 states, the District of Columbia, the Commonwealth of Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands (40 CFR 260.10).
- *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 260.10).
- *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. Used oil aggregation points may also accept used oil from household do-it-yourselfers (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. Used oil collection centers may accept used oil from household do-it-yourselfers (40 CFR 279.1).
- *Used Oil Fuel Marketer* - any person who conducts either of the following activities:
 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 meets used oil fuel specifications (40 CFR 279.1).
- *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 hours (h) during the normal course of transportation and not longer than 35 days (40 CFR 279.2).
- *Used Oil Transporter* - any person who transports used oil, any person 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 (i.e., 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).

- *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).

RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE C (RCRA-C)

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Facilities	4-1 through 4-12	(1)(2)(12)
All Generators:		
General	4-13 through 4-19	(1)(2)(12)(18)
Satellite Accumulation Points	4-20	(1)(2)(4)(12)
Personnel Training	4-21 and 4-22	(1)(2)(4)(12)
Conditionally Exempt Small Quantity Generators (CESQG)	4-23 through 4-26	(1)(2)(3)(4)(12)
Small Quantity Generators (SQG):		
General	4-27 through 4-30	(1)(2)(3)(4)
Containers	4-31 through 4-36	(1)(2)(3)(4)
Container Storage Areas	4-37 through 4-39	(1)(2)(3)(4)
Tank Systems Storage	4-40 through 4-42	(1)(2)(3)(4)
Large Quantity Generators (LQG):		
General	4-43 through 4-50	(1)(2)(3)(4)
Personnel Training	4-51 and 4-52	(2)(3)(12)(18)
Containers	4-53 through 4-58	(1)(2)(3)(4)
Container Storage Areas	4-59 through 4-61	(1)(2)(3)(4)
Tank Systems Storage	4-62 through 4-72	(1)(2)(3)(4)
Containment Buildings	4-73 through 4-79	(1)(2)(3)(4)
Transportation	4-80 through 4-84	(1)(2)(12)
All Treatment/Storage/ Disposal Facilities (TSDFs)		
General	4-85 through 4-94	
Personnel Training Requirements	4-95 and 4-96	
Containers	4-97 through 4-101	
Container Storage Areas	4-102 through 4-104	
Tank Systems Storage	4-105 through 4-115	

Items numbered 4-10, 4-11, 4-85 through 4-246, and 4-287 through 4-298 are not Army Reserve applicable and are not included in this manual

(a) CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager
- (3) Shop Foreman
- (4) Accumulation Point Manager
- (12) Environmental Coordinator (EC)
- (18) Safety Officer

RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE C (RCRA-C)

GUIDANCE FOR WORKSHEET USERS (continued)

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Treatment/Storage/ Disposal Facilities (TSDFs) (continued)		
Containment Buildings	4-116 through 4-122	
Emissions from Process Vents	4-123 through 4-125	
Air Emission Standards for Equipment Leaks	4-126 through 4-133	
Documentation Requirements	4-134 through 4-145	
Closure	4-146 through 4-150	
Permitted TSDFs	4-151 through 4-163	
Interim Status TSDFs	4-164 through 4-172	
Export/Import of Hazardous Waste	4-173 through 4-180	
All Surface Impoundments	4-181	
Permitted Surface Impoundments	4-182 through 4-191	
Interim Status Surface Impoundments	4-192 through 4-195	
All Waste Piles	4-196	
Permitted Waste Piles	4-197 through 4-201	
Interim Status Waste Piles	4-202 through 4-205	

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RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE C (RCRA-C)

**GUIDANCE FOR WORKSHEET USERS
(continued)**

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Land Treatment Units	4-206	
Permitted Land Treatment Units	4-207 through 4-213	
Interim Status Land Treatment Units	4-214 through 4-217	
All Hazardous Waste Landfills	4-218 through 4-223	
Permitted Hazardous Waste Landfills	4-224 through 4-227	
Interim Status Hazardous Waste Landfills	4-228	
Permitted Incinerators	4-229 through 4-237	
Permitted Miscellaneous Units	4-238 through 4-240	
Interim Status Thermal Treatment	4-241 through 4-243	
Interim Status Chemical/Physical/Biological Treatment	4-244 through 4-246	
Land Disposal of Restricted Wastes	4-247 through 4-256	(1)(2)(12)

Items numbered 4-10, 4-11, 4-85 through 4-246, and 4-287 through 4-298 are not Army Reserve applicable and are not included in this manual

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RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE C (RCRA-C)

GUIDANCE FOR WORKSHEET USERS

(continued)

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
Used Oil	4-257	(1)(2)(3)
Used Oil Generators:		
General	4-258 through 4-262	(1)(2)(3)(4)(12)(18)
Containers and Tanks	4-263 through 4-274	(1)(2)(3)(4)(12)(18)
Used Oil Collection Centers and Aggregation Points	4-275 through 4-277	(1)(2)(3)(4)(12)(18)
Used Oil Transportation	4-278 through 4-286	(1)(2)(3)(4)(12)(18)
Used Oil Burners	4-287 through 4-293	
Used Oil Marketing	4-294 through 4-298	
Used Oil Dust Suppression	4-299	(1)(2)(3)(4)(12)(18)

Items numbered 4-10, 4-11, 4-85 through 4-246, and 4-287 through 4-298 are not Army Reserve applicable and are not included in this manual

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RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE C (RCRA-C)

Plans and Maps to Review

- Hazardous Waste Management Plan
- Waste analysis plan(s)
- Part A/B permit including:
 - SPCC plans
 - ISCP
 - inspection plan
 - training plan
 - closure/postclosure plans
- Hazardous waste inventory

Records to Review

Generator (including TSDFs if they are also generators):

- Notification (USEPA ID No.)
- Hazardous waste manifests
- Manifest exception reports
- Biennial reports (LQGs only)
- Delistings
- Speculative accumulation records
- Land disposal restriction certifications
- Employee training documentation
- Hazardous waste tank integrity assessments
- Contingency plan (LQGs only)
- Notifications of hazardous waste oil fuel marketing or blending activity
- Accumulation point inspection records
- Used Solvent Elimination Program Contract (DEH or DOL)

In addition to the above, TSDFs would require:

- Location map of TSDFs
- Unmanifested waste reports
- Facility review reports (Inspection log)
- Operating record
- Groundwater monitoring records and annual reports (where required)
- Facility Biennial reports
- Closure/Postclosure Notices (where applicable)
- Other documents as required by the Permit

Physical Features to Examine

- Disposal sites
- Accumulations points
- Incinerators
- Vehicles used for transport
- Storage facilities (including drums)
- Surface impoundments

People to Interview

- MUSARC Engineer/Facility Coordinator
- Facility Manager
- Shop Foreman
- Accumulation Point Manager
- Directorate of Engineering and Housing (DEH)/DPW
- Environmental Coordinator (EC)
- Safety and Health Officer
- Fire Department
- Director of Logistics (DOL)
- TSDF Operators (DEH, DOL, DRMS)
- Shop Activity Supervisor
- Defense and Reutilization Marketing Office (DRMO)
- BASOPs ARCOM Environmental Managers

OPERATIONS/PROCESSES AND RELATED HW STREAMS*

* Not all operations listed will generate HW. Wastes listed may be a solid waste, a state HW or a RCRA HW.

Directorate of Logistics

- maintenance/transportation operations (opns) - solvents, hydraulic fluids, fuels, ethylene glycol, battery acids, paint washes, oils, brake fluid, spill residue, contaminated rags, oil filters, heavy metal contaminated sludges, brake pads, batteries
- painting operations - paint strippers, paint thinners, paint wastes (slop), epoxy (resin), filters, abrasive blast residue
- battery shop - battery acids, spill residue, alkaline battery fluids, heavy metals
- materials central storage facility - spill residue, HM that become HW due to shelf-life, expiration or package deterioration (check supplies, inventory management, waste management)
- drycleaning/laundry operations - filters, perchloroethylene, corrosives

Directorate of Engineering & Housing/Directorate of Public Works

- vehicle and engine maintenance (maint) operations - solvents, hydraulic fluids, fuels, ethylene glycol, battery acids, paint wastes, oils, brake fluid, spill residue, contaminated rags, oil filters, heavy metal contaminated sludges, brake pads, batteries
- residential/occupational housing maintenance - lead paint debris, lead paint, paint wastes, solvents, oils, contaminated rags
- electrical maintenance - oils, solvents, PCB (transformer fluids)
- roads and grounds maintenance - oils, fuels, spill residue, paint
- energy operations - boiler blowdown wastes, feed water chemicals, feed water testing wastes
- carpentry shops - varnishes, stains, adhesives, sealants
- metal shops - cutting oils, toxic metals
- painting operations - paint strippers, paint thinners, paint wastes (slop), epoxy (resin), filters, residue from abrasive blasting operations
- incinerator - ash

Medical Facility

- pathology dept - alcohol, methanol, acetone, formaldehyde, xylene, miscellaneous chemicals
- x-ray operations - silver recovery unit
- pharmacy - pharmaceuticals

Motorpools - (track waste from point of generation to storage location) solvents, hydraulic fluids, fuels, ethylene glycol, battery acids, paint wastes, oils, brake fluid, spill residue, contaminated rags, oil filters, heavy metal contaminated sludges, brake pads, batteries

Airfields - solvents, hydraulic fluids, fuels, ethylene glycol, battery acids, paint wastes, oils, brake fluid, spill residue, contaminated rags, oil filters, heavy metal contaminated sludges, brake pads, paint strippers, paint thinners, epoxy (resin), filters, batteries, residue from abrasive blasting operations

NBC Operations/Storage Areas - DS2, STB, decontamination kits, filters, batteries

Print Plant - inks, solvents, rags

TASC - photographic processing chemicals, paint wastes, inks, solvents, residue from abrasive blasting operations, waste from plastics modeling operations

Open Burning/Open Detonation sites - check permit and operations for compliance

TSDf - check permit and operations for compliance

**COMPLIANCE CATEGORY:
RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE C
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ALL FACILITIES</p> <p>4-1. Determine actions or changes since previous review of hazardous waste management (GMP).</p> <p align="center">...</p> <p>4-2. Copies of all relevant Federal and state regulations, DOD directives, ARs, and guidance documents on hazardous waste should be maintained at the facility (GMP).</p> <p align="center">...</p>	<p>Examine copy of previous review report to determine if noncompliance issues have been resolved. (1)(2)(12)</p> <p align="center">...</p> <p>Determine from interview if copies of the following regulations, which are applicable, are maintained and kept current at the ARCOM or Support Installation: (1)</p> <ul style="list-style-type: none"> - 40 CFR 260, <i>Hazardous Waste Management Systems: General.</i> - 40 CFR 261, <i>Identification and Listing of Hazardous Waste.</i> - 40 CFR 262, <i>Standards Applicable to Generators of Hazardous Waste.</i> - 40 CFR 263, <i>Standards Applicable to Transporters of Hazardous Waste.</i> - 40 CFR 264, <i>Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.</i> - 40 CFR 265, <i>Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.</i> - 40 CFR 266, <i>Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities.</i> - 40 CFR 267, <i>Interim Standards for Owners and Operators of new Hazardous Waste Land Disposal Facilities.</i> - 40 CFR 268, <i>Land Disposal Restriction.</i> - 40 CFR 279, <i>Standards for the Management of Used Oil.</i> - NFPA, <i>Fire Protection Guide of Hazardous Materials.</i> - DEQPPM 80-5, <i>DOD Hazardous Materials Disposal Policy.</i> - DEQPPM 80-8, <i>RCRA Hazardous Waste Management Regulations.</i> - AR 200-1, <i>Environmental Protection and Enhancement, 23 May 1990.</i> - Policy Letters. - Applicable state and local regulations. <p>Determine if facility environmental staff is familiar with and knowledgeable about regulatory requirements. (1)</p> <p>(NOTE: State 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. State may pass more stringent regulations.)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE C
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-3. Facilities are required to comply with applicable state and local requirements (FFCA, Section 102(a)(3) and AR 200-1, para 1-39a(3), 6-2a(1)).</p> <p align="center">...</p> <p>4-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, re-occurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation, promotes good public relations and addresses systemic operations in the overall operation of the program (GMP).</p> <p align="center">...</p>	<p>Verify that the facility is complying with state and local requirements. (1)(2)(12)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (1)(2)</p> <p>(NOTE: Examples of areas regulated by state and local agencies or regulated more stringently than the Federal regulations:</p> <ul style="list-style-type: none"> - additional manifest requirements - more frequent reporting requirements - transportation of hazardous waste - identification of special waste or waste categories - regulation of specific substances as hazardous waste such as: medical, pathological, and infectious wastes; used oil; explosives; used batteries - small quantity generator requirements - disposal requirements - construction and operation of storage and disposal facilities.) <p align="center">...</p> <p>Determine what management systems are in place. (1)(2)(12)</p> <p>Verify that the existing system addresses the issues associated with hazardous waste management by: (1)(2)(12)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p>Determine if training is being conducted. (1)(2)(12)</p> <p>Determine how hazardous waste is managed by starting at a point of generation and identifying through interviews, site visits, and paperwork review: (1)(2)(12)</p> <ul style="list-style-type: none"> - how, where and when the waste was generated - how the waste was identified as being hazardous - how waste is handled to prepare it for disposal or treatment - where the waste is finally disposed of or treated. <p>Verify that hazardous waste storage at generators has secondary containment. (1)(2)(12)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-5. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p align="center">...</p> <p>4-6. Each facility will have a written hazardous waste management plan (AR 200-1, para 6-4b).</p> <p align="center">...</p>	<p>Determine if any new regulations concerning hazardous waste have been issued since the finalization of the manual. (1)</p> <p>Verify that the facility is in compliance with newly issued regulations. (1)</p> <p>(NOTE: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p align="center">...</p> <p>Verify that the BASOPS ARCOM Engineer or DEH has prepared a hazardous waste management plan and provided copies to all facility personnel that generate, transport, treat, store, and dispose of hazardous waste. (1)(2)</p> <p>Verify that the plan is signed by the Host Facility commander and includes the following: (1)</p> <ul style="list-style-type: none"> - responsibilities of facility organizations and personnel for hazardous waste activities - USEPA and state ID No. - types and quantities of hazardous waste for each hazardous waste generating activity, including tenants - description of waste minimization projects - locations of all hazardous waste storage, treatment and disposal units - description of facility procedures to treat, store, dispose of, transport onpost, or offer for transport offpost hazardous waste - procedures to analyze hazardous waste - inspection procedures - procedures for the prevention of unauthorized entry to the hazardous waste units - description of training programs - contingency plan measures - procedures to temporarily treat, store, dispose of hazardous waste if the use of existing facilities is unavailable - copies of any RCRA permits - location of the SPCC Plan and the ISCP. <p align="center">...</p>

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COMPLIANCE CATEGORY: RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE C ECAAR	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-7. Each facility will conduct an annual inventory of hazardous waste (AR 200-1, para 6-4c).</p> <p style="text-align: center;">...</p> <p>4-8. Army material resources should be procured and used in a way that minimizes waste production (AR 200-1, para 1-27a and 6-6).</p> <p style="text-align: center;">...</p> <p>4-9. The ARCOM is required to report HAZMIN efforts (AR 200-1 para 6-6c(1)).</p> <p style="text-align: center;">...</p> <p>4-10.</p> <p>4-11.</p> <p style="text-align: center;">...</p>	<p>Verify that the BASOPS ARCOM Engineer or DEH has conducted an annual inventory of hazardous wastes, that it is certified by the Host facility commander, and that it includes: (1)(2)</p> <ul style="list-style-type: none"> - the hazardous waste generators - names, addresses, and state/USEPA ID No. of offsite TSDFs receiving the facilities' hazardous waste - the name and USEPA ID No. of each transporter used for offsite shipments of hazardous waste - description, USEPA hazardous waste number (from 40 CFR 261, subpart C or D), DOT hazard class, and quantity of each hazardous waste shipped offsite - the USEPA ID No. of the offsite facility to which the waste was shipped - a description of efforts undertaken during the year to reduce the volume and toxicity of wastes generated - a description of the changes in volume and toxicity of waste actually achieved in comparison to previous years, beginning with 1985. <p style="text-align: center;">...</p> <p>Verify that the BASOPS ARCOM Engineer or DEH monitors facility-wide use of hazardous materials to ensure progress in meeting HAZMIN goals and provides quarterly progress reports to the DEH. (2)(12)</p> <p>Verify that the BASOPS ARCOM Engineer or DEH provides semiannual progress reports to the facility commander on the reduction of use and toxicity of hazardous materials, recommending opportunities for further reduction. (6)</p> <p style="text-align: center;">...</p> <p>Verify that the ARCOM submits, by 1 March of even numbered years, USEPA Form 8700-13A/B to the appropriate state or USEPA regional administrator (depending upon whether the state has an USEPA-approved RCRA program). (1)(2)(12)</p> <p>Verify that the report includes a description of efforts undertaken during the year to reduce the volume and toxicity of hazardous waste generated, and a description of the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years. (1)(2)(12)</p> <p style="text-align: center;">...</p> <p>These items are not Army Reserve applicable.</p> <p>These items are not Army Reserve applicable.</p> <p style="text-align: center;">...</p>

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**COMPLIANCE CATEGORY:
RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE C
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-12. Disposal of medical, dental, and veterinary supplies and wastes must meet specific requirements (AR 200-1, para 6-11).</p> <p align="center">...</p>	<p>Verify that medical, dental and veterinary supplies and wastes that are RCRA listed or characteristic wastes are managed through the DRMO or a commercial contract with a permitted disposal firm. (1)(2)(12)</p> <p>Determine if the generator possesses the technical capability and facilities to dispose of items that are not RCRA listed but should be treated as a RCRA hazardous waste. (1)(2)(12)</p> <p>Verify that if the generator cannot dispose of the hazardous waste according to approved methods, the generator contacts DRMO for guidance.(1)(2)(12)</p> <p>Confirm that facility commanders disposing of such medical, dental, and veterinary wastes by land burial maintain records on: (1)(2)(12)</p> <ul style="list-style-type: none"> - quantities disposed - disposal method used - disposal site location. <p align="center">...</p>

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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ALL GENERATORS</p> <p>General</p> <p>4-13. Facilities that generate solid wastes must determine if the wastes are hazardous wastes (40 CFR 261.3, 262.11, and 261.24).</p>	<p>(NOTE: Expired materials which cannot be excessed, and unidentified waste materials, may have to be disposed of as hazardous waste depending on their constituents. Determination of whether or not a waste is a hazardous waste can be done through one of the following:</p> <ul style="list-style-type: none"> - knowledge of all the constituents of the waste - laboratory analysis.) <p>Discuss with staff how wastes generated on the facility were identified and classified. (1)(2)(12)</p> <p>Determine if the facility followed USEPA criteria for identifying the characteristics of hazardous waste and USEPA's listed wastes in 40 CFR 261. (1)(2)(12)</p> <p>Determine whether the facility generates, transports, treats, stores, or disposes of any hazardous waste (See Appendix 4-1 for guidance) and the quantity. If so, go to the appropriate section. (1)(2)(12)</p> <p>(NOTE: The following solid wastes are not considered to be hazardous wastes:</p> <ul style="list-style-type: none"> - household waste - 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 - drilling fluids, produced waters and other wastes affiliated with the explorations, development, or production of crude oil, natural gas, or geothermal energy - solid waste which consists of discarded arsenical-treated wood or wood products which fail the test for Toxicity Characteristics for Hazardous Waste Codes 0004 through 0017 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 - 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 280 (See RCRA-1) - used chlorofluorocarbon (CFC) 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 CFCs as the heat transfer fluid in a refrigeration cycle, provided that the refrigerant is reclaimed for further use

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-13 (continued)</p> <p align="center">...</p>	<ul style="list-style-type: none"> - used oil containing less than 1000 ppm halogens - nontern 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"> - puncturing the filter anti-drain back valve or the filter dome end and hot-draining - hot-draining and crushing - dismantling and hot-draining - any other equivalent hot-draining method which will remove used oil.) <p>Verify that wastes are tested for toxicity characteristics or are previously identified as toxic (See Appendix 4-2). (1)(2)(12)(18)</p> <p>Determine if wastes contain contaminants in greater concentrations than the Toxicity Characteristics listed in Appendix 4-3. (1)(2)(12)(18)</p> <p>Verify that wastes are tested for ignitability, corrosivity, and reactivity. (1)(2)(12)(18)</p> <p>Verify that wastes which exceed toxicity, ignitability, corrosivity, or reactivity characteristics are handled as hazardous wastes. (1)(2)(12)(18)</p> <p>Verify that all data, including quality assurance data is maintained and kept available for reference or inspection. (1)(2)(12)(18)</p> <p align="center">...</p>
<p>4-14. Facilities that generate hazardous wastes must test their wastes or use prior knowledge to determine if it is restricted from land disposal (40 CFR 268.7).</p> <p align="center">...</p>	<p>Determine whether the generator tests for restricted wastes. (1)(2)(12)(18)</p> <p>Determine if the facility generates restricted wastes by reviewing test results (See Appendix 4-4). (1)(2)(12)(18)</p> <p>(NOTE: Use the Land Disposal section questions for generators of these wastes in addition to the questions in this section.)</p> <p align="center">...</p>
<p>4-15. A facility must not offer its hazardous waste to transporters or to TSDFs that have not received an USEPA ID No. (40 CFR 262.12(c)).</p> <p align="center">...</p>	<p>Examine records pertaining to TSDF and transporter contract awards; verify that all transporters of hazardous wastes or TSDFs have an USEPA ID No.. (1)(2)(12)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-16. All 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 align="center">...</p>	<p>Verify that the biennial report (USEPA Form 8700-13A) is complete and was submitted in a timely manner. (1)(2)(12)</p> <p>Verify that copies are kept for 3 yr. (1)(2)(12)</p> <p>(NOTE: Reporting for exports of hazardous waste is not required.)</p> <p>(NOTE: This does not apply to CESQGs.)</p> <p align="center">...</p>
<p>4-17. Facilities that are generators are required to use manifests, and maintain records (40 CFR 262.40(a), 262.40 (b), and 262.40(d)).</p> <p align="center">...</p>	<p>Verify that copies of manifests are kept for 3 yr. (1)(2)(12)</p> <p>(NOTE: Periods of retention for manifests may be extended automatically during the course of any unresolved enforcement action.)</p> <p align="center">...</p>
<p>4-18. Generators are required to keep records of waste analyses, test and waste determinations (40 CFR 262.40(c)).</p> <p align="center">...</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 TSD. (1)(2)(12)</p> <p align="center">...</p>
<p>4-19. Specific persons should be designated responsible for hazardous waste storage areas, and the precise nature of their responsibilities should be specified (GMP).</p> <p align="center">...</p>	<p>Verify that specific individuals have been designated responsible for hazardous waste storage areas. (1)(2)(12)</p> <p>Verify that the individuals designated responsible for hazardous waste storage areas are aware of the precise nature of their responsibilities. (1)(2)(12)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>Satellite Accumulation Points</p> <p>4-20. All generators may accumulate as much as 55 gal of hazardous waste or 1 quart (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>(NOTE: This type of storage is often referred to as a satellite accumulation point.)</p> <p align="center">...</p> <p>Personnel Training</p> <p>4-21. All generator personnel who handle hazardous waste should meet certain training requirements (GMP).</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)(2)(4)(12)</p> <p>Determine how much waste is being generated by interviewing personnel. (1)(2)(4)(12)</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)(2)(4)(12)</p> <p>Verify that the containers are marked HAZARDOUS WASTE or other appropriate identification. (1)(2)(4)(12)</p> <p>(NOTE: See Appendix 4-1 and 4-5 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: (3)</p> <ul style="list-style-type: none"> - the excess container is marked with the date the excess amount began accumulating - the waste is transferred to 90 day or permitted storage within 3 days. <p align="center">...</p> <p>Verify that the training program is directed by a person trained in hazardous waste management procedures. (1)(2)(4)(12)</p> <p>Verify that the training program includes the following: (1)(2)(4)(12)</p> <ul style="list-style-type: none"> - contingency plan implementation - key parameters for automatic waste feed cutoff system - procedures for using, inspecting, and repairing emergency and monitoring equipment - operation of communications and alarm systems - response to fire or explosion - response to leaks or spills - waste turn-in procedures - identification of hazardous wastes - container use, marking, labeling, and on-facility transportation - manifesting and off-facility transportation - accumulation point management - personnel health and safety and fire safety - facility shutdown procedures.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-21. (continued)</p> <p>...</p> <p>4-22. Training records must be maintained for all generator staff who manage hazardous waste (GMP).</p> <p>...</p>	<p>Verify that new employee training is completed within 6 mo of employment. (1)(2)(12)</p> <p>Verify that an annual review of initial training is provided. (1)(2)(12)</p> <p>Verify that employees do not work unsupervised until training is completed. (1)(2)(12)</p> <p>Verify specifically that accumulation point managers and hazardous waste handlers have been trained. (1)(2)(12)</p> <p>...</p> <p>Examine training records and verify they include the following: (1)(2)(12)</p> <ul style="list-style-type: none"> - job title and description for each employee by name - written description of how much training each position will obtain - documentation of training received by name. <p>Determine if training records are retained for 3 yr after employment at the facility. (1)(2)(12)</p> <p>Verify that records are transferred with employees. (1)(2)(12)</p> <p>...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>CONDITIONALLY EXEMPT SMALL QUANTITY GENERATORS (CESQG)</p> <p>4-23. Generators of no more than 100 kg/mo of hazardous waste may qualify as CESQGs when they meet specific requirements (40 CFR 261.5).</p> <p align="center">...</p>	<p>Verify that the following quantity and storage limitations are met: (1)(2)(3)(4)(12)</p> <ul style="list-style-type: none"> - no more than 100 kg of hazardous waste is generated in a calendar month - total onsite accumulation does not exceed more than 1000 kg of hazardous waste - no more than 1 kg of acute hazardous waste (See Appendix 4-5) is generated in a calendar month, or - no more than a total of 100 kg of any residue or contaminated soil, waste, or other debris resulting from the cleanup of any acute wastes in a calendar month is generated. <p>Verify that wastes are either treated or disposed of in an onsite facility or delivered to an offsite TSDF, either of which are one of the following: (1)(2)(3)(4)(12)</p> <ul style="list-style-type: none"> - <i>permitted</i> - <i>in interim status</i> - <i>authorized to manage hazardous waste by a state with an approved hazardous waste management program</i> - <i>permitted, licensed, or registered by a state to manage municipal or industrial solid waste</i> - <i>a facility which does one of the following:</i> <ul style="list-style-type: none"> - <i>beneficially uses or reuses, or legitimately recycles or reclaims its waste</i> - <i>treats its waste prior to beneficial use or reuse, or legitimate recycling or reclamation.</i> <p>(NOTE: Hazardous waste generators who meet the requirements for being a CESQG, are not required to meet any of the standards outlined in 40 CFR 262 through 266 (except for 262.11), 268, and 270.)</p> <p>(NOTE: If a facility mixes its waste with used oil, the mixture is subject to the requirements in Subpart G of 40 CFR 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, and 40 CFR 270 and 124.)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-24. 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).</p> <p align="center">...</p>	<p>Verify that for containers or inner liners holding hazardous wastes that all wastes are removed that can be removed using common practices and no more than 2.5 centimeters (cm) of residue remains. (1)(2)(3)(4)</p> <p>Verify that for containers or inner liners if the container is less than or equal to 110 gal that no more than 3 percent by weight of total container capacity remains. (1)(2)(3)(4)</p> <p>Verify that for containers or inner liners when the container is greater than 110 gal no more than 0.3 percent by weight of the total container capacity remains. (1)(2)(3)(4)</p> <p>Verify that for containers that held a compressed gas the pressure in the container approaches atmospheric. (1)(2)(3)(4)</p> <p>Verify that for containers or inner liners that held an acute hazardous waste listed in Appendix 4-5 that one of the following is done: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - it is triple rinsed - it is cleaned by another method identified through the literature or testing as achieving equivalent removal - the inner liner is removed. <p align="center">...</p>
<p>4-25. Containers at CESQGs should be managed in accordance with good management practices (GMP).</p> <p align="center">...</p>	<p>Verify the following by inspecting storage areas: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - containers are not stored more than two high and have pallets between them - containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system) - at least 3 feet (ft) of aisle space is provided between rows of containers. <p align="center">...</p>
<p>4-26. Containers of hazardous waste should be kept in designated storage areas at CESQGs (GMP).</p> <p align="center">...</p>	<p>Verify that all hazardous waste containers are identified and stored in appropriate areas. (1)(2)(3)(4)</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 align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>SMALL QUANTITY GENERATORS (SQGs)</p> <p>General</p> <p>4-27. Generators of more than 100 kg but less than 1000 kg 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 align="center">...</p> <p>4-28. SQGs that generate, transports, or handle hazardous wastes must obtain an USEPA ID No. (40 CFR 262.12(a) and 265.11).</p> <p align="center">...</p>	<p>Inspect containers, storage, and records. (1)(2)(3)(4)</p> <p>Verify that no more than 1000 kg of hazardous waste is generated in any month. (1)(2)(3)(4)</p> <p>Verify that the onsite accumulation time does not exceed 180 days. (1)(2)(3)(4)</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.)</p> <p>Verify that no more than 6000 kg is allowed to accumulate at the facility. (1)(2)(3)(4)</p> <p>Verify that containers are marked with the date accumulation began and the words HAZARDOUS WASTE. (1)(2)(3)(4)</p> <p>Verify that the containers and the areas where containers are stored meet the requirements outlined in the SQGs: <i>Containers, SQGs: Container Storage, and SQGs: Tank Systems Storage.</i> (1)(2)(3)(4)</p> <p>(NOTE: When an SQG exceeds the quantity generation or the amount accumulation it becomes subject to either LQG requirements or all TSDF requirements. When an SQG exceeds the storage time limitation, it becomes subject to full TSDF regulation.)</p> <p align="center">...</p> <p>Examine documentation from USEPA for the facility's generator ID Nos. (1)(2)(3)(4)</p> <p>Verify that correct ID No. is used on all appropriate documentation (i.e., manifests). (1)(2)(3)(4)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-29. SQG 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 style="text-align: center;">...</p> <p>4-30. SQG are required to have an emergency coordinator and emergency response planning (40 CFR 262.34(d)(5)).</p> <p style="text-align: center;">...</p>	<p>Verify that signed copies of returned manifests are kept for 3 yr. (1)(2)(3)(4)</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)(2)(3)(4)</p> <p>Verify that exception reports are kept for at least 3 yr. (1)(2)(3)(4)</p> <p>Verify that records of test results, waste analyses, and determinations are kept for 3 yr. (1)(2)(3)(4)</p> <p>(NOTE: The requirement to prepare a manifest does not apply if:</p> <ul style="list-style-type: none"> - the waste is reclaimed under contractual agreement and: - the type of waste and frequency of shipments are specified in the agreement - 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 - the generator maintains a copy of the reclamation agreement for at least 3 yr after termination of the agreement.) <p>(NOTE: Period of retention of records is extended automatically during the course of any unresolved enforcement action.)</p> <p style="text-align: center;">...</p> <p>Verify that the facility has an emergency coordinator. (1)(2)(3)(4)</p> <p>Verify that emergency information is posted next to the telephone: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - name and telephone number of emergency coordinator - location of fire extinguishers and spill control materials - location of fire alarms (if present) - telephone number of fire department. <p>Verify that waste handlers are familiar with waste handling and emergency procedures. (1)(2)(3)(4)</p> <p style="text-align: center;">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>Containers</p> <p>4-31. 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 align="center">...</p> <p>4-32. 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 align="center">...</p> <p>4-33. 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 align="center">...</p> <p>4-34. 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 for containers or inner liners holding hazardous wastes that all wastes are removed that can be removed using common practices and no more than 2.5 cm of residue remains. (1)(2)(3)(4)</p> <p>Verify that for containers or inner liners if the container is less than or equal to 110 gal that no more than 3 percent by weight of total container capacity remains. (1)(2)(3)(4)</p> <p>Verify that for containers or inner liners when the container is greater than 110 gal no more than 0.3 percent by weight of the total container capacity remains. (1)(2)(3)(4)</p> <p>Verify that for containers that held a compressed gas the pressure in the container approaches atmospheric. (1)(2)(3)(4)</p> <p>Verify that for containers or inner liners that held an acute hazardous waste listed in Appendix 4-5 that one of the following is done: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - it is triple rinsed - it is cleaned by another method identified through the literature or testing as achieving equivalent removal - the inner liner is removed. <p align="center">...</p> <p>Verify that containers are not leaking, bulging, rusting, damaged or dented. (1)(2)(3)(4)</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary. (1)(2)(3)(4)</p> <p align="center">...</p> <p>Verify that containers are compatible with waste. (1)(2)(3)(4)</p> <p align="center">...</p> <p>Verify that containers are closed except when it is necessary to add or remove waste (check bungs on drums, look for funnels). (1)(2)(3)(4)</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak. (1)(2)(3)(4)</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-35. The handling of incompatible wastes, or incompatible wastes and materials in containers at SQGs must comp'y with safe mangement practices (40 CFR 262.34(d)(2) and 265.177).</p> <p align="center">...</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: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - generate extreme heat or pressure, fire, or explosion, or violent reaction - produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health - produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions - damage the structural integrity of the device or facility - by any other like means threaten human health. <p>(NOTE: Check for hydrocarbons in acid drums and other incompatible wastes as listed in Appendix 4-6.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material. (1)(2)(3)(4)</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. (1)(2)(3)(4)</p> <p align="center">...</p>
<p>4-36. Containers of hazardous waste at SQGs should be managed in accordance with good management practices (GMP).</p> <p align="center">...</p>	<p>Inspect containers and storage areas to determine the following: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - containers are not stored more than two high and have pallets between them - containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system) - at least 3 ft of aisle space is provided between rows of containers. <p align="center">...</p>

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**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

**Container Storage
Areas**

4-37. Containers of hazardous waste at SQGs should be kept in designated storage areas (GMP).

...

4-38. 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).

...

4-39. SQGs must conduct weekly inspections of container storage areas (40 CFR 262.34(d)(2) and 265.174).

...

Verify that all containers are identified and stored in appropriate areas. (1)(2)(3)(4)

(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.)

...

Determine if the following required equipment is easily accessible and in working condition by inspecting the SQG facility: (1)(2)(3)(4)

- internal communications or alarm system capable of providing immediate emergency instruction to facility personnel
- a telephone or hand-held two way radio
- portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals)
- spill control equipment
- decontamination equipment
- 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.

Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency. (1)(2)(3)(4)

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. (1)(2)(3)(4)

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. (1)(2)(3)(4)

Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency. (1)(2)(3)(4)

...

Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers. (1)(2)(3)(4)

...

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>Tank Systems Storage</p> <p>4-40. SQG must comply with certain storage tank requirements (40 CFR 262.34(d)(3) and 265.201(a) through 265.201(c)).</p> <p align="center">...</p>	<p>Determine if the facility is a SQG that stores or treats wastes in tanks and verify that: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - the tank prevents: <ul style="list-style-type: none"> - generation of extreme heat or pressure, fire or explosions, or violent reactions - production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment - production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion - damage to structural integrity of the device or facility - threats to human health or the environment through other means - 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 - 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 of the tank - continuous feed tanks have a wastefeed cutoff or other stop/bypass system. <p>Verify that the following are inspected at the indicated times: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - discharge control equipment at least once each operating day - monitoring equipment (pressure and temperature gauges) at least once each operating day - waste level in tank at least once each operating day - construction material of the tank for corrosion or leakage weekly - surrounding area for leakage and/or contamination at least weekly. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-41. 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 align="center">...</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)(4)</p> <ul style="list-style-type: none"> - 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 - 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 - the tank system is used solely for emergencies. <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)(4)</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)(4)</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)(4)</p> <p align="center">...</p>
<p>4-42. SQG must comply with specific tank closure requirements (40 CFR 265.201(d)).</p> <p align="center">...</p>	<p>Verify that tank systems in the process of being closed or closed have all hazardous waste removed from tanks, discharge control equipment, and discharge confinement structures. (1)(2)(3)(4)</p> <p align="center">...</p>
<p>LARGE QUANTITY GENERATORS (LQG)</p> <p>General</p> <p>4-43. A LQG that generates, transports, or handles hazardous wastes must obtain an USEPA ID No. (40 CFR 262.12(a), 262.12(b), 264.11, and 265.11).</p> <p align="center">...</p>	<p>Examine documentation from USEPA for the facility's generator ID No. (1)(2)(3)(4)</p> <p>Verify that correct ID number is used on all appropriate documentation (i.e., manifests). (1)(2)(3)(4)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-44. LQGs may accumulate hazardous waste onsite for 90 days or less without a permit or interim status provided they meet certain conditions (40 CFR 262.34 (a)(2), 262.34(a)(3) and 262.34(b)).</p> <p style="text-align: center;">...</p> <p>4-45. All LQG 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 style="text-align: center;">...</p>	<p>Inspect each accumulation point and interview the accumulation point manager. Verify that: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - the recorded start date indicates no container or tank has been accumulating a hazardous waste longer than 90 days - each container and tank is labeled or marked clearly with the words HAZARDOUS WASTE. <p>Verify that containers, drip pads and tanks meet the standards outline in the sections titled <i>LQGs: Containers</i>, <i>LQGs: Container Storage Areas</i>, <i>LQGs: Tank System Storage</i>, <i>LQGs: Containment Buildings</i>. (1)(2)(3)(4)</p> <p>(NOTE: A generator who meets these standards is exempt from meeting the closure requirements outlined in 40 CFR 265.110 through 265.150 except for 265.112 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 style="text-align: center;">...</p> <p>Determine if the following required equipment is easily accessible and in working condition at the facility: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - internal communications or alarm system capable of providing immediate emergency instruction to facility personnel - a telephone or hand-held two way radio - portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals) - spill control equipment - decontamination equipment - 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. <p>Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency. (1)(2)(3)(4)</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. (1)(2)(3)(4)</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. (1)(2)(3)(4)</p> <p>Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency. (1)(2)(3)(4)</p> <p style="text-align: center;">...</p>

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4-46. LQGs must have a contingency plan (40 CFR 262.34(a)(4) and 265.50 through 265.54).

(NOTE: Generating facilities may be addressed in the facility's SPCC plan or other emergency plan, or if none exists, in a separate contingency plan.)

...

Verify that the contingency plan is designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents. (1)(2)(3)(4)

Verify that the plan includes the following: (1)(2)(3)(4)

- a description of actions to be taken during an emergency
- a description of arrangements made with local police departments, fire departments, hospitals, contractors, and state and local emergency response teams
- names, addresses, and phone numbers of all persons qualified to act as emergency coordinator
- a list of all emergency equipment at the facility and where this equipment is required, located, and what it looks like
- an evacuation plan for facility personnel where there is a possibility evacuation would be needed.

Verify that copies of the contingency plan are maintained at the facility and also have been submitted to organizations which may be called upon to provide emergency services. (1)(2)(3)(4)

Verify that the contingency plan is routinely reviewed and updated, especially when the facility 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)(2)(3)(4)

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<p>4-47. Each LQG must have an emergency coordinator on the facility premises or on call at all times (40 CFR 262.34(a)(4) and 265.55).</p> <p align="center">...</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)(3)(4)</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)(3)(4)</p> <p align="center">...</p>
<p>4-48. Emergency coordinators at LQGs 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 align="center">...</p>	<p>Review the contingency plan for the LQG facility. (1)(2)(3)(4)</p> <p>Verify that the emergency coordinator is required to follow these emergency procedures: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - immediately activate facility alarms or communication systems and notify appropriate facility, state, and local response parties - identify the character, exact source, amount, and a real extent of any released materials - assess possible hazards to human health or the environment, including direct and indirect effects (i.e., release of gases, surface runoff from water or chemicals used to control fire or explosions, etc.) - stop processes and operations at the facility when necessary to prevent fires, explosions, or further releases - collect and contain the released waste - remove or isolate containers when necessary - monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment whenever appropriate - provide for treatment, storage, or disposal of recovered waste, contaminated soil, or surface water, or other material - ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup is completed - ensure that all emergency equipment is cleaned and fit for its intended use before operations are resumed - notify USEPA, and appropriate state and local authorities when cleanup is complete and operation resumes. <p align="center">...</p>
<p>4-49. LQG 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 align="center">...</p>	<p>Determine if incidents have been recorded and corrective actions taken through a review of the facility operating records. (1)(2)(3)(4)</p> <p>Verify that written reports have been submitted to the USEPA regional administrator within 15 days after the incident. (1)(2)(3)(4)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-50. Facilities that are LQGs are required to use manifests, maintain records, and file manifest exception reports (40 CFR 262.42(a)).</p> <p align="center">...</p> <p>Personnel Training Requirements</p> <p>4-51. All LQG 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 align="center">...</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. (1)(2)(3)(4)</p> <p>Verify that exception reports are kept for 3 yr. (1)(2)(3)(4)</p> <p>(NOTE: Periods of retention for reports may be extended automatically during the course of any unresolved enforcement action.)</p> <p align="center">...</p> <p>Verify that the training program is directed by a person trained in hazardous waste management procedures. (2)(12)(18)</p> <p>Verify that the training program includes the following: (2)(12)(18)</p> <ul style="list-style-type: none"> - contingency plan implementation - key parameters for automatic waste feed cut-off system - procedures for using, inspecting, and repairing emergency and monitoring equipment - operation of communications and alarm systems - response to fire or explosion - response to leaks or spills - waste turn-in procedures - identification of hazardous wastes - container use, marking, labeling, and on-facility transportation - manifesting and off-facility transportation - accumulation point management - personnel health and safety and fire safety - facility shutdown procedures. <p>Verify that new employee training is completed within 6 mo of employment. (2)(12)(18)</p> <p>Verify that an annual review of initial training is provided. (2)(12)(18)</p> <p>Verify that employees do not work unsupervised until training is completed. (2)(12)(18)</p> <p>Verify specifically that accumulation point managers and hazardous waste handlers have been trained. (2)(12)(18)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-52. Training records must be maintained for all LQG staff who manage hazardous waste (40 CFR 264.16(d) and 264.16(e); 265.16(d) and 265.16(e)).</p> <p align="center">...</p>	<p>Examine training records and verify they include the following: (2)(3)(12)(18)</p> <ul style="list-style-type: none"> - job title and description for each employee by name - written description of how much training each position will obtain - documentation of training received by name. <p>Determine if training records are retained for 3 yr after employment at the facility. (2)(3)(12)(18)</p> <p>Verify that records are transferred with employees. (2)(3)(12)(18)</p> <p align="center">...</p>
<p align="center">Containers</p> <p>4-53. Empty containers at LQGs 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 align="center">...</p>	<p>Verify that for containers or inner liners holding hazardous wastes that all wastes are removed that can be removed using common practices and no more than 2.5 cm (1 in.) of residue remains. (1)(2)(3)</p> <p>Verify that for containers or inner liners if the container is less than or equal to 417 L (110 gal) that no more than 3 percent by weight of total container capacity remains. (1)(2)(3)</p> <p>Verify that for containers or inner liners when the container is greater than 417 L (110 gal) no more than 0.3 percent by weight of the total container capacity remains. (1)(2)(3)</p> <p>Verify that for containers that held a compressed gas the pressure in the container approaches atmospheric. (1)(2)(19)</p> <p>Verify that for containers or inner liners that held an acute hazardous waste listed in Appendix 4-5 that one of the following is done: (1)(2)(3)</p> <ul style="list-style-type: none"> - it is triple rinsed - it is cleaned by another method identified through the literature or testing as achieving equivalent removal - the inner liner is removed. <p align="center">...</p>
<p>4-54. Containers used to store hazardous waste at LQGs must be in good condition and not leaking (40 CFR 262.34(a)(1)(i) and 265.171).</p> <p align="center">...</p>	<p>Verify that containers are not leaking, bulging, rusting, damaged or dented. (1)(2)(3)(4)</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary. (1)(2)(3)(4)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-55. Containers used at LQGs 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 align="center">...</p>	<p>Verify that containers are compatible with waste. (1)(2)(3)(4)</p> <p align="center">...</p>
<p>4-56. Containers must be closed during storage and handled in a safe manner at LQGs (40 CFR 262.34(a)(1)(i) and 265.173).</p> <p align="center">...</p>	<p>Verify that containers are closed except when it is necessary to add or remove waste (check bungs on drums, look for funnels). (1)(2)(3)(4)</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak. (1)(2)(3)(4)</p> <p align="center">...</p>
<p>4-57. The handling of incompatible wastes, or incompatible wastes and materials in containers at LQGs must comply with safe management practices (40 CFR 262.34(a)(1)(i) and 265.177).</p> <p align="center">...</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: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - generate extreme heat or pressure, fire, or explosion, or violent reaction - produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health - produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions - damage the structural integrity of the device or facility - by any other like means threaten human health. <p>(NOTE: Check for hydrocarbons in acid drums and other incompatible wastes as listed in Appendix 4-6.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material. (1)(2)(3)(4)</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. (1)(2)(3)(4)</p> <p align="center">...</p>
<p>4-58. Containers used to store hazardous waste at LQGs should be managed in accordance with good management practices (GMP).</p> <p align="center">...</p>	<p>Verify the following by inspecting container storage areas: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - containers are not stored more than two high and have pallets between them - containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system) - at least 3 ft of aisle space is provided between rows of containers. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>Container Storage Areas</p> <p>4-59. At LQGs, containers of hazardous waste should be kept in designated storage areas (GMP).</p> <p align="center">...</p> <p>4-60. Containers holding ignitable or reactive waste must be located 50 ft from the property line at LQGs (40 CFR 262.34(a)(1)(i) and 265.176).</p> <p align="center">...</p> <p>4-61. LQGs must conduct weekly inspections of container storage areas (40 CFR 262.34(a)(1)(i) and 265.174).</p> <p align="center">...</p> <p>Tank System Storage</p> <p>4-62. Secondary containment is required for specific types of tank systems used to store or treat hazardous waste at LQGs (40 CFR 262.34(a)(1)(ii), 265.190(a), 265.190(b), and 265.193(a)).</p> <p align="center">...</p>	<p>Verify that all containers are identified and stored in appropriate areas. (1)(2)(3)(4)</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 align="center">...</p> <p>Determine the distance from storage containers holding ignitable or reactive waste to the property line. (1)(2)(3)(4)</p> <p align="center">...</p> <p>Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers. (1)(2)(3)(4)</p> <p align="center">...</p> <p>Verify that the following types of tanks used to store or treat hazardous waste have secondary containment: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - all new tank systems or components - all existing tank systems used to store or treat USEPA Hazardous Waste No. FO20, FO21, FO22, FO23, FO26 and FO27 - existing tank systems of known documented age that are 15 yr of age. <p>Verify that existing tank systems for which the age cannot be determined within 8 yr of 12 January 1987 and are at a facility that is older than 7 yr old are provided with secondary containment by time the facility reaches 15 yr of age or 12 January 1989, whichever comes later. (1)(2)(3)(4)</p> <p>(NOTE: The following are exempt from these requirements:</p> <ul style="list-style-type: none"> - 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 - tank systems, including sumps, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes.) <p align="center">...</p>

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4-63. Secondary containment on tank systems at LQGs must meet specific requirements (40 CFR 262.34(a)(1)(ii), 265.190(a), and 265.193 (b) through 265.193(d)).

Verify that secondary containment meets the following criteria: (1)(2)(3)(4)

- it is designed, installed, and operated to prevent the migration of liquid out of the system
- it is capable of detecting and collecting releases and accumulated liquids until removal is possible
- it is constructed of or lined with materials compatible with the wastes
- it is placed on a foundation or base that can provide appropriate support and prevent failure due to settlement, compression, or upset
- 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
- it is sloped or designed to drain and remove liquids from leaks, spills, or precipitation.

Verify that spilled or leaked wastes are removed from secondary containment within 24 h or as timely as possible. (1)(2)(3)(4)

Verify that secondary containment for tanks includes one or more of the following: (1)(2)(3)(4)

- a liner (external to the tank)
- a vault
- a double-walled tank, or
- an equivalent approved device.

(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.)

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<p>4-64. External liners, vaults and double-walled tanks at LQGs are required to meet specific standards (40 CFR 262.34(a)(1)(ii) and 265.190(a) and 265.193 (e)).</p> <p align="center">...</p>	<p>Verify that external liner systems meet the following requirements: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - they are designed and operated so that 100 percent of the capacity of the largest tank within the boundary would be contained - they prevent run-on and infiltration of precipitation into the secondary containment unless the collection system has sufficient capacity to handle run-on or infiltration - it is free of cracks or gaps - it surrounds the tank completely and covers all surrounding earth likely to come into contact with the waste if there is a release - capacity is sufficient to contain precipitation from a 25-yr, 24-h rainfall event. <p>Verify that vault systems meet the following criteria: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - it will contain 100 percent of the capacity of the largest tank within its boundary - it prevents run-on and infiltration of precipitation unless there is sufficient excess capacity - it is constructed with chemical-resistant water stops at all joints - it has an impermeable interior coating that is compatible with the wastes it contains - has a means to protect against the formation and ignition of vapors within the vault if the waste is ignitable or reactive - it has an exterior moisture barrier or otherwise operated to prevent migration of moisture into the vault. <p>Verify that double-walled tanks meet the following criteria: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - it is designed as an integral structure so that any release is contained by the outer shell - it is protected from both corrosion of the primary tank and the external surface of the outer shell if constructed of metal - it has a built-in continuous leak detection system capable of detecting a release within 24 h. <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 align="center">...</p>

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<p>4-65. Tank ancillary equipment at LQGs must also be provided with secondary containment (40 CFR 262.34(a)(1)(ii) and 265.190(a) and 265.193(f)).</p> <p align="center">...</p>	<p>Verify that ancillary equipment, except for the following, has secondary containment: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - aboveground piping that is visually inspected for leaks on a daily basis - welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis - seal-less or magnetic coupling pumps and seal-less valves, that are visually inspected for leaks on a daily basis - pressurized above ground piping systems with automatic shutoff valves that are visually inspected for leaks on a daily basis. <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 align="center">...</p>

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<p>4-66. Tank systems that are required to have secondary containment at LQGs 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 align="center">...</p>	<p>Verify that tank systems without secondary containment meet the following: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - for nonenterable underground tanks a leak test is conducted annually - for other than nonenterable underground tanks either a leak test is done annually or the facility develops a schedule and procedure for an assessment of the overall condition by an independent, qualified, registered, professional engineer. <p>Verify that the facility maintains a record of the results of testing and assessments. (1)(2)(3)(4)</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)(4)</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 align="center">...</p>
<p>4-67. LQGs with new tank systems must submit to the Regional Administrator a written assessment review 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 align="center">...</p>	<p>Determine if the facility has any new tank systems. (1)(2)(3)(4)</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)(4)</p> <p>Verify that the facility keeps on file the written assessments from the individuals required to certify the tank and supervise the installation of the tank. (1)(2)(3)(4)</p> <p align="center">...</p>
<p>4-68. Tanks used for hazardous waste treatment or storage at LQGs must follow certain operating requirements (40 CFR 262.34(a)(1)(ii) and 265.194).</p> <p align="center">...</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)(4)</p> <p>Verify that appropriate measures are taken to prevent overflow, including: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - spill prevention controls - overflow prevention controls - maintenance of sufficient freeboard to prevent overtopping by wave, wind action or precipitation for uncovered tanks. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-69. Tank systems at LQGs 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 align="center">...</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)(4)</p> <ul style="list-style-type: none"> - 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 - 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 - the tank system is used solely for emergencies. <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)(4)</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)(4)</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)(4)</p> <p align="center">...</p>
<p>4-70. LQGs must conduct inspections of tank systems and associated equipment (40 CFR 262.34(a)(1)(ii) and 265.195).</p> <p align="center">...</p>	<p>Verify that a schedule and procedure has been developed and is followed to inspect overfill controls at permitted facilities. (1)(2)(3)(4)</p> <p>Determine if the following inspections are conducted at least once a day: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - data gathered from monitoring and detection equipment - overfill/spill control equipment at interim state facilities to ensure it is in good working order - aboveground portions of the tank to detect corrosion or releases - tank monitoring equipment (i.e., pressure and temperature gauges) - area surrounding tank including the secondary containment system for signs of leakage (wet spots, dead vegetation). <p>Verify that the proper operation of cathodic protection systems are inspected within 6 mo after initial installation and annually thereafter. (1)(2)(3)(4)</p> <p>Verify that all sources of impressed current are inspected and/or tested every other month. (1)(2)(3)(4)</p> <p>Verify that inspections are documented. (1)(2)(3)(4)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-71. Tank systems or secondary containment systems at LQGs from which there has been a leak or spill or which have been declared unfit for use must be removed from service immediately and specific requirements met (40 CFR 262.34(a)(1)(ii) and 265.196).</p> <p align="center">...</p>	<p>Verify that the following steps are taken: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - the flow or addition of hazardous wastes to the tank is stopped - the hazardous waste is removed from the tank: <ul style="list-style-type: none"> - within 24 h of detection (or other reasonable time as demonstrated by the owner/operator) remove as much waste from the tank as necessary to prevent further release and allow inspection and repair - within 24 h (or in as timely a manner as is possible to prevent harm to human health and the environment) remove waste released to secondary containment system - a visual inspection of the release is done and: <ul style="list-style-type: none"> - action is taken to prevent further migration to soils or surface or groundwater - any visible contamination of soil and surface water is removed and disposed. <p>Verify that notification is made within 24 h for any release to the environment to the Regional Administrator. (1)(2)(3)(4)</p> <p>Verify that a report is submitted within 30 days. (1)(2)(3)(4)</p> <p>(NOTE: Releases of 1 lb or less that are immediately contained and cleaned up are exempt from reporting.)</p> <p>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)(4)</p> <p align="center">...</p>
<p>4-72. LQGs 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 align="center">...</p>	<p>Determine if the facility has closed any tank systems. (1)(2)(3)(4)</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)(4)</p> <p>Verify that if it is not possible and/or practicable to remove or decontaminate all soils, the facility closes the tank and performs postclosure care as is required for landfills. (1)(2)(3)(4)</p> <p align="center">...</p>

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**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

Containment Buildings

4-73. LQGs 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).

Verify that the containment building meets the following: (1)(2)(3)(4)

- 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
- 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
- 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
- if the unit is used to manage liquids:
 - there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier
 - there is a liquid collection system designed and constructed of materials to minimized the accumulation of liquid on the primary barrier
 - 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
- it has controls sufficient to prevent fugitive dust emissions
- it is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel and equipment.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-74. 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: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - it is completely enclosed with a floor, walls, and a roof to prevent exposure to the elements and to assure containment of wastes - 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 - 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 - it has sufficient structural strength to prevent collapse or other failure - all surfaces in contact with hazardous wastes are compatible with the wastes - 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. <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: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier (i.e., a geomembrane covered by a concrete wear surface) - 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"> - the primary barrier is sloped to drain liquids to the associated collection system - liquids and wastes are collected and removed to minimized hydraulic head on the containment system at the earliest practicable time - 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 - the leak detection component of the secondary containment system meets the following: <ul style="list-style-type: none"> - it is constructed with a bottom slope of 1 percent or more - it is constructed of a granular drainage materials with a hydraulic conductivity of 1×10^{-2} cm/second (sec) 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 3×10^{-5} m²/sec or more

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-74. (continued)</p> <p align="center">...</p> <p>4-75. Containment buildings are required to be operated according to specific standards (40 CFR 262.34(a)(1)(iv), 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>	<ul style="list-style-type: none"> - 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. - 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. <p>(NOTE: An exception to the structural strength requirement may be made for lightweight 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"> - the doors and windows provide an effective barrier against fugitive dust emissions - the unit is designed and operated in a manner that ensures that the waste will not come in contact with the doors or windows.) <p>(NOTE: A containment building can serve as secondary containment systems for tanks within the building if:</p> <ul style="list-style-type: none"> - it meets the requirements of 264.193(d)(1) - it meets the requirements of 264.193(b) and 264.193(c)(1 - 2).) <p align="center">...</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. (1)(2)(3)(4)</p> <p>Verify that the following operational procedures are done: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - controls and practices are used to ensure the containment of the waste within the building - 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 - the level of the stored/treated hazardous waste is maintained so that the height of any containment wall is not exceeded - 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 - there is a designated area for the decontamination of equipment and collection of rinsate - any collected rinsate is managed as needed according to its constituents - measures are implemented to control fugitive dust emissions so that no openings exhibit visible emissions - particulate collection devices are maintained and operated according to sound air pollution control practices.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-75. (continued)</p> <p align="center">...</p>	<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. (1)(2)(3)(4)</p> <p>Verify that there is a written description of procedures to ensure that waste does not remain in the building for more than 90 days. (1)(2)(3)(4)</p> <p>Verify that there is documentation that the waste does not remain for more than 90 days. (1)(2)(3)(4)</p> <p align="center">...</p>
<p>4-76. Containment buildings are required to be certified by a registered professional engineer (40 CFR 262.34(a)(1)(iv), 264.1101(c)(2), and 265.1101(c)(2)).</p> <p align="center">...</p>	<p>Verify that the building has been certified by a qualified, registered, professional engineer. (1)(2)(3)(4)</p> <p align="center">...</p>
<p>4-77. 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 align="center">...</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. (1)(2)(3)(4)</p> <p>Verify that when a leak is discovered: (1)(2)(3)(4)</p> <ul style="list-style-type: none"> - the discovery is recorded in the facility operating record - the portion of the containment building that is affected is removed from service - a cleanup and repair schedule is established - within 7 days the Regional Administrator is notified and within 14 working days written notice is provided to the Regional Administrator - the Regional Administrator is notified upon the completion of all repairs and certification from a qualified, registered, professional engineer is also submitted. <p align="center">...</p>
<p>4-78. 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 align="center">...</p>	<p>Verify that each area is designed and operated according to the appropriate requirements. (1)(2)(3)(4)</p> <p>Verify that measures are taken to prevent the release of liquids or wet materials into areas without secondary containment. (1)(2)(3)(4)</p> <p>Verify that a written description is maintained in the facility operating log of operating procedures used to maintain the integrity of areas without secondary containment. (1)(2)(3)(4)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-79. 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 align="center">...</p> <p>TRANSPORTATION</p> <p>4-80. Transporters of hazardous waste that is required to be manifested must have an USEPA ID No. and must comply with manifest management requirements (40 CFR 263.10(a), 263.10(b), 263.11, 263.20(a) through 263.20(j), 263.21 and 263.22(a)).</p> <p>(NOTE: These requirements do not apply to the onsite transportation of hazardous waste.)</p> <p align="center">...</p>	<p>Determine if the facility has closed a containment building recently. (1)(2)(3)(4)</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)(3)(4)</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 <i>ALL TSDFs - Documentation</i> and <i>ALL TSDFs - Closure</i>. (1)(2)(3)(4)</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)(3)(4)</p> <p align="center">...</p>
<p>...</p>	<p>Determine if the facility transports hazardous waste offsite using their own vehicles or a contractor. (1)(2)(12)</p> <p>Verify that the transporter has a USEPA ID No. (1)(2)(12)</p> <p>Verify that all waste accepted for transport is accompanied by a manifest. (1)(2)(12)</p> <p>Verify that prior to transport, the transporter signs and dates the manifest and returns a copy to the generator prior to leaving the facility. (1)(2)(12)</p> <p>Verify that the transporter retains a copy of the manifest after delivery. (1)(2)(12)</p> <p>Verify that manifests are kept on file for 3 yr. (1)(2)(12)</p> <p>(NOTE: Special issues involved in the transportation of hazardous waste by rail or water are not addressed in this manual.)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-81. Before transporting hazardous waste or offering hazardous waste for transportation offsite in the United States, the facility 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 align="center">...</p>	<p>Determine what pre-transport procedures for hazardous waste are used by interviewing DRMO. (1)(2)(12)</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)(12)</p> <p>Examine end-seams for minor weeping that indicates drum failure. (1)(2)(12)</p> <p>Verify labeling and marking on each container is compatible with the manifests. (1)(2)(12)</p> <p>Verify that the following information is displayed on a random sample of containers of 110 gal or less in accordance with 49 CFR 172.304: (1)(2)(12)</p> <p align="center">- "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 _____."</p> <p>Verify that proper DOT placarding is available for the transporter. (1)(2)(12)</p> <p align="center">...</p>
<p>4-82. Transporters of waste offsite must take immediate notification and cleanup action if a discharge occurs during transport (40 CFR 263.30 and 263.31).</p> <p align="center">...</p>	<p>Verify that transport operators have instructions to notify local authorities and take cleanup action so that the discharge does not present a hazard. (2)</p> <p>Verify that transporters give notice to the NRC and report in writing as required by 49 CFR 171.15 and 49 CFR 171.16. (2)</p> <p align="center">...</p>
<p>4-83. The facility should ensure that transportation of hazardous wastes between buildings is accomplished in accordance with good management practices to help prevent spills, releases, and accidents (GMP).</p> <p align="center">...</p>	<p>Determine from the transportation branch if procedures exist to manage movement of hazardous wastes throughout the facility. (2)(12)</p> <p>Determine if drivers are trained in spill control procedures. (2)(12)</p> <p>Determine if provisions have been made for securing wastes in vehicles when transporting. (2)(12)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-84. 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 align="center">...</p>	<p>Determine if the facility has a transfer facility. (1)(2)(12)</p> <p>Verify the following: (1)(2)(12)</p> <ul style="list-style-type: none"> - transfer facility storage is for 10 days or less - DOT packaging requirements are met - shipments are manifested and manifests accompany shipments - storage is consistent with GMP. <p>(NOTE: Storage for more than 10 days will require a TSD permit.)</p> <p align="center">...</p>
<p>ALL TSDFs</p>	
<p>General</p>	
<p>4-85.</p>	<p>This item is not Army Reserve applicable.</p>
<p>4-86.</p>	<p>This item is not Army Reserve applicable.</p>
<p>4-87.</p>	<p>This item is not Army Reserve applicable.</p>
<p>4-88.</p>	<p>This item is not Army Reserve applicable.</p>
<p>4-89.</p>	<p>This item is not Army Reserve applicable.</p>
<p>4-90.</p>	<p>This item is not Army Reserve applicable.</p>
<p>4-91.</p>	<p>This item is not Army Reserve applicable.</p>
<p>4-92.</p>	<p>This item is not Army Reserve applicable.</p>
<p>4-93.</p>	<p>This item is not Army Reserve applicable.</p>
<p>4-94.</p>	<p>This item is not Army Reserve applicable.</p>
<p>Personnel Training Requirements</p>	
<p>4-95.</p>	<p>This item is not Army Reserve applicable.</p>
<p>4-96.</p>	<p>This item is not Army Reserve applicable.</p>
<p align="center">...</p>	<p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>Containers</p> <p>4-97.</p> <p>4-98.</p> <p>4-99.</p> <p>4-100.</p> <p>4-101.</p> <p align="center">...</p>	<p>This item is not Army Reserve applicable.</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>Container Storage Areas</p> <p>4-102.</p> <p>4-103.</p> <p>4-104.</p> <p>Tank Systems</p> <p>4-105.</p> <p>4-106.</p> <p>4-107.</p> <p>4-108.</p> <p>4-109.</p> <p>4-110.</p> <p>4-111.</p> <p>4-112.</p> <p>4-113.</p> <p>4-114.</p> <p>4-115.</p>	<p><i>This item is not Army Reserve applicable.</i></p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
Containment Buildings	
4-116.	This item is not Army Reserve applicable.
4-117.	This item is not Army Reserve applicable.
4-118.	This item is not Army Reserve applicable.
4-119.	This item is not Army Reserve applicable.
4-120.	This item is not Army Reserve applicable.
4-121.	This item is not Army Reserve applicable.
4-122.	This item is not Army Reserve applicable.
Emissions From Process Vents	
4-123.	This item is not Army Reserve applicable.
4-124.	This item is not Army Reserve applicable.
4-125.	This item is not Army Reserve applicable.
Air Emission Standards for Equipment Leaks	
4-126.	This item is not Army Reserve applicable.
4-127.	This item is not Army Reserve applicable.
4-128.	This item is not Army Reserve applicable.
4-129.	This item is not Army Reserve applicable.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
4-130.	This item is not Army Reserve applicable.
4-131.	This item is not Army Reserve applicable.
4-132.	This item is not Army Reserve applicable.
4-133.	This item is not Army Reserve applicable.
Documentation Requirements	
4-134.	This item is not Army Reserve applicable.
4-135.	This item is not Army Reserve applicable.
4-136.	This item is not Army Reserve applicable.
4-137.	This item is not Army Reserve applicable.
4-138.	This item is not Army Reserve applicable.
4-139.	This item is not Army Reserve applicable.
4-140.	This item is not Army Reserve applicable.
4-141.	This item is not Army Reserve applicable.
4-142.	This item is not Army Reserve applicable.
4-143.	This item is not Army Reserve applicable.
4-144.	This item is not Army Reserve applicable.
4-145.	This item is not Army Reserve applicable.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>Closure</p> <p>4-146.</p> <p>4-147.</p> <p>4-148.</p> <p>4-149.</p> <p>4-150.</p>	<p><i>This item is not Army Reserve applicable.</i></p>
<p>PERMITTED TSDFs</p> <p>4-151.</p> <p>4-152.</p> <p>4-153.</p> <p>4-154.</p> <p>4-155.</p> <p>4-156.</p> <p>4-157.</p> <p>4-158.</p> <p>4-159.</p> <p>4-160.</p> <p>4-161.</p> <p>4-162.</p> <p>4-163.</p>	<p><i>This item is not Army Reserve applicable.</i></p>

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**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

**INTERIM STATUS
TSDFs**

- | | |
|--|--|
| <p>4-164.</p> <p>4-165.</p> <p>4-166.</p> <p>4-167.</p> <p>4-168.</p> <p>4-169.</p> <p>4-170.</p> <p>4-171.</p> <p>4-172.</p> | <p>This item is not Army Reserve applicable.</p> |
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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
EXPORT/IMPORT OF HAZARDOUS WASTE	
4-173.	This item is not Army Reserve applicable.
4-174.	This item is not Army Reserve applicable.
4-175.	This item is not Army Reserve applicable.
4-176.	This item is not Army Reserve applicable.
4-177.	This item is not Army Reserve applicable.
4-178.	This item is not Army Reserve applicable.
4-179.	This item is not Army Reserve applicable.
4-180.	This item is not Army Reserve applicable.
ALL SURFACE IMPOUNDMENTS	
4-181.	This item is not Army Reserve applicable.
PERMITTED SURFACE IMPOUNDMENTS	
4-182.	This item is not Army Reserve applicable.
4-183.	This item is not Army Reserve applicable.
4-184.	This item is not Army Reserve applicable.
4-185.	This item is not Army Reserve applicable.
4-186.	This item is not Army Reserve applicable.
4-187.	This item is not Army Reserve applicable.
4-188.	This item is not Army Reserve applicable.
4-189.	This item is not Army Reserve applicable.
4-190.	This item is not Army Reserve applicable.
4-191.	This item is not Army Reserve applicable.
INTERIM STATUS SURFACE IMPOUNDMENTS	
4-192.	This item is not Army Reserve applicable.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
4-193.	This item is not Army Reserve applicable.
4-194.	This item is not Army Reserve applicable.
4-195.	This item is not Army Reserve applicable.
ALL WASTE PILES	
4-196.	This item is not Army Reserve applicable.
PERMITTED WASTE PILES	
4-197.	This item is not Army Reserve applicable.
4-198.	This item is not Army Reserve applicable.
4-199.	This item is not Army Reserve applicable.
4-200.	This item is not Army Reserve applicable.
4-201.	This item is not Army Reserve applicable.
INTERIM STATUS WASTE PILES	
4-202.	This item is not Army Reserve applicable.
4-203.	This item is not Army Reserve applicable.
4-204.	This item is not Army Reserve applicable.
4-205.	This item is not Army Reserve applicable.
ALL LAND TREATMENT UNITS	
4-206.	This item is not Army Reserve applicable.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
PERMITTED LAND TREATMENT UNITS	
4-207.	This item is not Army Reserve applicable.
4-208.	This item is not Army Reserve applicable.
4-209.	This item is not Army Reserve applicable.
4-210.	This item is not Army Reserve applicable.
4-211.	This item is not Army Reserve applicable.
4-212.	This item is not Army Reserve applicable.
4-213.	This item is not Army Reserve applicable.
INTERIM STATUS LAND TREATMENT UNITS	
4-214.	This item is not Army Reserve applicable.
4-215.	This item is not Army Reserve applicable.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
4-216.	This item is not Army Reserve applicable.
4-217.	This item is not Army Reserve applicable.
ALL HAZARDOUS WASTE LANDFILLS	
4-218.	This item is not Army Reserve applicable.
4-219.	This item is not Army Reserve applicable.
4-220.	This item is not Army Reserve applicable.
4-221.	This item is not Army Reserve applicable.
4-222.	This item is not Army Reserve applicable.
4-223.	This item is not Army Reserve applicable.
PERMITTED HAZARDOUS WASTE LANDFILLS	
4-224.	This item is not Army Reserve applicable.
4-225.	This item is not Army Reserve applicable.
4-226.	This item is not Army Reserve applicable.
4-227.	This item is not Army Reserve applicable.
INTERIM STATUS HAZARDOUS WASTE LANDFILLS	
4-228.	This item is not Army Reserve applicable.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
PERMITTED INCINERATORS	
4-229.	This item is not Army Reserve applicable.
4-230.	This item is not Army Reserve applicable.
4-231.	This item is not Army Reserve applicable.
4-232.	This item is not Army Reserve applicable.
4-233.	This item is not Army Reserve applicable.
4-234.	This item is not Army Reserve applicable.
4-235.	This item is not Army Reserve applicable.
4-236.	This item is not Army Reserve applicable.
4-237.	This item is not Army Reserve applicable.
PERMITTED MISCELLANEOUS UNITS	
4-238.	This item is not Army Reserve applicable.
4-239.	This item is not Army Reserve applicable.
4-240.	This item is not Army Reserve applicable.
INTERIM STATUS THERMAL TREATMENT	
4-241.	This item is not Army Reserve applicable.
4-242.	This item is not Army Reserve applicable.
4-243.	This item is not Army Reserve applicable.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>INTERIM STATUS CHEMICAL/ PHYSICAL/ BIOLOGICAL TREATMENT</p> <p>4-244.</p> <p>4-245.</p> <p>4-246.</p> <p>LAND DISPOSAL OF RESTRICTED WASTES</p> <p>4-247. Facilities must not dispose of the wastes listed in Appendix 4-4 on land unless specific parameters are met (40 CFR 268.1, 268.4, and Appendix VII).</p>	<p>This item is not Army Reserve applicable.</p> <p>This item is not Army Reserve applicable.</p> <p>This item is not Army Reserve applicable.</p> <p>Verify that the wastes listed in Appendix 4-4 are not disposed of on land after the indicated dates in the table unless: (1)(2)(12)</p> <ul style="list-style-type: none"> - the facility was granted an extension - 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"> - is disposed of into a nonhazardous or hazardous injection well - does not exhibit any prohibited characteristic of a hazardous waste at the point of injection - disposal is done in a surface impoundment if: <ul style="list-style-type: none"> - treatment of the wastes occurs at the impoundment - sampling, testing, and removal procedures and design requirements outlined in 40 CFR 268.4 are followed - the waste is treated. <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"> - waste generated by SQGs of less than 100 kg of nonacute hazardous waste or less than 1 kg of acute hazardous waste per month - waste pesticides that a farmer disposes of - wastes identified or listed as hazardous after 8 November 1984 for which USEPA has not promulgated land disposal prohibitions or treatment standards - <i>de minimis</i> 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

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-247. (continued)</p> <p>...</p>	<ul style="list-style-type: none"> - laboratory wastes displaying the characteristic of ignitability (D001), or corrosivity (D002), that are commingled with other plant wastewaters under designated circumstances - 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 one percent or the laboratory wastes combined annualized sewage concentration does not exceed one ppm in the facility's headwork.) <p>(NOTE: As of 8 May 1993, debris that is contaminated with the wastes listed in Appendix 4-4 and debris that is contaminated with any characteristic waste for which there are treatment standards is prohibited from land disposal.)</p> <p>...</p>
<p>4-248. 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>...</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 pretreatment or unless the waste is a D003 reactive cyanide wastewater or nonwastewater. (1)(2)(12)</p> <p>...</p>
<p>4-249. Appendix 4-7 lists restricted wastes and the concentrations of their associated constituents which must not be exceeded by the waste or residual for allowable disposal of the waste or residual (40 CFR 268.40(c) and 268.43).</p> <p>...</p>	<p>Verify that restricted wastes that are disposed of on land meet the criteria in Appendix 4-7. (1)(2)(12)</p> <p>(NOTE: Appendix 4-8 lists extract concentrations for the constituents of wastes F001 through F005 as a supplement to Appendix 4-7.)</p> <p>...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-250. 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 align="center">...</p>	<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)(2)(12)</p> <ul style="list-style-type: none"> - the USEPA hazardous waste No. - treatment standards - the manifest number associated with the shipment - for hazardous debris, the contaminants subject to treatment and the following statement <i>This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45</i> - the waste analysis data, when available. <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)(2)(12)</p> <ul style="list-style-type: none"> - the USEPA hazardous waste No. - treatment standards - the manifest number associated with the shipment - the waste analysis data, when available - the signature of an authorized representative certifying that the waste complies with the treatment standards of 40 CFR 268. <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)(2)(12)</p> <ul style="list-style-type: none"> - the USEPA hazardous waste No. - treatment standards - the manifest number associated with the shipment - the waste analysis data, when available - for hazardous debris, the contaminant subject to treatment - the date the waste is subject to prohibitions. <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 align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-251. 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 align="center">...</p>	<p>Verify that the plan describes the procedures that the generator will carry out to comply with treatment standards. (1)(2)(12)</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: (1)(2)(12)</p> <ul style="list-style-type: none"> - the plan is based on a detailed chemical and physical analysis of representative sample of the prohibited waste being treated - the plan is filed with the EPA Regional Administrator or state authorized official at least 30 days prior to the treatment activity, with delivery verified. <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 align="center">...</p>
<p>4-252. 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 align="center">...</p>	<p>Verify that if the facility is using generator knowledge to determine whether a waste meets Land Disposal Restrictions (LDR) requirements, the supporting data used in making this determination is documented and retained in the facility operating record. (1)(2)(12)</p> <p>Verify that if the facility has determined whether a waste is restricted using appropriate test methods, the waste analysis data is retained. (1)(2)(12)</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-C, a one-time notice is placed in the facility's files stating that the generated waste is excluded. (1)(2)(12)</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 was last sent to onsite or offsite treatment, storage, or disposal. (1)(2)(12)</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. (1)(2)(12)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-253. Treatment facilities are required to follow specific procedures for restricted wastes (40 CFR 268.7(b)).</p> <p align="center">...</p>	<p>Verify that treatment facilities are testing their waste according to the procedures outlined in their waste analysis plan. (1)(2)(12)</p> <p>Verify that the treatment facility sends a notice with each waste shipment going to a land disposal facility, except for debris excluded from the definitions of hazardous waste, that includes the following (1)(2)(12)</p> <ul style="list-style-type: none"> - USEPA hazardous waste No. - treatment standards - the manifest number associated with the the shipment of waste - waste analysis data, where available. <p>Verify that the treatment facility submits a certification with each shipment of waste or treatment residue of a restricted waste, except for debris excluded from the definitions of a hazardous waste, to the land disposal facility stating that the waste has been treated in compliance with applicable standards (1)(2)(12)</p> <p>(NOTE: If waste or treatment residues will be further managed at a different treatment or storage facility, the treatment, storage, or disposal facility sending the waste or treatment residue offsite must comply with notice and certification requirements.)</p> <p>(NOTE: Where the wastes are recyclable materials used in a manner constituting disposal, the facilities treatment facility is not required to notify the receiving facility.)</p> <p align="center">...</p>
<p>4-254. Land disposal facilities for restricted wastes are required to maintain copies of notices and certifications and test the waste except when disposing of waste that is recycled material used in a manner constituting disposal (40 CFR 268.7(c)).</p> <p align="center">...</p>	<p>Verify that copies of the certifications and notification are kept on hand. (1)(2)(12)</p> <p>Verify that the facility is testing waste as specified in the facilities waste analysis plan. (1)(2)(12)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-255. 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 align="center">...</p> <p>4-256. 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 align="center">...</p>	<p>Verify that a one-time notification is submitted to the Director or authorized state including the following: (1)(2)(12)</p> <ul style="list-style-type: none"> - the name and address of the facility receiving the treated waste - a description of the hazardous debris as initially generated, including the applicable USEPA hazardous waste No. - for excluded debris, the technology used to treat the debris. <p>Verify that the notification is updated if the debris is shipped to a different facility. (1)(2)(12)</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)(2)(12)</p> <p align="center">...</p> <p>Verify that land disposal restricted waste is not stored at the facility unless: (1)(2)(12)</p> <ul style="list-style-type: none"> - 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 - the TSDF is storing the wastes in tanks, containers, or containment buildings in order to accumulate the necessary quantities for proper recovery, treatment or disposal and: <ul style="list-style-type: none"> - each container is marked to identify contents and the date accumulation began - each tank is clearly marked with a description of the contents, the quantity of of each hazardous waste received, and the start date of accumulation or a record of such information is maintained. <p>Verify that transporters do not store manifested shipments of land disposal restricted wastes for more than 10 days. (1)(2)(12)</p> <p>(NOTE: A TSDF may stored the land disposal restricted wastes for up to 1 yr if they can prove that the reason for the storage is to accumulate such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment, or disposal.)</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 <i>Toxic Substances Control Act (TSCA)</i>) and is removed from storage within 1 yr of the date it was first placed into storage. (1)(2)(12)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>USED OIL</p> <p>4-257. Depending on the constituents of the used oil, (see Appendix 4-9), facilities are required to handle used oil as a hazardous waste or according to specific used oil requirements (40 CFR 279.10)</p> <p align="center">...</p>	<p>Determine which types of the used oils listed in Appendix 4-9 are generated at the facility. (1)(2)(3)</p> <p>Verify that used oil is handled according to its classification as one of the following: (1)(2)(3)</p> <ul style="list-style-type: none"> - a hazardous waste - used oil that falls under the requirements of 40 CFR 279 in check-list items 4-257 through 4-299 - used oil that is not subject to the requirements of 40 CFR 279 and it is not a hazardous waste unless testing indicates it does contain hazardous constituents. <p align="center">...</p>
<p>USED OIL GENERATORS</p> <p align="center">...</p>	<p>(NOTE: The requirements for used oil generators do not apply to the following:</p> <ul style="list-style-type: none"> - household do-it-yourselfer used oil generators - vessels at sea or at port (in these cases generation occurs when it is transported ashore) - mixtures of used oil and diesel fuel mixed by the generators for use in the generators own vehicles - farmers who generate an average of 25 gal/mo or less of used oil from vehicles or machinery used on the farm in a calendar yr.) <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>General</p> <p>4-258. Used oil generators that detect a release (other than an underground storage tank (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 align="center">...</p>	<p>Verify that when a release is detected the following is done: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - the release is stopped - the released used oil is contained - the released used oil is cleaned up and properly managed - any leaking used oil storage containers or tanks are repaired or replaced prior to returning them to service. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-259. Generators are allowed to burn used oil in used oil-fired space heaters if specific parameters are met (40 CFR 279.23).</p> <p align="center">...</p>	<p>Determine if the facility operates any used oil-fired space heaters. (1)(2)(3)(4)(12)(18)</p> <p>Verify that the following parameters are met: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - the heater burns only used oil that the facility generates or used oil received from household do-it-yourself used oil generators - the heater is designed to have a maximum capacity of not more than 0.5 MBtu/h - the combustion gases from the heater are vented to the ambient air. <p align="center">...</p>
<p>4-260. Except in specific circumstances, used oil generators must ensure that their used oil is transported only by transporters who have USEPA ID No. (40 CFR 279.24).</p> <p align="center">...</p>	<p>Determine if the facility is transporting used oil or contracting the transportation of used oil. (1)(2)(3)(4)(12)(18)</p> <p>Verify that the transporter has an USEPA ID No. except when: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - the generator does not transport more than 55 gal 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 - 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 is transported - 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"> - the type of used oil and frequency of shipments - that the vehicle used for transportation is owned by the used oil processor/refiner - that reclaimed oil will be returned to the generator. <p align="center">...</p>
<p>4-261. 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 align="center">...</p>	<p>Verify that the facility does not mix hazardous waste with used oil unless: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - the resulting mixture does not exhibit any characteristics of hazardous waste - the waste is hazardous solely because it exhibits the characteristic of ignitability and is not a listed hazardous waste. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-262. The label <i>Used Oil</i> must be clearly marked on containers and aboveground tanks used to store used oil and fill pipes used to transfer used oil into underground storage facilities (40 CFR 279.22(c)).</p> <p align="center">...</p>	<p>Verify that containers, aboveground storage tanks and fill pipes used to transfer used oil are clearly marked with the phrase <i>Used Oil</i>. (1)(2)(3)(4)(12)(18)</p> <p align="center">...</p>
<p>Containers and Tanks</p>	
<p>4-263. Containers and tanks used to store used oil at used oil generators must be in good condition and not leaking (40 CFR 264.171, 265.171, and 279.22(a) through 279.22(b)).</p> <p align="center">...</p>	<p>Verify that containers and tanks are not leaking, bulging, rusting, damaged or dented. (1)(2)(3)(4)(12)(18)</p> <p>Verify that used oil is transferred to a new container or managed in another appropriate manner when necessary. (1)(2)(3)(4)(12)(18)</p> <p align="center">...</p>
<p>4-264. Containers used at used oil generators must be made of or lined with materials compatible with the used oil stored in them (40 CFR 264.172, 265.172, and 279.22(a)).</p> <p align="center">...</p>	<p>Verify that containers are compatible with used oil. (1)(2)(3)(4)(12)(18)</p> <p align="center">...</p>
<p>4-265. Containers at used oil generators must be closed during storage and handled in a safe manner (40 CFR 264.173, 265.173, and 279.22(a)).</p> <p align="center">...</p>	<p>Verify that containers are closed except when it is necessary to add or remove used oil (check bungs and look for open funnels). (1)(2)(3)(4)(12)(18)</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak. (1)(2)(3)(4)(12)(18)</p> <p align="center">...</p>
<p>4-266. Containers of used oil at used oil generators should be managed accordingly (GMP).</p> <p align="center">...</p>	<p>Inspect containers and storage areas to determine the following: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - containers are not stored more than two high and have pallets between them - at least 3 ft of aisle space is provided between rows of containers. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-267. Secondary containment is required for specific types of tank systems used to store or treat used oil at used oil generators (40 CFR 264.190(a), 264.190(b), 264.193(a), 265.190(a), 265.190(b), 265.193(a), 279.22(a)).</p> <p style="text-align: center;">...</p> <p>4-268. Secondary containment on tank systems at used oil generators must meet specific requirements (40 CFR 264.190(a), 264.193(b) through 264.193(d), 265.190(a), 265.193(b) through 265.193(d), and 279.22(a)).</p> <p style="text-align: center;">...</p>	<p>Verify that the following types of tanks used to store or treat used oil have secondary containment: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - all new tank systems or components - existing tank systems of known documented age that are 15 yr of age. <p>Verify that existing tank systems for which the age cannot be determined within 8 yr of 12 January 1987 and are at a facility that is older than 7 yr old are provided with secondary containment by time the facility reaches 15 yr of age or 12 January 1989, whichever comes later. (1)(2)(3)(4)(12)(18)</p> <p style="text-align: center;">...</p> <p>Verify that secondary containment meets the following criteria: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - it is designed, installed, and operated to prevent the migration of liquid out of the system - it is capable of detecting and collecting releases and accumulated liquids until removal is possible - it is constructed of or lined with materials compatible with the used oil - it is placed on a foundation or base that can provide appropriate support and prevent failure due to settlement, compression, or upset - 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 used oil within 24 h or the earliest practicable time - it is sloped or designed to drain and remove liquids from leaks, spills, or precipitation. <p>Verify that spilled or leaked used oil are removed from secondary containment within 24 h or as timely as possible. (1)(2)(3)(4)(12)(18)</p> <p>Verify that secondary containment for tanks includes one or more of the following: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - a liner (external to the tank) - a vault - a double-walled tank, or - an equivalent approved device. <p style="text-align: center;">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-269. External liners, vaults and double-walled tanks at used oil generators are required to meet specific standards (40 CFR 264.190(a), 264.193 (e), 265.190(a), 265.193 (e), and 279.22(a)).</p> <p align="center">...</p>	<p>Verify that external liner systems meet the following requirements: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - it is designed and operated so that 100 percent of the capacity of the largest tank within the boundary would be contained - 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 - it is free of cracks or gaps - it surrounds the tank completely and covers all surrounding earth likely to come into contact with the used oil if there is a release - capacity is sufficient to contain precipitation from a 25-yr, 24-h rainfall event. <p>Verify that vault systems meet the following criteria: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - it will contain 100 percent of the capacity of the largest tank within its boundary - it prevents run-on and infiltration of precipitation unless there is sufficient excess capacity - it is constructed with chemical-resistant water stops at all joints - it has an impermeable interior coating that is compatible - it has a means to protect against the formation of and ignition of vapors within the vault if the waste is ignitable or reactive - it has an exterior moisture barrier or otherwise operated to prevent migration of moisture into the vault. <p>Verify that double-walled tanks meet the following criteria: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - it is designed as an integral structure so that any release is contained by the outer shell - it is protected from both corrosion of the primary tank and the external surface of the outer shell if constructed of metal - it has a built-in continuous leak detection system capable of detecting a release within 24 h. <p align="center">...</p>
<p>4-270. Tank ancillary equipment at used oil generators must also be provided with secondary containment (40 CFR 264.190(a), 264.193(f), 265.190(a), 265.193(f), and 279.22(a)).</p> <p align="center">...</p>	<p>Verify that ancillary equipment, except for the following, has secondary containment: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - aboveground piping that is visually inspected for leaks on a daily basis - welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis - sealless or magnetic coupling pumps and sealless valves, that are visually inspected for leaks on a daily basis - pressurized aboveground piping systems with automatic shutoff valves that are visually inspected for leaks on a daily basis. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-271. Tank systems at used oil generators that are required to have secondary containment 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 279.22(a)).</p> <p align="center">...</p>	<p>Verify that tank systems without secondary containment meet the following: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - for nonenterable underground tanks a leak test is conducted annually - for other than nonenterable underground tanks either a leak test is done annually or the facility develops a schedule and procedure for an assessment of the overall condition by an independent, qualified, registered professional engineer - for ancillary equipment a leak test or other approved integrity assessment at least annually. <p>Verify that the facility maintains a record of the results of testing and assessments. (1)(2)(3)(4)(12)(18)</p> <p align="center">...</p>
<p>4-272. Used oil generators with new tank systems must submit to the Regional Administrator a written assessment review certified by an independent, qualified, registered professional engineer and install the tank according to specific standards (40 CFR 264.192, 265.192, and 279.22(a)).</p> <p align="center">...</p>	<p>Determine if the used oil generator has any new tank systems. (1)(2)(3)(4)(12)(18)</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)(4)(12)(18)</p> <p>Verify that the facility keeps on file the written assessments from the individuals required to certify the tank and supervise the installation of the tank. (1)(2)(3)(4)(12)(18)</p> <p align="center">...</p>
<p>4-273. Tanks used for used oil treatment or storage at used oil generators must follow certain operating requirements (40 CFR 264.194, 265.194, and 279.22(a)).</p> <p align="center">...</p>	<p>Verify that used oil is not placed in tanks if it could cause the tank system (including ancillary equipment, or containment system) to fail. (1)(2)(3)(4)(12)(18)</p> <p>Verify that appropriate measures are taken to prevent overflow, including: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - spill prevention controls - overflow prevention controls - maintenance of sufficient freeboard to prevent overtopping by wave, wind action, or precipitation for uncovered tanks. <p align="center">...</p>

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**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

4-274. Tank systems at used oil generators must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 264.198, 264.199, 265.198, 265.199, and 279.22(a)).

Verify that ignitable or reactive wastes are not placed in a tank system, unless one of the following is met: (1)(2)(3)(4)(12)(18)

- 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
- 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
- the tank system is used solely for emergencies.

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 *Flammable and Combustible Liquids Code* are maintained. (1)(2)(3)(4)(12)(18)

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)(4)(12)(18)

Verify that used oil 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)(4)(12)(18)

...

...

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>USED OIL COLLECTION CENTERS AND AGGREGATION POINTS</p> <p>4-275. Do-It-Yourself used oil collection centers are required to meet the same standards as used oil generators (40 CFR 279.30).</p> <p align="center">...</p> <p>4-276. Used oil collection centers are required to be licensed/permited and operated according to specific standards (40 CFR 279.31).</p> <p align="center">...</p> <p>4-277. Used oil aggregation points are required to be operated according to the standards for used oil generators (40 CFR 279.32).</p> <p align="center">...</p>	<p>Verify that Do-It-Yourself used oil collection centers such as the auto hobby shop meet the requirements outlined in the sections titled USED OIL GENERATORS and USED OIL GENERATORS - Containers and Tanks. This item is not Army Reserve applicable. (1)(2)(3)(4)(12)(18)</p> <p align="center">...</p> <p>Determine if the facility operates a used oil collection center. (1)(2)(3)(4)(12)(18)</p> <p>Verify that the collection center meets the requirements for used oil generators outlined in the sections titled USED OIL GENERATORS and USED OIL GENERATORS - Containers and Tanks. (1)(2)(3)(4)(12)(18)</p> <p>Verify that the collection center is registered/licensed/permited/ recognized by a state/county/ municipal government to manage used oil. (1)(2)(3)(4)(12)(18)</p> <p align="center">...</p> <p>Verify that the used oil aggregation point is operated according to the standards outlined in the sections titled USED OIL GENERATORS and USED OIL GENERATORS - Containers and Tanks. (1)(2)(3)(4)(12)(18)</p> <p align="center">...</p>
<p>USED OIL TRANSPORTATION</p> <p align="center">...</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"> - onsite transportation - generators who transport shipments of used oil totaling 55 gal or less from the generator to a used oil collection center - generators who transport shipments of used oil totaling 55 gal or less from the generator to a used oil aggregation point owned by the generator - 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.) <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-278. 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 align="center">...</p>	<p>Verify that if used oil that is contaminated with hazardous waste is determined to be a hazardous waste, it is transported as a hazardous waste. (1)(2)(3)(4)(12)(18)</p> <p>(NOTE: Facilities 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 State.)</p> <p align="center">...</p>
<p>4-279. Used oil transporters can consolidate or aggregate loads of used oil (40 CFR 279.41).</p> <p align="center">...</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)(12)(18)</p> <p align="center">...</p>
<p>4-280. Used oil transporters are required to have an USEPA ID No. (40 CFR 279.42).</p> <p align="center">...</p>	<p>Verify that if the facility is transporting used oil, it has an USEPA ID No. (1)(2)(3)(4)(12)(18)</p> <p align="center">...</p>
<p>4-281. Transporters must meet specific requirements for deliveries and shipments of used oil (40 CFR 279.43(a) through 279.43(b)).</p> <p align="center">...</p>	<p>Verify that all used oil is delivered to: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - another used oil transporter if the transporter has an USEPA ID No. - a used oil processing/re-refining facilities with an USEPA ID No. - an off-specification used oil burner facility with an USEPA ID No. - an on-specification used oil burner facility. <p>Verify that DOT labeling, packaging, and placarding requirements are met.</p> <p align="center">...</p>
<p>4-282. Transporters are required to take specific actions if there is a discharge of used oil during transportation (40 CFR 279.43(c)).</p> <p align="center">...</p>	<p>Verify that if there is a discharge the following are done: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - notification of authorities (NRC) - containment of the discharge - submission of a written report to the DOT - cleanup. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-283. 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 align="center">...</p>	<p>Verify that the transporter determines the total halogen content of the used oil by one of the following methods: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - testing the used oil - applying knowledge of halogen content of the used oil in light of the materials or processes used. <p>Verify that records of analyses are kept for 3 yr.</p> <p align="center">...</p>
<p>4-284. Used oil transporters are required to keep records for used oil shipments and deliveries (40 CFR 279.46).</p> <p align="center">...</p>	<p>Verify that the following records are kept for each shipment accepted for transport: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - name and address of the generator, transporter, or processor/refiner who provided the used oil for transport - USEPA ID No. - the quantity of oil accepted - the day of acceptance - signature of receipt. <p>Verify that the following records are kept for each delivery to another used oil transporter, or to a used oil burner, processor/re-refiner, or disposal facility and for export/import activities: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - the name and address of the receiving facility or transporter - the USEPA ID No. of the receiving facility or transporter - the quantity of used oil delivered - the date of delivery - the signature, dated upon receipt of the used oil, of a representative of the receiving facility or transporter. <p>Verify that records are maintained for 3 yr. (1)(2)(3)(4)(12)(18)</p> <p align="center">...</p>
<p>4-285. Transfer facilities are required to store used oil in tanks and containers that meet specific requirements (40 CFR 279.45(b) through 279.45(g)).</p>	<p>Verify that the tanks and containers at transfer facilities meet the requirements outlined in the section USED OIL GENERATORS - Containers and Tanks. (1)(2)(3)(4)(12)(18)</p> <p>Verify that containers and aboveground storage tanks (ASTs) used to store used oil have secondary containment that meets the following minimum requirements: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - dikes, berms, or retaining walls - a floor that covers the entire area within the dikes, berms, or retaining walls - the system is impervious. <p>Verify that containers and aboveground tanks are labeled with the phrase <i>Used Oil</i>. (1)(2)(3)(4)(12)(18)</p> <p>Verify that fill pipes used to transfer used oil into underground storage tanks at transfer facilities are labeled <i>Used Oil</i>. (1)(2)(3)(4)(12)(18)</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>4-286. Specific steps must be followed in response to a release at a transfer facility (40 CFR 279.45(h)).</p> <p align="center">...</p>	<p>Verify that the following steps are taken: (1)(2)(3)(4)(12)(18)</p> <ul style="list-style-type: none"> - the release is stopped - the release is contained - the release is cleaned up and properly managed - necessary repairs and replacements are done. <p align="center">...</p>
<p>USED OIL BURNERS</p> <p>4-287.</p> <p>4-288.</p> <p>4-289.</p> <p>4-290.</p> <p>4-291.</p> <p>4-292.</p> <p>4-293.</p>	<p>This item is not Army Reserve applicable.</p>
<p>USED OIL MARKETING</p> <p>4-294.</p> <p>4-295.</p> <p>4-296.</p> <p>4-297.</p> <p>4-298.</p>	<p>This item is not Army Reserve applicable.</p>
<p>USED OIL DUST SUPPRESSION</p> <p>4-299. Used oil cannot be used for dust suppression unless allowed by the state (40 CFR 279.82).</p>	<p>Verify that used oil is not used for dust suppression at the facility. (1)(2)(3)(4)(12)(18)</p>

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Appendix 4-1

40 CFR 261 Identification and Listing of Hazardous Waste

TABLE I

Hazardous Waste from Nonspecific Sources

(40 CFR 261.30 through 261.31)
(Effective as of 5 June 1991)

Industry and USEPA Hazardous Waste No.	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/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(t)
F002	The following spent <i>halogenated</i> 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/blends containing, before use, a total of ten 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.

Appendix 4-1 (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/blends containing, before use, a total of ten 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.

Appendix 4-1 (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.

Appendix 4-1 (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 Nos. F020, F021, F022, F023, F026 and F027.	(t)
F032	Wastewaters (except those that have not come into contact with process contaminants), process residues, 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 not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use creosote formulations. This listing does not include K001 bottom sludge from the treatment of wastewater from wood preserving processes that use creosote and or pentachlorophenol.	(t)
F035	Wastewaters (except those that have not 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)

* 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.

Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
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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. 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.

NOTE:

- *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.

Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F038	<p>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. 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 noncontact 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</p>	(t)

NOTE:

*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.

Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F038 (cont)	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. (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.)	(t)

NOTE:

*hazard code:

t= toxic waste

i= ignitable waste

r= reactive waste

h= acute hazardous waste

c= corrosive waste

e= toxicity characteristic waste

* 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.

Appendix 4-1 (continued)

Hazardous Wastes from Organic and Inorganic Chemical Industries
(40 CFR 261.30 through .31)
(effective as of 20 November 1990)

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)

* HAZARD CODES (Column 3)

r = reactive waste

t = toxic waste

Appendix 4-1 (continued)

USEPA Hazardous Waste Number	Hazardous Waste	Code
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)
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)

* HAZARD CODES (Column 3)

r = reactive waste

t = toxic waste

Appendix 4-1 (continued)

USEPA Hazardous Waste Number	Hazardous Waste	Code
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)
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 absorbant solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(t)

* HAZARD CODES (Column 3)

r = reactive waste

t = toxic waste

Appendix 4-1 (continued)

USEPA Hazardous Waste Number	Hazardous Waste	Code
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K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(t)
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Inorganic Chemicals

K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.	(t)
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K073	Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.	(t)
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K106	Wastewater treatment sludge from the mercury cell process in chlorine production.	(t)
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Hazardous Waste from Explosives Manufacturing

K044	Wastewater treatment sludge from the manufacturing and processing of explosives.	(r)
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K045	Spent carbon from the treatment of wastewater containing explosives.	(r)
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K046	Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds.	(t)
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K047	Pink/red water from TNT operations.	(r)
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* HAZARD CODES (Column 3)

r = reactive waste

t = toxic waste

Appendix 4-2

Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Toxic Wastes CFR 261.33 (effective 8 May 1990)

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

USEPA Hazardous Waste No.	Substance
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
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

Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
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-
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)

Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
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[<i>rst</i>]pentaphene
U248	2-H-1-benzopyran-2-on2, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, and salts, when present at concentrations of 0.3% or less
U022	benzo[<i>a</i>]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)

Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U143	2-butenic acid, 2-methyl-, 7-[(2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy)methyl]-2,3,5,7s-erythro-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	carbamodithioic 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
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 ₂ CrO ₄ , calcium salt
U050	chrysene
U051	creosote
U052	cresols (cresylic acid)
U053	crotonaldehyde
U055	cumene (i)
U246	cyanogen bromide

Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
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
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
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

Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
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-
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

Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
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)
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-nitrosoureido)-
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	isosafrole
U142	kepone
U143	lasiocarpine
U144	lead acetate
U146	lead, bis(acetato-O) tetrahydroxytri-
U145	lead phosphate
U146	lead subacetate
U129	lindane
U163	mnng
U147	maleic anhydride

Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
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
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-

Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
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
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-
U081	phenol, 2,4-dichloro-
U082	phenol, 2,6-dichloro-

Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
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, 4-[bis(2-chloroethyl)amino]-
U145	phosphoric acid, lead salt
U087	phosphorodithioic acid, 0,0-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)
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)

Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
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
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

Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U228	trichloroethylene
U121	trichloromonofluoromethane
U230	2,4,5-trichlorophenol
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.

Appendix 4-3

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 ¹
D024	m-Cresol	108-39-4	2	200.0 ¹
D025	p-Cresol	106-44-5	2	200.0 ¹
D026	Cresol		2	200.0 ¹
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 ²
D012	Endrin	72-20-8	0.0002	0.02
D031	Heptachlor (and its hydroxide)	76-44-8	0.00008	0.008 ²
D032	Hexachlorobenzene	118-74-1	0.0002	0.13 ²
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 ²
D038	Pyridine	110-86-1	0.04	5.0 ²
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

¹ If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used.

² Quantitation limit is greater than the calculated regulatory level. Therefore, the quantitation limit becomes the regulatory level.

Source: Federal register 55:61, pg 11804.

Appendix 4-4

Land Disposal Restricted Wastes and Their Effective Dates 40 CFR 268, Appendix VII

Part 1--Land Disposal Restricted Wastes and Their Effective Dates

Waste Code	Waste Category	Effective Date
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/L.	8 November 1988
D001	All	8 August 1990
D002	All	8 August 1990
D003	All	8 August 1990
D004	Wastewater	8 August 1990
D005	Nonwastewater	8 May 1992
D006	All	8 August 1990
D007	All	8 August 1990
D007	All	8 August 1990
D008	Lead materials before secondary smelting	8 May 1992
D008	All others	8 August 1990
D009	Nonwastewater	8 May 1992
D010	All	8 August 1990
D011	All	8 August 1990
D012	All	8 August 1990
D013	All	8 August 1990
D014	All	8 August 1990
D015	All	8 August 1990
D016	All	8 August 1990
D017	All	8 August 1990
F001	SQGs, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 November 1988
F001	All others	8 November 1986
F002(1,1,2 -trichloro- ethane)	Wastewater and nonwastewater	8 August 1990
F002	SQGs, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 November 1988

Appendix 4-4 (continued)

Waste Code	Waste Category	Effective Date
F002	All others	8 November 1986
F003	SQGs, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 November 1988
F003	All others	8 November 1986
F004	SQGs, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 November 1988
F004	All others	8 November 1986
F005 (benzene, 2-ethoxy ethanol, 2-nitropropane)	Wastewater and nonwastewater	8 August 1990
F005	SQGs, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and soils.	8 November 1988
F005	All others	8 November 1986
F006	Wastewater	8 August 1990
F006	Nonwastewater	8 August 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 December 1986
F011	All others	8 July 1989
F012 (cyanides)	Nonwastewater	8 December 1989
F012	All others	8 July 1989
F019	All	8 August 1990
F020	All	8 November 1988
F021	All	8 November 1988
F022	All	8 November 1988
F023	All	8 November 1988
F024 (metals)	Wastewater	8 June 1989
F024 (metals)	Nonwastewater	8 August 1990
F024 ^b	All others	8 June 1989
F025	All	8 August 1990
F026	All	8 November 1988
F027	All	8 November 1988
F028	All	8 November 1988
FO37	Other than from surface impoundments	30 June 1993
FO37	All	30 June 1994
FO38	Other than from surface impoundments	30 June 1993
FO38	All	30 June 1994
F039	Wastewater	8 August 1990
F039	Nonwastewater	8 May 1992
K001 (organics) ^b	All	8 August 1988
K001	All others	8 August 1988
K002	All	8 August 1990
K003	All	8 August 1990

Appendix 4-4 (continued)

Waste Code	Waste Category	Effective Date
K004	Wastewater	8 August 1990
K004 ^c	Nonwastewater	8 August 1990
K005	Wastewater	8 August 1990
K005 ^c	Nonwastewater	8 June 1989
K006	All	8 August 1990
K007	Wastewater	8 August 1990
K007 ^c	Nonwastewater	8 June 1989
K008	Wastewater	8 August 1990
K008 ^c	Nonwastewater	8 August 1988
K009	All	8 June 1989
K010	All	8 June 1989
K011	Wastewater	8 August 1990
K011	Nonwastewater	8 June 1989
K013	Wastewater	8 August 1990
K013	Nonwastewater	8 June 1989
K014	Wastewater	8 August 1990
K014	Nonwastewater	8 June 1989
K015	Wastewater	8 August 1988
K015	Nonwastewater	8 August 1990
K016	All	8 August 1988
K017	All	8 August 1990
K018	All	8 August 1988
K019	All	8 August 1988
K020	All	8 August 1988
K021	Wastewater	8 August 1990
K021 ^c	Nonwastewater	8 August 1988
K022	Wastewater	8 August 1990
K022	Nonwastewater	8 August 1988
K023	All	8 June 1989
K024	All	8 August 1988
K025	Wastewater	8 August 1990
K025 ^c	Nonwastewater	8 August 1988
K026	All	8 August 1990
K027	All	8 June 1989
K028 (metals)	Nonwastewater	8 August 1990
K028	All others	8 June 1989
K029	Wastewater	8 August 1990
K029	Nonwastewater	8 June 1989
K030	All	8 August 1990
K031	Wastewater	8 August 1990
K031	Nonwastewater	8 May 1992
K032	All	8 August 1990
K033	All	8 August 1990
K034	All	8 August 1990
K035	All	8 August 1990
K036	Wastewater	8 June 1989
K036 ^c	Nonwastewater	8 August 1988
K037 ^b	Wastewater	8 August 1988
K037	Nonwastewater	8 August 1988
K038	All	8 June 1989
K039	All	8 June 1989

Appendix 4-4 (continued)

Waste Code	Waste Category	Effective Date
K040	All	8 June 1989
K041	All	8 August 1990
K042	All	8 August 1990
K043	All	8 June 1989
K044 ^c	All	8 August 1988
K045 ^c	all	8 August 1988
K046 (Nonreactive)	Nonwastewater	8 August 1988
K046	All others	8 August 1990
K047	All	8 August 1988
K048	Wastewater	8 August 1990
K048	Nonwastewater	8 November 1990
K049	Wastewater	8 August 1990
K049	Nonwastewater	8 November 1990
K050	Wastewater	8 August 1990
K050	Nonwastewater	8 November 1990
K051	Wastewater	8 August 1990
K051	Nonwastewater	8 November 1990
K052	Wastewater	8 August 1990
K052	Nonwastewater	8 November 1990
K060	Wastewater	8 August 1990
K060 ^c	Nonwastewater	8 August 1988
K061	Wastewater	8 August 1990
K061	Nonwastewater (low zinc) (interim standard for high zinc remains in effect until 7 August 1991).	8 August 1988
K062	All	8 August 1988
K069 (Non-Calcium Sulfate) ^c	Nonwastewater	8 August 1988
K069	All others	8 August 1990
K071	All	8 August 1990
K073	All	8 August 1990
K083	All	8 August 1990
K084	Wastewater	8 August 1990
K084	Nonwastewater	8 May 1992
K085	All	8 August 1990
K086 (organics) ^b	All	8 August 1988
K086	All others	8 August 1988
K087	All	8 August 1988
K093	All	8 June 1989
K094	All	8 June 1989
K095	Wastewater	8 August 1990
K095	Nonwastewater	8 June 1989
K096	Wastewater	8 August 1990
K096	Nonwastewater	8 June 1989
K097	All	8 August 1990
K098	All	8 August 1990
K099	All	8 August 1988
K100	Wastewater	8 August 1990
K100 ^c	Nonwastewater	8 August 1988
K101 (organics)	Wastewater	8 August 1988
K101 (metals)	Wastewater	8 August 1990

Appendix 4-4 (continued)

Waste Code	Waste Category	Effective Date
K101 (organics)	Nonwastewater	8 August 1988
K101 (metals)	Nonwastewater	8 May 1992
K102 (organics)	Wastewater	8 August 1988
K102 (metals)	Wastewater	8 August 1990
K102 (organics)	Nonwastewater	8 August 1988
K102 (metals)	Nonwastewater	8 May 1992
K103	All	8 August 1988
K104	All	8 August 1988
K105	All	8 August 1990
K106	Wastewater	8 August 1990
K106	Nonwastewater	8 May 1992
K107	All	8 November 1992
K108	All	8 November 1992
K109	All	8 November 1992
K110	All	9 November 1992
K111	All	9 November 1992
K112	All	9 November 1992
K113	All	8 June 1989
K114	All	8 June 1989
K115	All	8 June 1989
K116	All	8 June 1989
K117	All	9 November 1992
K118	All	9 November 1992
K123	All	9 November 1992
K124	All	9 November 1992
K125	All	9 November 1992
K126	All	9 November 1992
K131	All	9 November 1992
K132	All	9 November 1992
K136	All	9 November 1992
P001	All	8 August 1990
P002	All	8 August 1990
P003	All	8 August 1990
P004	All	8 August 1990
P005	All	8 August 1990
P006	All	8 August 1990
P007	All	8 August 1990
P008	All	8 August 1990
P009	All	8 August 1990
P010	Wastewater	8 August 1990
P010	Nonwastewater	8 May 1992
P011	Wastewater	8 August 1990
P011	Nonwastewater	8 May 1992
P012	Wastewater	8 August 1990
P012	Nonwastewater	8 May 1992
P013 (barium)	Nonwastewater	8 August 1990
P013	All others	8 June 1989
P014	All	8 August 1990
P015	All	8 August 1990
P016	All	8 August 1990
P017	All	8 August 1990

Appendix 4-4 (continued)

Waste Code	Waste Category	Effective Date
P018	All	8 August 1990
P020	All	8 August 1990
P021	All	8 June 1989
P022	All	8 August 1990
P023	All	8 August 1990
P024	All	8 August 1990
P026	All	8 August 1990
P027	All	8 August 1990
P028	All	8 August 1990
P029	All	8 June 1989
P030	All	8 June 1989
P031	All	8 August 1990
P033	All	8 August 1990
P034	All	8 August 1990
P036	Wastewater	8 August 1990
P036	Nonwastewater	8 May 1992
P037	All	8 August 1990
P038	Wastewater	8 August 1990
P038	Nonwastewater	8 May 1992
P039	All	8 June 1989
P040	All	8 June 1989
P041	All	8 June 1989
P042	All	8 August 1990
P043	All	8 June 1989
P044	All	8 June 1989
P045	All	8 August 1990
P046	All	8 August 1990
P047	All	8 August 1990
P048	All	8 August 1990
P049	All	8 August 1990
P050	All	8 August 1990
P051	All	8 August 1990
P054	All	8 August 1990
P056	All	8 August 1990
P057	All	8 August 1990
P058	All	8 August 1990
P059	All	8 August 1990
P060	All	8 August 1990
P062	All	8 June 1989
P063	All	8 June 1989
P064	All	8 August 1990
P065	Wastewater	8 August 1990
P065	Nonwastewater	8 May 1992
P066	All	8 August 1990
P067	All	8 August 1990
P068	All	8 August 1990
P069	All	8 August 1990
P070	All	8 August 1990
P071	All	8 June 1989
P072	All	8 August 1990
P073	All	8 August 1990

Appendix 4-4 (continued)

Waste Code	Waste Category	Effective Date
P074	All	8 June 1989
P075	All	8 August 1990
P076	All	8 August 1990
P077	All	8 August 1990
P078	All	8 August 1990
P079	All	8 August 1990
P081	All	8 August 1990
P082	All	8 August 1990
P084	All	8 August 1990
P085	All	8 June 1989
P087	All	8 May 1992
P088	All	8 August 1990
P089	All	8 June 1989
P092	Wastewater	8 August 1990
P092	Nonwastewater	8 May 1992
P093	All	8 August 1990
P094	All	8 June 1989
P095	All	8 August 1990
P096	All	8 August 1990
P099 (silver)	Wastewater	8 August 1990
P099	All others	8 June 1989
P101	All	8 August 1990
P102	All	8 August 1990
P103	All	8 August 1990
P104 (silver)	Wastewater	8 August 1990
P104	All others	8 June 1989
P105	All	8 August 1990
P106	All	8 June 1989
P108	All	8 August 1990
P109	All	8 June 1989
P110	All	8 August 1990
P111	All	8 June 1989
P112	All	8 August 1990
P113	All	8 August 1990
P114	All	8 August 1990
P115	All	8 August 1990
P116	All	8 August 1990
P118	All	8 August 1990
P119	All	8 August 1990
P120	All	8 August 1990
P121	All	8 June 1989
P122	All	8 August 1990
P123	All	8 August 1990
U001	All	8 August 1990
U002	All	8 August 1990
U003	All	8 August 1990
U004	All	8 August 1990
U005	All	8 August 1990
U006	All	8 August 1990
U007	All	8 August 1990
U008	All	8 August 1990

Appendix 4-4 (continued)

Waste Code	Waste Category	Effective Date
U009	All	8 August 1990
U010	All	8 August 1990
U011	All	8 August 1990
U012	All	8 August 1990
U014	All	8 August 1990
U015	All	8 August 1990
U016	All	8 August 1990
U017	All	8 August 1990
U018	All	8 August 1990
U019	All	8 August 1990
U020	All	8 August 1990
U021	All	8 August 1990
U022	All	8 August 1990
U023	All	8 August 1990
U024	All	8 August 1990
U025	All	8 August 1990
U026	All	8 August 1990
U027	All	8 August 1990
U028	All	8 August 1990
U029	All	8 June 1989
U030	All	8 August 1990
U031	All	8 August 1990
U032	All	8 August 1990
U033	All	8 August 1990
U034	All	8 August 1990
U035	All	8 August 1990
U036	All	8 August 1990
U037	All	8 August 1990
U038	All	8 August 1990
U039	All	8 August 1990
U041	All	8 August 1990
U042	All	8 August 1990
U043	All	8 August 1990
U044	All	8 August 1990
U045	All	8 August 1990
U046	All	8 August 1990
U047	All	8 August 1990
U048	All	8 August 1990
U049	All	8 August 1990
U050	All	8 August 1990
U051	All	8 August 1990
U052	All	8 August 1990
U053	All	8 August 1990
U055	All	8 August 1990
U056	All	8 August 1990
U057	All	8 August 1990
U058	All	8 August 1990
U059	All	8 June 1989
U060	All	8 August 1990
U061	All	8 August 1990
U062	All	8 August 1990

Appendix 4-4 (continued)

Waste Code	Waste Category	Effective Date
U063	All	8 August 1990
U064	All	8 August 1990
U066	All	8 August 1990
U067	All	8 August 1990
U068	All	8 August 1990
U069	All	8 June 1989
U070	All	8 August 1990
U071	All	8 August 1990
U072	All	8 August 1990
U073	All	8 August 1990
U074	All	8 August 1990
U075	All	8 August 1990
U076	All	8 August 1990
U077	All	8 August 1990
U078	All	8 August 1990
U079	All	8 August 1990
U080	All	8 August 1990
U081	All	8 August 1990
U082	All	8 August 1990
U083	All	8 August 1990
U084	All	8 August 1990
U084	All	8 August 1990
U085	All	8 August 1990
U086	All	8 August 1990
U087	All	8 June 1989
U088	All	8 June 1989
U089	All	8 August 1990
U090	All	8 August 1990
U091	All	8 August 1990
U092	All	8 August 1990
U093	All	8 August 1990
U094	All	8 August 1990
U095	All	8 August 1990
U096	All	8 August 1990
U097	All	8 August 1990
U098	All	8 August 1990
U099	All	8 August 1990
U101	All	8 August 1990
U101	All	8 June 1989
U103	All	8 August 1990
U105	All	8 August 1990
U106	All	8 August 1990
U107	All	8 June 1989
U108	All	8 August 1990
U109	All	8 August 1990
U110	All	8 August 1990
U111	All	8 August 1990
U112	All	8 August 1990
U113	All	8 August 1990
U114	All	8 August 1990
U115	All	8 August 1990

Appendix 4-4 (continued)

Waste Code	Waste Category	Effective Date
U116	All	8 August 1990
U117	All	8 August 1990
U118	All	8 August 1990
U119	All	8 August 1990
U120	All	8 August 1990
U121	All	8 August 1990
U122	All	8 August 1990
U123	All	8 August 1990
U124	All	8 August 1990
U125	All	8 August 1990
U126	All	8 August 1990
U127	All	8 August 1990
U128	All	8 August 1990
U129	All	8 August 1990
U130	All	8 August 1990
U131	All	8 August 1990
U132	All	8 August 1990
U133	All	8 August 1990
U134	All	8 August 1990
U135	All	8 August 1990
U136	Wastewater	8 August 1990
U136	Nonwastewater	8 May 1992
U137	All	8 August 1990
U138	All	8 August 1990
U140	All	8 August 1990
U141	All	8 August 1990
U142	All	8 August 1990
U143	All	8 August 1990
U144	All	8 August 1990
U145	All	8 August 1990
U146	All	8 August 1990
U147	All	8 August 1990
U148	All	8 August 1990
U149	All	8 August 1990
U150	All	8 August 1990
U151	Wastewater	8 August 1990
U151	Nonwastewater	8 May 1992
U152	All	8 August 1990
U153	All	8 August 1990
U154	All	8 August 1990
U155	All	8 August 1990
U156	All	8 August 1990
U157	All	8 August 1990
U158	All	8 August 1990
U159	All	8 August 1990
U160	All	8 August 1990
U161	All	8 August 1990
U162	All	8 August 1990
U163	All	8 August 1990
U164	All	8 August 1990
U165	All	8 August 1990

Appendix 4-4 (continued)

Waste Code	Waste Category	Effective Date
U166	All	8 August 1990
U167	All	8 August 1990
U168	All	8 August 1990
U169	All	8 August 1990
U170	All	8 August 1990
U171	All	8 August 1990
U172	All	8 August 1990
U173	All	8 August 1990
U174	All	8 August 1990
U176	All	8 August 1990
U177	All	8 August 1990
U178	All	8 August 1990
U179	All	8 August 1990
U180	All	8 August 1990
U181	All	8 August 1990
U182	All	8 August 1990
U183	All	8 August 1990
U184	All	8 August 1990
U185	All	8 August 1990
U186	All	8 August 1990
U187	All	8 August 1990
U188	All	8 August 1990
U189	All	8 August 1990
U190	All	8 June 1989
U191	All	8 August 1990
U192	All	8 August 1990
U193	All	8 August 1990
U194	All	8 August 1990
U196	All	8 August 1990
U197	All	8 August 1990
U200	All	8 August 1990
U201	All	8 August 1990
U202	All	8 August 1990
U203	All	8 August 1990
U204	All	8 August 1990
U205	All	8 August 1990
U206	All	8 August 1990
U207	All	8 August 1990
U208	All	8 August 1990
U209	All	8 August 1990
U210	All	8 August 1990
U211	All	8 August 1990
U212	All	8 August 1990
U213	All	8 August 1990
U214	All	8 August 1990
U215	All	8 August 1990
U216	All	8 August 1990
U217	All	8 August 1990
U218	All	8 August 1990
U219	All	8 August 1990
U220	All	8 August 1990

Appendix 4-4 (continued)

Waste Code	Waste Category	Effective Date
U221	All	8 June 1989
U222	All	8 August 1990
U223	All	8 June 1989
U225	All	8 August 1990
U226	All	8 August 1990
U227	All	8 August 1990
U228	All	8 August 1990
U234	All	8 August 1990
U235	All	8 June 1989
U236	All	8 August 1990
U237	All	8 August 1990
U238	All	8 August 1990
U239	All	8 August 1990
U240	All	8 August 1990
U243	All	8 August 1990
U244	All	8 August 1990
U246	All	8 August 1990
U247	All	8 August 1990
U248	All	8 August 1990
U249	All	8 August 1990
U328	All	9 November 1992
U353	All	9 November 1992
U359	All	9 November 1992

^a The previous table does not include mixed radioactive wastes (from the First, Second, and Third rules) that are receiving a national capacity variance until 8 May 1992, for all applicable treatment technologies. 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.

Appendix 4-4 (continued)

Part 2--Summary of Effective Dates of Land Disposal Restrictions for Contaminated Soil and Debris (CSD)

Restricted hazardous waste in CSD	Effective date
1. Solvent-(F001-F005) and dioxin-(F020-F023 and F026-F028) containing soil and debris from CERCLA response of RCRA corrective actions.	8 November 1990
2. Soil and debris not from CERCLA response or RCRA corrective actions contaminated with less than 1% total solvents (F001-F005) or dioxins (F020-F023 and F026-F028).	8 November 1990
3. Soil and debris contaminated with California list HOCs from CERCLA response or RCRA corrective actions.	8 November 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 August 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, or 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 1992

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, 31 January 1991]

Appendix 4-5

Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Acute Hazardous Waste 40 CFR 261.33(a) - 261.33(e) (effective 8 May 1990)

(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 Number	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
P007	5-(Aminomethyl)-3-isoxazolol
P008	4-Aminopyridine
P009	Ammonium picrate
P119	Ammonium vanadate
P099	Argebtate(1), bis(cyano-C)-, potassium
P010	Arsenic acid
P012	Arsenic oxide As ₂ O ₃
P011	Arsenic oxide As ₂ O 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]-
P046	Benzeneethanamine, alpha,alpha- dimethyl-
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%

Appendix 4-5 (continued)

Hazardous Waste Number	Substance
P028	Benzyl chloride
P015	Beryllium
P016	Bis(chloromethyl)ether
P017	Bromoacetone
P018	Brucine
P021	Calcium cyanide
P021	Calcium cyanide Ca(CN) ₂
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-aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta,7aalpha)-
P051	2,7:3,6-Dimethanonaph[2,3b]oxirane, octahydro-, (1aalpha,2beta,2abeta,3alpha,6alpha,6abeta,7beta,7aalpha)-
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
P048	2,4-Dinitrophenol

Appendix 4-5 (continued)

Hazardous Waste Number	Substance
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
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
P082	Methanamine, N-methyl-N-nitroso
P064	Methane, isocyanato-
P016	Methane, oxybis[chloro-
P112	Methane, tetranitro-
P118	Methanethiol, trichloro-
P050	6,9-Methano-2,4,3-benzodioxathlepen, 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
P064	Methyl isocyanate
P069	2-Methylactonitrile
P071	Methyl parathion
P072	alpha-Naphthylthiourea
P073	Nickel carbonyl

Appendix 4-5 (continued)

Hazardous Waste Number	Substance
P073	Nickel carbonyl, (T-4)-
P074	Nickel cyanide
P074	Nickel cyanide Ni (CN) ₂
P075	Nicotine and salts
P076	Nitric oxide
P077	p-Nitroaniline
P078	Nitrogen dioxide
P076	Nitrogen oxide NO
P078	Nitrogen oxide NO ₂
P081	Nitroglycerine
P082	N-Nitrosodimethylamine
PG84	N-Nitrosomethylvinylamine
P074	Nickel cyanide
P085	Octamethylpyrophosphoramide
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
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
P040	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester

Appendix 4-5 (continued)

Hazardous Waste Number	Substance
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
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
P045	Thiofanox
P049	Thiomidodicarbonic diamide
P014	Thiophenol
P116	Thiosemicarbazide
P026	Thiourea, (2-chlorophenyl)-
P072	Thiourea, 1-naphthalenyl-

Appendix 4-5 (continued)

Hazardous Waste Number	Substance
P093	Thiourea, phenyl-
P123	Toxaphene
P118	Trichloromethanethiol
P119	Vanadic acid, ammonium salt
P120	Vanadium oxide V ₂ O ₃
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) ₂
P122	Zinc phosphide Zn ₃ P ₂ , when present at concentrations greater than 0.3%

Appendix 4-6

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.

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.

Appendix 4-6 (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 ₂ Cl ₂ , SOCl ₂ , PCl ₃ , CH ₃ SiCl ₃ 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 explosion, or 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.

Appendix 4-6 (continued)

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.

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)

Appendix 4-7

Constituent Concentrations in Wastes (CCW) 40 CFR 268.43(a) (effective as of 31 January 1991)

Waste Codes Regulated Hazardous Constituent with Applicable Chemical Abstract Service (CAS) No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
D015** (CAS 8001-35-1) 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) Benzene (CAS 71-43-2)	0.030 0.070	7.6 (1) 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
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
F010		
Cyanides (total) (CAS 57-12-5)	1.9	1.5
Cyanides (amenable) (CAS 57-12-5)	0.1	NA
F011*		
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
F012*		
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
F019*		
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
F024**		
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 107-05-1)	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
F025 (light ends subcategory)		
Chloroform (CAS 67-66-3)	0.046 (2)	6.2 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.21 (2)	6.2 (1)
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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
F025 (spent filters/aids and desiccants subcategory)		
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)
F039*** (and D001 and D002 wastes prohibited under 40 CFR 268.37)		
Acetone (CAS 67-64-1)	0.28 (2)	160 (1)
Acenaphthalene (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)	0.029 (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)	0.013 (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)
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)
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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
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 91-8-7)	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-chloropropane (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) (CAS 94-75-7)	0.72 (2)	10 (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)
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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
1,2-Dichloropropane (CAS 78-87-5)	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-propylnitrosoamine (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)
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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
Isosafrole (CAS 120-58-1)	0.081 (2)	2.6 (1)
Kepone (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) (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-Naphtylamine (CAS 91-59-8)	0.52 (2)	NA
p-Nitroaniline (CAS 100-01-6)	0.028 (2)	28 (1)
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)
Phthalicanhydridr (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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
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)
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-trifloro-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
K001*		
Naphthalene (CAS 91-20-3)	0.031 (1)	1.5 (1)
Pentachlorophenol (CAS 87-86-5)	0.18 (1)	7.4 (1)
Penanthrene		
Pyrene (CAS 85-01-8)	0.031 (1)	1.5 (1)
Toluene (CAS 129-00-0)	0.028 (1)	1.5 (1)
Xylenes (total) (CAS 108-88-3)	0.028 (1)	28 (1)
Lead	0.032 (1)	33
(CAS 7439-92-1)	0.037	NA
K002*, K003*, and K004*		
Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
Lead (CAS 7439-92-1)	3.4 (2)	NA
K005*		
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
K006*		
Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
K007*		
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)	
K008*		
Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
K009		
Chloroform (CAS 67-66-3)	0.1	6.0 (1)
K010		
Chloroform (CAS 67-66-3)	0.1	6.0 (1)
K011, K013, and K014		
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
K015*		
Anthracene (CAS 120-12-7)	1.0	3.4 (1)
Benzal chloride (CAS 98-87-3)	0.28	6.2 (1)
Sum of Benzo(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
K016		
Hexachlorobenzene (CAS 118-74-1)	0.033 (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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
K017		
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)
K018		
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)
K019		
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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
K020		
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)
K021*		
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)
K022*		
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
K023 and K024		
Phthalic anhydride (measured as Phthalic acid) (CAS 85-44-9)	0.54 (1)	28 (1)
K028*		
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
K029		
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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
K030		
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)
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)
K031*		
Arsenic (CAS 7440-38-2)	0.79	NA
K032		
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)
K033 and K034		
Hexachlorocyclopentadiene (CAS 77-47-4)	0.057 (2)	2.4 (1)
K035		
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)
K036		
Disulfoton (CAS 298-04-4)	0.025 (2)	0.1 (1)
K037		
Disulfoton (CAS 298-04-4)	0.025 (2)	0.1 (1)
Toluene (CAS 108-88-3)	0.080 (2)	28 (1)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
K038 Phorate (CAS 298-02-2)	0.025 (2)	0.1 (1)
K040 Phorate (CAS 298-02-2)	0.025 (2)	0.1 (1)
K041 Toxaphene (CAS 8001-35-1)	0.0095 (2)	2.6 (1)
K042 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)
K043 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)
K046* Lead (CAS 7439-92-1)	0.037	NA
K048* Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)pyrene (CAS 50-32-8)	0.047 (1)	12 (1)
Bis(2-ethylhexy)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 Fluorene (CAS 100-41-4)	0.011 (1)	14 (1)
Naphthalene (CAS 86-73-7)	0.005 (1)	NA
Phenanthrene (CAS 91-20-3)	0.033 (1)	42 (1)
Phenol (CAS 85-01-8)	0.039 (1)	34 (1)
Pyrene (CAS 108-95-2)	0.047 (1)	3.6 (1)
Toluene (CAS 129-00-0)	0.045 (1)	36 (1)
Xylene(s) (108-88-3)	0.011 (1)	14 (1)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
Cyanides(total)	0.011 (1)	22 (1)
Chromium(total) (CAS 57-12-5)	0.28 (1)	1.8 (1)
Lead (CAS 7440-47-32)	0.2	NA
(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 50-32-8)	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		
Naphthalene (CAS 100-41-4)	0.011 (1)	14 (1)
Phenanthrene (CAS 91-20-3)	0.033 (1)	42 (1)
Phenol (CAS 85-01-8)	0.039 (1)	34 (1)
Pyrene (CAS 108-95-2)	0.047 (1)	3.6 (1)
Toluene (CAS 129-00-0)	0.045 (1)	36 (1)
Xylene(s) (CAS 108-88-3)	0.011 (1)	14 (1)
Cyanides(total)	0.011 (1)	22 (1)
Chromium(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Lead (CAS 7440-47-32)	0.2	NA
(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		
Bis(2-ethylhexyl)phthalate (117-81-7)	0.047 (1)	12 (1)
(CAS 75-15-0)	0.043 (1)	7.3 (1)
Chrysene		
Di-n-butyl phthalate (CAS 2218-01-09)		
Ethylbenzene (CAS 105-67-9)	0.043 (1)	15 (1)
Fluorence	0.06 (1)	3.6 (1)
Naphthalene (CAS 100-41-4)		
Phenanthrene (CAS 86-73-7)	0.011 (1)	14 (1)
Phenol (CAS 91-20-3)	0.05 (1)	NA
Pyrene (CAS 85-01-8)	0.033 (1)	42 (1)
Toluene (CAS 108-95-2)	0.039 (1)	34 (1)
Xylene(s) (CAS 129-00-0)	0.047 (1)	3.6 (1)
Cyanides(total) (CAS 108-88-3)	0.045 (1)	36 (1)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
Chromium(total)	0.011 (1)	14 (1)
Lead (CAS 57-12-5)	0.11 (1)	22 (1)
(CAS 7440-47-32)	0.028 (1)	1.8 (1)
(CAS 7439-92-1)	0.2	NA
	0.037	NA
K052*		
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		
Naphthalene (CAS 100-41-4)	0.011 (1)	14 (1)
Phenanthrene (CAS 91-20-3)	0.033 (1)	42 (1)
Phenol (CAS 85-01-8)	0.039 (1)	34 (1)
Toluene (CAS 108-95-2)	0.047 (1)	3.6 (1)
Xylenes (CAS 108-88-3)	0.011 (1)	14 (1)
Cyanides (total)	0.011 (1)	22 (1)
Chromium (total) (CAS 57-12-5)	0.28 (1)	1.8 (1)
Lead (CAS 7440-47-32)	0.2	NA
(CAS 7439-92-1)	0.037	NA
K060		
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
K061*		
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
K062*		
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
K069***		
Cadmium (CAS 7440-43-9)	1.6	NA
Lead (CAS 7439-92-1)	0.51	NA
K071*		
Mercury (CAS 7439-97-6)	0.030	NA
K073		
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	6.2 (1)
Chloroform (CAS 67-66-3)	0.046 (2)	6.2 (1)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
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)
K083*		
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
K084		
Arsenic (CAS 7440-38-2)	0.79	NA
K085		
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 (CAS 95-94-3)	0.055 (2)	4.4 (1)
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 (CAS 117-81-7)	0.28 (2)	28 (1)
n-Butyl alcohol (CAS 71-36-3)	5.6	2.6 (1)
Butylbenzylphthalate (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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
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)
Nit. obenzene (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)	0.04 (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)	1.9	1.5
Chromium (Total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.037	NA
K087*		
Acenaphthalene (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)
Indeno(1,2,3-cd)pyrene (CAS 193-39-5)	0.028 (1)	3.4 (1)
Naphthalene		
Phenanthrene (CAS 91-20-3)	0.028 (10)	3.4 (1)
Toluene (CAS 85-01-8)	0.028 (1)	3.4 (1)
Xylenes (CAS 108-88-3)	0.008 (1)	0.65 (1)
Lead	0.014 (1)	0.07 (1)
(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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
K095		
1,1,1,2-Tetrachloroethane (CAS 630-20-6)	0.057	5.6 (1)
1,1,2,2-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)
1,1,2,2-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)
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)
Terachlorodibenzofurans	0.001 (1)	0.001 (1)
K100*		
Cadmium (CAS 7440-43-9)	1.6	NA
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.51	NA
K101		
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

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
K102*		
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
K103		
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)
K104		
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)
K105		
Benzene (CAS 71-43-2)	0.14	4.4 (1)
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)		

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
Arsenic (CAS 7440-38-2)	0.79	NA
P013* (Barium cyanide)		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	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)
P029 (Copper cyanide)		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.1	9.1
P030 (Cyanides (soluble salts and complexes))		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amendable) (CAS 57-12-5)	0.1	9.1
P036* (Dichlorophenylarsine)		
Arsenic (CAS 7440-38-2)	0.79	NA
P037		
Dieldrin (CAS 60-57-1)	0.017 (2)	0.13 (1)
P038* (Diethylarsine)		
Arsenic (CAS 7440-38-2)	0.79	NA
P039		
Disulfoton (CAS 298-04-4)	0.017	0.1 (1)
P047		
4,6-Dinitro-o-cresol (CAS 534-52-1)	0.28	160 (1)
P048		
2,4-Dinitrophenil (CAS 51-28-5)	0.12 (2)	160 (1)
P050		
Endosulfan I (CAS 939-98-8)	0.023 (2)	0.066 (1)
Endosulfan II (CAS 33213-6-5)	0.029 (2)	0.13 (1)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
Endosulfan sulfate (CAS 1031-07-8)	0.029 (2)	0.13 (1)
P051		
Endrin (CAS 72-20-8)	0.0028 (2)	0.13 (1)
Endrin aldehyde (CAS 7421-93-4)	0.025 (2)	0.13 (1)
P056**		
Fluoride (CAAS 16964-48-8)	35	NA
P059		
Heptachlor (CAS 76-44-8)	0.0012 (2)	0.066 (1)
Heptachlor epoxide (CAS 1024-57-3)	0.016 (2)	0.066 (1)
P060		
Isodrin (CAS 465-73-6)	0.021 (2)	0.066 (1)
P063 (Hydrogen cyanide)		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	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)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	9.1
Nickel (CAS 7440-02-0)	0.44	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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
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
P099* (Potassium silver cyanide) Cyanides (Total) (CAS 57-12-5) Cyanides (Amenable) (CAS 57-12-5) Silver (CAS 7440-22-4)	1.9 0.1 0.29	110 9.1 NA
P101 Ethyl cyanide (Propanenitrite) (CAS 107-12-0)	0.24 (2)	360 (1)
P103* (Selemourea) Selenium (CAS 7782-49-2)	1.0 (2)	NA
P104* (Silver cyanide) Cyanides (Total) (CAS 57-12-5) Cyanides (Amendable) (CAS 57-12-5) Silver (CAS 7440-22-4)	1.9 0.10 0.29	110 9.1 NA
P106 (Sodium cyanide) Cyanides (Total) (CAS 57-12-5) Cyanides (Amenable) (CAS 57-12-5)	1.9 0.10	110 9.1
P110*** (Tetraethyl lead) Lead (CAS 7439-92-1)	0.040	NA
P113** (Thallic oxide) Thallium (CAS 7440-28-0)	0.14 (2)	NA
P114* (Thallium selenite) Selenium (CAS 7782-49-2)	1.0	NA

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
P115** (Thallium(1)sulfate) Thallium (CAS 7440-28-0)	0.14 (2)	NA
P119** (Ammonia vandate) Vanadium (CAS 7440-62-2)	28 (2)	NA
P120** (Vanadium pentoxide) Vanadium (CAS 7440-62-2)	28 (2)	NA
P121 (Zinc cyanide) Cyanides (Total) (CAS 57-12-5) Cyanides (Amenable) (CAS 57-12-5)	1.9 0.10	110 9.1
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 107-13-1)	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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
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)
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-Chloronaphalene (CAS 91-58-7)	0.055 (2)	5.6 (1)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
U048 2-Chlorophenol (CAS 95-57-8)	0.044 (2)	5.7 (1)
U050 Chrysene (CAS 218-01-9)	0.059 (2)	8.2 (1)
U051* (Creosote)		
Napthalene (CAS 91-20-3)	0.031	1.5 (1)
Pentachlorophenol (CAS 87-86-5)	0.18	7.4 (1)
Phenanthrene		
Pyrene (CAS 85-01-8)	0.031	1.5 (1)
Toluene (CAS 129-00-0)	0.028	1.5 (1)
Xylenes (Total) (CAS 108-88-3)	0.028	28 (1)
Lead	0.032	33 (1)
(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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (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-Dichlorophenol (CAS 78-87-5)	0.85 (2)	18 (1)
U084 (1,3-Dichloropropene) cis-1,3-Dichloropropylene (CAS 10061-01-5) trans-1,3-Dichloropropylene (CAS 10061-02-6)	0.036 (2) 0.036 (2)	18 (1) 18 (1)
U088 Diethyl phthalate (CAS 84-66-2)	0.54 (2)	28 (1)
U093** p-Dimethylaminoazobenzene (CAS 60-11-7)	0.13 (2)	NA

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
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-propylnitrosoamine (CAS 621-64-7)	0.40 (2)	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 Floranthene (CAS 206-44-0)	0.068 (2)	8.2 (1)
U121 Trichloromonofluoromethane (CAS 75-69-4)	0.020 (2)	33 (1)
U127 Hexachlorobutadiene (CAS 118-74-1)	0.055 (2)	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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
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)	0.0055 (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
U146* (Lead subacetate) Lead (CAS 7439-92-1)	0.040	NA
U151*** Mercury (CAS 7439-97-6)	0.030	NA

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
U152 Methacrylonitrile (CAS 126-98-7)	0.24 (2)	84 (1)
U154 Methanol (CAS 67-56-1)	5.6	NA
U155 Methacrylonitrile (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)
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-Nitrosopipendien (CAS 100-75-4)	0.013 (2)	35 (1)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
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
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)

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes
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)
U228 Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
U235 tris-(2,3-Dibromopropyl) phosphate (CAS 126-72-7)	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

Appendix 4-7 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS No.	Concentrations	
	Wastewaters (mg/L) Notes	Nonwastewaters (mg/kg) Notes

U247 Methoxychlor (CAS 72-43-5)	0.25 (2)	0.18 (1)
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*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

- (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.
- (2) Based on analysis of composite samples.
- (3) As analyzed using SW-846 Method 9010 or 9012; sample size 10 g; distillation time 1 h and 15 min.

Appendix 4-8

Land Disposal Restricted Wastes Treatment Standards (40 CFR 268, Appendix II)

CONSTITUENTS OF F001-F005 SPENT SOLVENT WASTE	EXTRACT CONCENTRATIONS ^a (in milligrams per liter)	
	WASTEWATER ^b	OTHER ^c
Acetone	0.05	0.59
n-Butyl alcohol	5.00	5.00
Carbon disulfide	1.05	4.81
Carbon tetrachloride	0.05	0.96
Chlorobenzene	0.15	0.05
Cresols (cresylic acid)	2.82	0.75
Cyclohexanone	0.125	0.75
1,2-Dichlorobenzene	0.65	0.125
Ethyl acetate	0.05	0.75
Ethylbenzene	0.05	0.053
Ethyl ether	0.05	0.75
Isobutanol	5.00	5.00
Methanol	0.25	0.75
Methylene chloride	0.20	0.96
Methyl ethyl ketone	0.05	0.75
Methyl isobutyl ketone	0.05	0.33
Nitrobenzene	0.66	0.125
Pyridine	1.12	0.33
Tetrachloroethylene	0.079	0.05
Toluene	1.12	0.33
1,1,1-Trichloroethane	1.05	0.41
1,1,2 Trichloro-1,2,2-trifluoroethane	1.05	0.96
Trichloroethylene	0.062	0.091
Trichlorofluoromethane	0.05	0.96
Xylene	0.05	0.15

^a An extract of the waste is obtained by employing the Toxicity Characteristic Leaching Procedure (TCLP). The TCLP is an analytical method used to determine whether the concentrations of hazardous constituents in the waste extract or an extract of the treatment residual meet the treatment standards.

^b For determining the applicable treatment standard, F-solvent wastewaters are defined as solvent-water mixtures containing less than or equal to 1% total organic carbon (TOC).

^c Wastewaters that contain > 1% TOC solvent-containing solids, solvent-containing sludges, and solvent-contaminated soils.

Appendix 4-9

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), 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 and is not a listed waste.
7. Mixtures of used oil and conditionally exempt small quantity generator hazardous waste.
8. Mixtures of used oil and fuels or other fuel products except those marked onsite by the generator for use in the generators 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 ^o 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).

Appendix 4-9 (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), 279.10(f) through 279.10(i))

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.

INSTALLATION:	COMPLIANCE CATEGORY: RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE C ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (3) Shop Foreman (4) Accumulation Point Manager (12) Environmental Coordinator (EC) (18) Safety Officer

Section 5

**RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE D
(RCRA-D)**

SECTION 5

RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE D (RCRA-D)

A. Applicability of this Protocol

This protocol addresses the collection, storage, and disposal of solid waste on Army Reserve facilities.

Solid waste is considered to be nonhazardous trash, rubbish, garbage, bulky wastes, liquids, or sludges generated by any Army Reserve facilities operations and activities. It also includes any medical/pathological wastes generated by the Army Reserve medical unit. The handling and disposal of asbestos waste materials are addressed in Section 13, *Asbestos Management Program*.

Recycling and resource recovery activities are also included in this protocol, since this form of solid waste management is required by Department of Defense (DOD) and U.S. Army directives.

Minimum solid waste management regulations have been established at the Federal level. However, state and local governments are responsible for managing and enforcing their solid waste management programs. The checklist items in this protocol represent the minimum Federal standards. Since some of these standards may differ from the state, a previsit analysis of specific state and local solid waste regulations is required to conduct a thorough review of this area.

B. Federal Legislation

- The *Solid Waste Disposal Act* of 1965 established grant programs for the development of solid waste management plans by states and/or interstate agencies and was enacted for the primary purpose of improving solid waste disposal methods.
- The *Resource Conservation and Recovery Act of 1976*, as amended, is the Federal law which governs the disposal of solid waste. Subtitle D of this act, i.e., state or Regional Solid Waste Plans, as last amended in November 1984, Public Law (PL) 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 *Hazardous and Solid Waste Amendments of 1984* amended the SWDA and substantially increased the Federal government's involvement in waste management. These amendments required the USEPA to revise the RCRA Subtitle D criteria for solid waste facilities that may receive hazardous household waste or hazardous waste from small quantity generators (SQGs).
- The *Military Construction Codification Act*. This Act, PL 97-214, effective 1 October 1982, defines solid waste recycling in the DOD. It defines recyclable materials and increases the incentives for participation in installation recycling programs by increasing the options for the use of sales proceeds. Section 203 of the *Federal Property and Administrative Service Act of 1949* governs the procedures for the sale of recyclable materials in the Army.
- The next reauthorization of RCRA is expected to significantly change Subtitle D. The reauthorization may affect Army Reserve obligations under RCRA.

C. State/Local Requirements

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 criterias for municipal solid waste landfills (MSWLFs) into their permit programs and gain approval from 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.

D. DOD Regulations

- DOD Directive 4100.15, *Commercial and Industrial Activities*, sets the overall policy that military installations shall not compete with a locally available commercial recycling industry which offers a total solid waste resource recovery system and that regional resource recovery programs shall be used whenever practical.
- DOD Directive 4165.60, *Solid Waste Collection, Disposal, Material Recovery, and Recycling*, 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. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, Chapter 6, *Solid Waste and Hazardous Waste Management Program*, defines Army policy and responsibilities for managing solid waste, including resource recovery, recycling, waste reduction, and training programs. It mandates compliance with local, state, and Federal solid waste requirements, to assure waste management practices the protection of human health and the environment, to reduce the need for corrective action, and minimize waste generation and disposal.
- AR 420-47, *Solid and Hazardous Waste Management*, remains in force with the exception of Chapters 5 and 6, appendices a, b, and c, and the glossary, which have been superseded by AR 200-1. The remaining chapters cover responsibilities regarding solid and hazardous waste, collection and storage of both solid and hazardous waste, thermal processing and land disposal of solid (nonhazardous) waste, and monitoring records.
- AR 40-5, *Preventive Medicine*, establishes practical measures for the preservation and promotion of health and the prevention of disease and injury.

The Department of the Army (DA) objective is to manage Army Reserve facility solid waste to ensure compliance with appropriate Federal, state, and DA regulations in a manner that permits maximum opportunity for resource recovery without jeopardizing natural resources or health and the environment.

- AR 215-1, *Administration of Morale, Welfare and Recreation (MWR) Activities and Non-Appropriated Funds Instrumentalities (NAFIs)* contains guidance for the involvement of NAFI activities in the recycling program.

F. Key Compliance Requirements

- **Permits and Licenses for Onsite Landfills** - Army Reserve facilities must obtain applicable state or local permits and licenses for the site location and operation of onsite landfills. They must follow Federal and state regulations pertaining to the design, operation, monitoring, and closure of landfills.
- **Hazardous Waste** - Substances regulated as hazardous waste by Federal, state, or local regulations may not be disposed of in facilities permitted for nonhazardous waste disposal. RCRA, the Hazardous and Solid Waste Amendments of 1984, and specific state and local regulations will apply.
- **Waste Source Separation, Source Separation, Resource Recovery, and Recycling** - Army Reserve facilities are required to comply with Federal, state, and local regulations and requirements pertaining to these practices.
- **Use of Properly Permitted Offsite Landfills** - Army Reserve facilities have the responsibility for the proper disposal of solid waste generated by Army Reserve operations. This responsibility includes assurance that offsite landfills that receive Army Reserve facility solid wastes are licensed and are operated in compliance with the conditions of those permits.
- **Garbage On or In Vessels and Aircraft Arriving From Outside the United States** - Army Reserve facilities located in the United States and territories and possessions are required to comply with certain United States Department of Agriculture (USDA) inspection and disposal requirements if they receive garbage from vessels and aircraft arriving from outside the United States. These regulations are designed to prevent the spread of plant pests and animal diseases.

G. Key Compliance Definitions

These definitions were obtained from Federal, DOD, and U.S. ARs cited previously in this protocol.

- **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 whose 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).
- *Commercial Solid Waste* - all types of solid waste generated by stores, offices, restaurants, warehouses, and other non-manufacturing activities, excluding residential and industrial wastes (40 CFR 243.101).
- *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).
- *Contaminated* - the presence of 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 bloodborne 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 (h) of continuous operation (40 CFR 240.101(d)).
- *Existing Municipal Solid Waste Landfill (MSWLF)* - any municipal solid waste landfill unit that is receiving solid wastes as of 9 October 1993 (40 CFR 258.2).
- *Facility* - all contiguous land and structures, other appurtenances and improvement on the land use 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).
- *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 including 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)).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *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).
- *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 MSWLFs, 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* - 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 (40 CFR 240.101).
- *Institutional Solid Waste* - solid wastes generated by educational, health care, correctional and other institutional facilities (40 CFR 243.101).
- *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).
- *Medical/Pathological Wastes* - any solid waste that is generated in the diagnosis, treatment, or 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 receives 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-D wastes, such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator (CESQG) waste and industrial 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* - any municipal solid waste landfill unit that has not received waste prior to 9 October 1993 (40 CFR 258.2).
- *Open Burning* - in relation to MSWLFs, the combustion of solid waste without (40 CFR 258.2):
 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.
- *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).
- *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).

- *Recycled Material* - a material that is used in place of a primary, raw, or virgin material in manufacturing a product (40 CFR 245.101).
- *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).
- *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 MSWLFs, 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 semi-liquid suspension of settled solids deposited from waste waters or other fluids in tanks or basins (40 CFR 240.101).

- *Sludge* - in relation to MSWLFs, 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 258.2).
- *Solid Waste* - in relation to MSWLF, any garbage, or refuse, 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, or 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 240.202).

- *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).

**RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE D
(RCRA-D)**

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Facilities	5-1 through 5-5	(1)(2)
Recycling	5-6 through 5-9	(1)(2)(12)(18)
Solid Waste Storage/Collection	5-10 through 5-20	(1)(2)(5)(12)(18)
Specific Wastes	5-21 through 5-24	
Land Disposal Sites Other Than MSWLFs		
Operations	5-25 through 5-43	
Closure	5-44	
Site Criteria For New Landfills	5-45 through 5-47	
Municipal Solid Waste Landfills		
Location Restrictions	5-48 through 5-53	
Operating criteria	5-54 through 5-64	
Groundwater monitoring criteria	5-65 through 5-76	
Closure criteria	5-77 through 5-81	
Postclosure care requirements	5-82 through 5-84	
Design criteria	5-85 and 5-86	

Items numbered 5-8 and 5-21 through 5-103 are not Army Reserve applicable and are not included in this manual.

(a) CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager
- (5) Directorate of Engineering and Housing (DEH)/DPW
- (12) Environmental Coordinator (EC)
- (17) Preventive Medicine Officer/Health Physician
- (18) Safety Officer

**RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE D
(RCRA-D)**

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
Thermal Processing Facilities	5-87 through 5-101	
Resource Recovery Facilities	5-102 and 5-103	
Disposal of Refuse From Outside the United States	5-104	(1)(2)(12)(18)
Medical/Pathological Wastes	5-105 through 5-112	(1)(17)(18)

Items numbered 5-8 and 5-21 through 5-103 are not Army Reserve applicable and are not included in this manual.

(a)CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager
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RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE D (RCRA-D)

Plans and Maps to Review

- Documentation of locations (map) and descriptions of all nonhazardous
- Regional solid waste management plan
- Installation solid waste management plans, Standard Operating Procedures (SOPs)

Records to Review

- Record of current nonhazardous solid waste management practices
- Records of operational history of all active and inactive landfill sites
- State and Federal inspection reports
- Environmental monitoring procedures or plans and analytical results
- Records of resource recovery practices, including the sale of materials for the purpose of recycling
- Solid waste removal contracts and inspection records
- Unique state and local rules for handling solid waste
- Any regulatory agreement, waivers, exemptions, inspection reports, compliance orders, and notices relating to solid waste program
- Groundwater monitoring data
- Operating record for onsite municipal solid waste landfill
- Estimate of generation rates

Physical Features to Examine

- Resource recovery facilities
- Incineration and land disposal facilities (active and inactive)
- Areas where nonhazardous waste is disposed
- Construction debris areas
- Waste receptacles (dining facilities, hospitals, labs, motorpools, industrial areas)
- Solid waste vehicle storage and washing areas
- Groundwater monitoring wells
- Methane gas vents at landfills
- Compost facilities
- Transfer stations
- Recycling centers
- DRMO facilities

People to Interview

- MUSARC Engineer/Facility Coordinator
- Facility Manager
- Directorate of Engineering and Housing (DEH)/DPW
- Environmental Coordinator (EC)
- Preventive Medicine Officer/Health Physician
- Safety Officer
- BASOPs ARCOM Environmental Managers

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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ALL FACILITIES</p> <p>5-1. Determine actions or changes since previous review of solid waste management (GMP).</p> <p align="center">...</p> <p>5-2. The ARCOM or Support Installation should maintain a current file of applicable Federal, DOD, U.S. Army, Army Reserve, and state regulations (GMP).</p> <p align="center">...</p>	<p>Examine copy of previous review report to determine if noncompliance issues have been resolved. (1)(2)</p> <p align="center">...</p> <p>Determine if copies of the following regulations, which are applicable, are current and available at the ARCOM or Support Installation: (1)</p> <ul style="list-style-type: none"> - 7 CFR 330, <i>Animal and Plant Health Inspection Service.</i> - 29 CFR 1910, <i>Occupational Safety and Health Standards.</i> - 40 CFR 240, <i>Guidelines for Thermal Processing of Solid Waste.</i> - 40 CFR 241, <i>Guidelines for Land Disposal of Solid Wastes.</i> - 40 CFR 243, <i>Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste.</i> - 40 CFR 245, <i>Promulgation Resource Recovery Facility Guidelines.</i> - 40 CFR 246, <i>Source Separation for Materials Recovery Guidelines.</i> - 40 CFR 260, <i>Hazardous Waste Management Systems.</i> - EO 12088, <i>Federal Compliance with Pollution Standards.</i> - DOD Directive 4100.15, <i>Commercial and Industrial Activities.</i> - DOD Directive 4165.60, <i>Solid Waste Collection, Disposal, Material Recovery, and Recycling.</i> - AR 40-5, <i>Preventive Medicine.</i> - AR 200-1, <i>Environmental Protection and Enhancement.</i> - AR 420-47, <i>Solid and Hazardous Waste Management.</i> - TN 420-47-02 - Applicable state and local regulations. <p>(NOTE: A consolidated listing of approved test methods should also be maintained at the facility such as <i>Test Methods for Evaluating Solid Waste, Physical/Chemical Methods</i>, USEPA Publication SW-846, Document #PB87-120-291.)</p> <p align="center">...</p>

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RESOURCE CONSERVATION
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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>5-3. Facilities are required to comply with appropriate state and local requirements (EO 12088, Section 1-1).</p> <p align="center">...</p> <p>5-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, reoccurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation, promotes good public relations and addresses systemic weakness in the overall operation of the program (GMP).</p> <p align="center">...</p>	<p>Verify that the facility is complying with state and local requirements. (1)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (1)(2)</p> <p>(NOTE: Issues which are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - license or permit requirements for existing onsite landfills - requirements for filing a closure plan for onsite landfills specifying monitoring and inspection procedures - design and operations specifications for solid waste receptacles - disposal of solid waste offsite only at a licensed or permitted facility - design and policy procedures of thermal processing of solid waste - analysis for hazardous properties of ash residues and sludge from air pollution control devices at coal-fired facility heating plant operations before sale or disposal - handling and disposal of medical, pathological, and infectious wastes - recycling requirements - yard waste - used tires.) <p align="center">...</p> <p>Determine what management systems are in place. (1)(2)</p> <p>Verify that the existing system addresses the issues associated with solid waste by: (1)(2)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p>Determine if training is being conducted. (1)(2)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>5-5. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p align="center">...</p>	<p>Determine if any new regulations concerning solid waste have been issued since the finalization of the manual. (1)</p> <p>Verify that the facility is in compliance with newly issued regulations. (1)</p> <p>(NOTE: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p align="center">...</p>
<p>RECYCLING</p> <p>5-6. Army facilities are required to participate in any state or local recycling programs and to reduce the volume of solid waste materials at the source whenever practical (DOD 4165.60, para V(a), V(c), and V(h), and AR 200-1, para 6-14a).</p> <p align="center">...</p>	<p>Determine if a solid waste reduction/resource recovery program exists. (1)(2)(12)(18)</p> <p>Verify that recycling program is in compliance with applicable state or local requirements. (1)(2)(12)(18)</p> <p>Verify that reusable or marketable materials are collected at regular intervals. (2)(12)</p> <p>Verify that proceeds from the sale of recyclables are properly distributed. (2)(12)</p> <p align="center">...</p>
<p>5-7. Facilities with office facilities of over 100 office workers are required to recover high-grade paper (40 CFR 246.200-1).</p> <p align="center">...</p>	<p>Determine if the facility has over 100 office workers. (2)(12)</p> <p>Verify that high-grade paper is separated at the source of generation. (2)(12)</p> <p>Verify that high-grade paper is separately collected. (2)(12)</p> <p>Verify that high-grade paper is recycled. (2)(12)</p> <p align="center">...</p>
<p>5-8.</p> <p align="center">...</p>	<p>This item is not Army Reserve applicable.</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>5-9. Any facility generating 10 or more tons of waste corrugated containers per month are required to segregate/separately collect for recycling or alternative energy use (40 CFR 246.202-1).</p> <p align="center">...</p>	<p>Determine if the facility generates 10 or more tons of waste corrugated containers per month. (2)(12)</p> <p>Verify that waste corrugated containers are collected separately. (2)(12)</p> <p>Verify that waste corrugated containers are recycled or used as a source for alternative energy. (2)(12)</p> <p align="center">...</p>
<p>SOLID WASTE STORAGE AND COLLECTION</p> <p>5-10. Army facilities are required to follow specific requirements for solid waste storage, collection, and cleaning of equipment (AR 200-1, para 6-12b and AR 420-47, para 3-4a).</p> <p align="center">...</p>	<p>Verify that all solid waste is stored such that: (2)(5)(12)</p> <ul style="list-style-type: none"> - it is not a fire, health, or safety hazard - it does not provide food or harborage for disease vectors - it is contained or bundled to prevent spills. <p>Verify that containers are properly cleaned. (1)(2)(12)(18)</p> <p align="center">...</p>
<p>5-11. Facility industrial shop waste receptacles should be inspected quarterly to verify that hazardous wastes are not being deposited (GMP).</p> <p align="center">...</p>	<p>Verify that receptacles were inspected by interviewing staff and reviewing records. (1)</p> <p>Verify that corrective actions were taken where indicated. (1)(2)(12)(18)</p> <p>Inspect a sample of solid waste receptacles at shops for presence of hazardous waste. (1)(2)(12)(18)</p> <p align="center">...</p>
<p>5-12. Facility personnel should be periodically informed about materials that are prohibited from disposal in solid waste receptacles (GMP).</p> <p align="center">...</p>	<p>Verify that a program exists at the facility to keep personnel informed about proper waste disposal practices. (1)(2)(12)(18)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>5-13. Facilities are required to store all solid wastes and materials separated for recycling according to specific guidelines (40 CFR 243.200-1).</p> <p align="center">...</p> <p>5-14. Food waste containers are required to be marked <i>Unauthorized Personnel Are Not To Enter Dumpster For Any Reason</i> (AR 420-47, para 3-4b(5)).</p> <p align="center">...</p> <p>5-15. All facilities 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 align="center">...</p> <p>5-16. Facilities are required to maintain collection equipment according to certain standards (40 CFR 243.202-1(a)).</p>	<p>Verify that all solid wastes are stored so as not cause a fire, health or safety hazard. (1)(2)(12)(18)</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. (1)(2)(12)(18)</p> <p>Verify that solid waste containers are of an adequate size and number to contain all waste generated between collections. (1)(2)(12)(18)</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. (1)(2)(12)(18)</p> <p>Verify that reusable containers are capable of being serviced without the collector coming into contact with the waste. (1)(2)(12)(18)</p> <p>(NOTE: Federal agencies that have decided not to adopt the requirements contained in 40 CFR 243 are required to provide a report of the analysis and rationale used.)</p> <p align="center">...</p> <p>Verify that dumpsters used for food products are correctly labeled. (1)(2)</p> <p align="center">...</p> <p>Verify that collection system is operated safely by interviewing collection system personnel to determine if health and safety procedures exist and how they are implemented. (1)(2)(12)(18)</p> <p align="center">...</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: (1)(2)(12)(18)</p> <ul style="list-style-type: none"> - Motor Carrier Safety Standards (49 CFR 390 through 396) - Noise Emission Standards for Motor Carriers Engaged in Interstate Commerce (40 CFR 202) - Federal Motor Vehicle Safety Standards (49 CFR 500 through 580) (Federally owned collection equipment only).

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>5-17. All collection equipment is required to meet specific criteria (40 CFR 243.202-1(b) and 243.202-1(c)).</p> <p align="center">...</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. (2)(12)</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. (2)(12)</p> <p>Verify that the following types of equipment meet the standards established by the American National Standards Institute: (2)(12)</p> <ul style="list-style-type: none"> - rear-loading compaction equipment - side-loading compaction equipment - front-loading compaction equipment - tilt-frame equipment - hoist-type equipment - satellite vehicles - special collection compaction equipment - stationary compaction equipment. <p align="center">...</p>
<p>5-18. All facilities are required to collect solid wastes or materials separated for recycling according to a certain schedule (40 CFR 243.203-1).</p> <p align="center">...</p>	<p>Verify that solid wastes which contain food wastes are collected at least once a week. (1)(2)(12)(18)</p> <p>Verify that bulky wastes are collected at a minimum of once every 3 mo. (1)(2)(12)(18)</p> <p>Verify that all wastes are collected with sufficient frequency to inhibit the propagation or attraction of vectors and the creation of nuisances. (1)(2)(12)(18)</p> <p align="center">...</p>
<p>5-19. Weekly collection is required for garbage from dining facilities and similar activities and family quarters (AR 420-47, para 3-7).</p> <p align="center">...</p>	<p>Verify that weekly collection is occurring. (1)(2)(12)</p> <p align="center">...</p>
<p>5-20. Facilities are required to collect solid waste in a safe and efficient manner (40 CFR 243.204-1).</p> <p align="center">...</p>	<p>Verify that solid wastes or materials separated for recycling are collected in a safe, efficient manner. (1)(2)(12)(18)</p> <p>Verify that the collection vehicle operator immediately cleans up any spillage caused by his or her operations. (1)(2)(12)(18)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>Specific Wastes</p> <p>5-21.</p> <p>5-22.</p> <p>5-23.</p> <p>5-24.</p> <p>LAND DISPOSAL SITES OTHER THAN MSWLFs</p> <p>Operations</p> <p>5-25.</p>	<p>This item is not Army Reserve applicable.</p> <p>This item is not Army Reserve applicable.</p> <p>This item is not Army Reserve applicable.</p> <p>This item is not Army Reserve applicable.</p> <p>This item is not Army Reserve applicable.</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
5-26.	This item is not Army Reserve applicable.
5-27.	This item is not Army Reserve applicable.
5-28.	This item is not Army Reserve applicable.
5-29.	This item is not Army Reserve applicable.
5-30.	This item is not Army Reserve applicable.
5-31.	This item is not Army Reserve applicable.
5-32.	This item is not Army Reserve applicable.
5-33.	This item is not Army Reserve applicable.
5-34.	This item is not Army Reserve applicable.
5-35.	This item is not Army Reserve applicable.
5-36.	This item is not Army Reserve applicable.
5-37.	This item is not Army Reserve applicable.
5-38.	This item is not Army Reserve applicable.
5-39.	This item is not Army Reserve applicable.
5-40.	This item is not Army Reserve applicable.
5-41.	This item is not Army Reserve applicable.
5-42.	This item is not Army Reserve applicable.
5-43.	This item is not Army Reserve applicable.
Closure	
5-44.	This item is not Army Reserve applicable.
SITE CRITERIA FOR NEW LANDFILLS	
5-45.	This item is not Army Reserve applicable.
5-46.	This item is not Army Reserve applicable.
5-47.	This item is not Army Reserve applicable.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>MUNICIPAL SOLID WASTE LANDFILLS (MSWLF)</p> <p>Location Restrictions</p> <p>5-48.</p> <p>5-49.</p> <p>5-50.</p> <p>5-51.</p> <p>5-52.</p> <p>5-53.</p>	<p>This item is not Army Reserve applicable.</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
Operating Criteria 5-54. 5-55. 5-56. 5-57. 5-58. 5-59. 5-60. 5-61. 5-62. 5-63. 5-64.	This item is not Army Reserve applicable. This item is not Army Reserve applicable.
Groundwater Monitoring Criteria 5-65. 5-66. 5-67. 5-68. 5-69. 5-70. 5-71. 5-72. 5-73. 5-74. 5-75. 5-76.	This item is not Army Reserve applicable. This item is not Army Reserve applicable.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>Closure Criteria</p> <p>5-77.</p> <p>5-78.</p> <p>5-79.</p> <p>5-80.</p> <p>5-81.</p>	<p>This item is not Army Reserve applicable.</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
Postclosure Care Requirements	
5-82.	This item is not Army Reserve applicable.
5-83.	This item is not Army Reserve applicable.
5-84.	This item is not Army Reserve applicable.
Design Criteria	
5-85.	This item is not Army Reserve applicable.
5-86.	This item is not Army Reserve applicable.
THERMAL PROCESSING FACILITIES	
5-87.	This item is not Army Reserve applicable.
5-88.	This item is not Army Reserve applicable.
5-89.	This item is not Army Reserve applicable.
5-90.	This item is not Army Reserve applicable.
5-91.	This item is not Army Reserve applicable.
5-92.	This item is not Army Reserve applicable.
5-93.	This item is not Army Reserve applicable.
5-94.	This item is not Army Reserve applicable.
5-95.	This item is not Army Reserve applicable.
5-96.	This item is not Army Reserve applicable.
5-97.	This item is not Army Reserve applicable.
5-98.	This item is not Army Reserve applicable.
5-99.	This item is not Army Reserve applicable.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>5-100.</p> <p>5-101.</p> <p>RESOURCE RECOVERY FACILITIES</p> <p>5-102.</p> <p>5-103.</p> <p align="center">...</p> <p>DISPOSAL OF REFUSE FROM OUTSIDE THE UNITED STATES</p> <p>5-104. Garbage from outside the United States which is on or unloaded from vessels or aircraft arriving in the United States and certain territories and possessions is subject to certain inspection and disposal requirements to prevent dissemination of pests and diseases (7 CFR 330.400 (d) and 330.400(g) (1 and 2)).</p> <p align="center">...</p>	<p>This item is not Army Reserve applicable.</p> <p align="center">...</p> <p>Verify that garbage on or unloaded from vessels or aircraft arriving in the places listed below complies with certain inspection and disposal requirements: (1)(2)(12)(18)</p> <ul style="list-style-type: none"> - the United States from any place outside of the United States - the continental United States from Hawaii or any territory or possession - any territory or possession from any other territory or possession or Hawaii - Hawaii from any territory or possession. <p>Inspect arriving vessels and aircraft and observe that: (1)(2)(12)(18)</p> <ul style="list-style-type: none"> - garbage is contained in tight leakproof covered receptacles inside guard rails on vessels - garbage is removed in tight, leakproof covered containers under direction of United States Department of Army (U.S. DA) inspector to an approved facility for incineration, sterilization, or grinding into an approved sewage system, or - garbage is removed for other handling and under supervision approved by the U.S. DA. <p>Verify that the facility has received approval from Administrator, Animal and Plant Health Inspection Service, U.S. DA for use of sewage system for disposal. (1)(2)(12)(18)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>MEDICAL/ PATHOLOGICAL WASTES</p> <p>5-105. Both medical/pathological waste, and classified material incinerators should be secured to prevent unauthorized use (GMP). ...</p> <p>5-106. Ash from medical waste incinerators should be tested to determine whether or not it is required to be disposed of as other than solid waste (GMP). ...</p> <p>5-107. 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>5-108. Specimens of blood or other potentially infectious material are required to be placed in a container that prevent leakage during collection, handling, processing, storage, transport, or shipping and specific labeling and handling requirements are followed (29 CFR 1910.1030(d)(2)(xiii)).</p>	<p>Verify that incinerators are enclosed and have locks on doors and control cabinets. (1)(17)(18) ...</p> <p>Verify that ash is tested for heavy metals and is disposed of according to test results. (1)(17)(18) ...</p> <p>Verify that contaminated reusable sharps are placed in containers that are: (1)(17)(18) - puncture resistant - labeled or color coded - leakproof on the sides and bottom. 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)(17)(18) ...</p> <p>Verify that containers are: (1)(17)(18) - labeled and color coded - closed prior to being stored, transported or shipped. (NOTE: If 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.) Verify that if outside contamination of the primary container occurs, it is placed in a second container. (1)(17)(18) Verify that if the specimens could puncture the primary container, the primary container is placed in a secondary container which is puncture resistant. (1)(17)(18)</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>5-109. Contaminated sharps are required to be discarded immediately in containers meeting specific requirements (29 CFR 1910.1030(d)(4)(iii)(A)).</p> <p align="center">...</p>	<p>Verify that contaminated sharps are placed in containers that are: (1)(17)(18)</p> <ul style="list-style-type: none"> - closeable - puncture resistant - leakproof on sides and bottoms - labeled or color coded. <p>Verify that during use, containers for contaminated sharps are: (1)(17)(18)</p> <ul style="list-style-type: none"> - easily accessible - maintained upright throughout use - replaced routinely and not allowed to overfill <p>Verify that when the containers of contaminated sharps are being moved from the area of use, the containers: (1)(17)(18)</p> <ul style="list-style-type: none"> - are closed - placed in a secondary container if leakage is possible. <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)(17)(18)</p> <p align="center">...</p>
<p>5-110. 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 align="center">...</p>	<p>Verify that regulated wastes are placed in containers that: (1)(17)(18)</p> <ul style="list-style-type: none"> - are closeable - constructed to contain all contents and prevent leakage of fluids - labeled or color coded - closed prior to removal. <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)(17)(18)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
RESOURCE CONSERVATION
AND RECOVERY ACT, SUBTITLE D (RCRA-D)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>5-111. 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 align="center">...</p> <p>5-112. 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 receptacles with the potential for contamination are regularly inspected and decontaminated. (1)(17)(18)</p> <p align="center">...</p> <p>Verify that the labels: (1)(17)(18)</p> <ul style="list-style-type: none"> - include the biohazard symbol - are fluorescent orange or orange-red or predominantly so, with lettering and symbols in contrasting color - are affixed as closely as possible to the container to prevent loss or removal. <p>(NOTE: Red bags or containers may be used as a substitute for labels.)</p> <p>(NOTE: The following are exempt from labelling requirements:</p> <ul style="list-style-type: none"> - 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 - individual containers of blood or other potentially infectious materials that are placed in a labeled container during storage, transport, shipment or disposal.) <p>(NOTE: Regulated waste that has been decontaminated need not be labeled or color coded.)</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (17) Preventive Medicine Officer/Health Physician (18) Safety Officer

INSTALLATION:	COMPLIANCE CATEGORY: RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE D (RCRA-D) ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (17) Preventive Medicine Officer/Health Physician (18) Safety Officer

Section 6

**RESOURCE CONSERVATION AND RECOVERY ACT,
SUBTITLE I (RCRA-I)**

SECTION 6

RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE I (RCRA-I)

A. Applicability of this Protocol

This protocol covers management of underground hazardous materials storage tanks, underground Petroleum, Oil, and Lubricant (POL) bulk storage tanks, pipeline delivery systems, truck fill stands, and fueling/defueling flight line operations. POL materials addressed include jet fuel (JP-4), AVGAS, MOGAS, diesel fuel, and lubricating oils. Waste petroleum based solvents (including PD-680) are addressed in Section 4, *RCRA-C*.

In addition to the requirements outlined in this section, buried metallic tanks are addressed in Section 2, *Clean Water Act (CWA)*.

B. Federal Legislation

- *The Resource Conservation and Recovery Act (RCRA), Subtitle I, as amended.* This law, Public Law (PL) 99-49 (42 U.S. Code (USC) 6991-6991i), established the standards and procedures for underground storage tanks (USTs). It requires 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)).
- *The Federal Facilities 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*.

C. State/Local Requirements

Many state and local governments also have active UST programs. These various governments have developed regulations specific to the physical environment and the regulated communities' needs. Review regulations at the state and local level to ensure that any differences, such as reporting or notice requirements, and monitoring requirements are being complied with. In all cases, the most stringent regulation should be followed.

D. Department of Defense (DOD) Regulations

- DOD Directive 4140.25M, *Procedures for the Management of Petroleum Products*, describes procedures for the management of petroleum products on military installations.
- DOD Directive 5030.41, *Oil and Hazardous Substances Pollution Prevention and Contingency Program*, addresses requirements for compliance with the National Oil and Hazardous Substances Pollution Contingency Plan (OHSCP).
- Defense Environmental Quality Program Policy Memorandum (DEQPPM) 79-3, *Management of Recoverable and Waste Liquid Petroleum Products*, addresses the management of recoverable and waste liquid petroleum products.

E. U.S. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, requires compliance with the most stringent Federal, state, local, host nation, and Army requirements for USTs. It further lifts the categorical exclusion granted to heating oil tanks under Subtitle I of RCRA. Chapter 5, paragraph 7, outlines the basic Army UST requirements to follow in the absence of more stringent regulations.
- AR 420-49, *Heating, Energy Selection, and Fuel Storage, Distribution, and Dispensing Systems*.

F. Key Compliance Requirements

- Petroleum Product Environmental Release Reporting - Army Reserve facilities are required to notify USEPA and appropriate state agencies when a release of a reportable quantity of POL material enters a navigable water (40 Code of Federal Regulations (CFR) 302).
- Spill Response Training - All Army Reserve personnel involved with the management and handling of oil and hazardous substances must take part in periodic spill prevention and response training programs (40 CFR 112.7, 264.16, and 265.16).
- New Petroleum USTs installed after December 1988, must be certified that the tank and piping were properly installed; the tank must be equipped with devices to prevent spills and overflow; correct filling practices must be followed; the tank and piping must be protected from corrosion; and both the tank and piping must be equipped with leak detection.

- Existing Petroleum USTs installed before December 1988, must have corrosion protection for steel tanks and piping, and devices that prevent spills and overfills installed by December 1998.
- UST Leaks must be corrected following short and long term requirements.
- Closure procedures must be followed when a UST is temporarily or permanently closed.
- Reporting to regulatory agencies must be accomplished for installation, closure, and suspected releases.
- Records must be maintained to prove leak detection performance, inspection of corrosion protection systems, proper repair or upgrade, and to document proper closure.
- New Chemical USTs installed after December 1988, containing hazardous materials (no UST is to be used to store hazardous wastes) must meet the same installation, corrosion protection, spill and overfill prevention, corrective action, and closure requirements, but must also have secondary containment and interstitial monitoring.
- Existing Chemical USTs installed before December 1988, must meet the same standards as existing petroleum USTs leak detection and must be installed on an accelerated schedule. In addition, chemical USTs must have secondary containment in place by 1998.
- Equipment used after 22 December 1990 to comply with the release detection requirements must have documentation that demonstrated its performance meets the standards outlined in 40 CFR 280.40(a)(3).
- Release Detection for USTs - 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 the 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 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.**
 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. 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 years (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:

1. **Below-grade piping must operate at less than atmospheric pressure**
2. **Below-grade piping must be sloped to drain back into the tank when suction is released**
3. **Only one check valve can be included in each suction line**
4. **Check valve shall be located directly below and as close as practical to the suction pump**
5. **Criteria in paragraphs 2 through 4 must be verifiable.**

G. Key Compliance Definitions

These definitions were obtained from the various Federal, DOD, and ARs cited previously in this section.

- ***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).
- ***Belowground 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 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).
- ***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 280.14).
- ***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).
- ***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).
- ***Comprehensive Environmental Response Compensation and Liability Act*** - CERCLA of 1980 as amended (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, this 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).
- **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 (40 CFR 280.10(c)). These tanks include:
 1. Wastewater treatment tank systems
 2. Any UST system containing radioactive materials that are significant under the *Atomic Energy Act of 1954*
 3. Any UST system that is a part of an emergency generator system at a 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 (i.e., tank from piping) (40 CFR 280.12).
- **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** - USTs which are not required to meet the requirements of 40 CFR 280, including: (40 CFR 280.10(b))
 1. any UST system holding hazardous wastes listed under Subtitle C of the *Solid Waste Disposal Act (SWDA)*, or a mixture of such hazardous wastes and other regulated substances
 2. any wastewater treatment tank systems that are a part of a wastewater treatment facility regulated under Section 402 or 307(b) of the *Clean Water Act (CWA)*
 3. equipment or machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment
 4. any UST system whose capacity is 100 gallons (gal) or less
 5. any UST 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.

- **Existing Tank System** - a tank system used to contain an accumulation of regulated substances, and for which installation began on or before 22 December 1988. Installation is considered to have commenced if: (40 CFR 280.14).
 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. either a continuous onsite physical construction or installation program has begun or the owner or operator has entered into any contractual obligations which cannot be canceled or modified without substantial loss, 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 to store material before introduction into the production process or to store 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 (i.e., liquid not dissolved in water) (40 CFR 280.14).

- **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).

- **Good Management Practice (GMP)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.

- **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).
- **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 (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).
- **Implementing Agency** - when a state has an approved UST program the implementing authority is the designated state or local agency responsible for the programs, otherwise the implementing agency is the USEPA (40 CFR 280.14).
- **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).
- **Maintenance** - the normal operational upkeep to prevent a UST system from releasing a 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 System** - a tank system that will be used to contain an accumulation of regulated substances and for which installation commenced after 22 December 1988 (40 CFR 280.14).
- **Noncommercial Purposes** - with respect to motor fuel, not for resale (40 CFR 280.12).
- **On the Premises Where Stored (Heating Oil)** - UST systems located on the same property where 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 280.14).
- **Owner** -
 1. In the case of a UST system in use on 8 November 1984, or brought into use after that date, any person who owns a UST system used for storage, use, or dispensing of regulated substance
 2. In the case of any UST system in use before 8 November 1984, but no longer in use on that date, any person who owned the UST immediately before the discontinuation of its use (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 United States Government (40 CFR 280.12).
- **Petroleum UST System** - a UST tank 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 non-earthen materials (40 CFR 280.12).
- **Pipeline Facilities** - new and existing pipe rights-of-way (including gathering lines) and any associated equipment, facilities, or buildings (40 CFR 280.12).
- **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).
- **Regulated Substance** -
 1. any substance defined in section 101(14) of *CERCLA* (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 degrees Fahrenheit (°F) and 14.7 pounds per square inch absolute (psia)).

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 soil (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).
- *Septic Tank* - a watertight 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 handed 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 (i.e., 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 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 or less capacity used for storing motor fuel for noncommercial purposes
 2. septic tanks
 3. pipeline facility (including gathering lines) regulated by other acts
 4. surface impoundment, pit, pond, or lagoon
 5. stormwater or wastewater collection system
 6. flow-through process tank
 7. liquid trap or associated gathering lines directly related to oil or gas production and gathering operations
 8. storage tank situated in an underground area if the storage tank is situated upon or above the surface of the floor.

(NOTE: The definition of UST does not include any pipes connected to any tank described in paragraphs 1 through 8 of this definition.)

(NOTE: Although the USEPA excludes tanks used for storing heating oil for consumptive use on the premises where stored, the U.S. Army does not, AR 200-1.)

- ***Upgrade*** - the addition or retrofit of some systems such as cathodic protection, lining, or spill and overflow controls to improve the ability of a UST system to prevent the release of product (40 CFR 280.12).
- ***UST System or Tank System*** - a UST, 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 wastewater through physical, chemical, or biological methods (40 CFR 280.12).

**RESOURCE CONSERVATION AND RECOVERY ACT,
SUBTITLE I (RCRA-I)**

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All facilities	6-1 through 6-7	(1)(2)(5)
Underground storage tanks:		
Substandard USTs	6-8	(1)(2)
New or Upgraded USTs	6-9 through 6-13	(1)(2)(5)(12)(13)
Tank Filling	6-14 and 6-15	(1)(2)(5)(12)(13)
Corrosion Protection/Repairs	6-16 and 6-17	(1)(2)(5)(13)
Release Detection	6-18 through 6-26	(1)(2)(5)(13)
Hazardous Substance USTs	6-27	(1)(2)(5)(13)
Deferred UST systems	6-28	(1)(2)(5)(13)
Documentation	6-29 and 6-30	(1)(2)(5)(13)
If the facility changes service or undergoes closure of UST	6-31 through 6-37	(1)(2)(5)(12)

(a)CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager
- (5) Directorate of Engineering and Housing (DEH)/DPW
- (12) Environmental Coordinator (EC)
- (13) Fuels Maintenance Officer

RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE I (RCRA-I)

Plans and Maps to Review

- UST inventory - map
- UST Management plan

Records to Review

- Results of all UST testing, sampling, monitoring, inspection, maintenance, and repair work
- 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
- UST replacement program
- Groundwater well monitoring data

Physical Features to Examine

- Airfield Refueling Operations
- Refueling facilities, including:
 - Aboveground and belowground storage tanks and dikes
 - Venting
 - Fill pipe
 - Gauges
 - Stations
- Washrack areas
- Vehicle Maintenance areas
- Oil Separators
- Oil and Hazardous Substance Site
- Rapid Refueling Points
- Fuel Bladders
- Any location with a UST system

People to Interview

- MUSARC Engineer/Facility Coordinator
- Facility Manager
- Directorate of Engineering and Housing (DEH)
- Environmental Coordinator (EC)
- Fuels Maintenance Officer
- Spill Response Team (SRT)
- Fuels Management Officer
- BASOPs ARCOM Environmental Managers

**COMPLIANCE CATEGORY:
RESOURCE CONSERVATION
AND RECOVERY ACT, SUBTITLE I
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ALL FACILITIES</p> <p>6-1. Determine action or changes since last review of UST management (GMP).</p> <p align="center">...</p> <p>6-2. Facilities should have on file all appropriate regulations pertaining to UST operation, maintenance, and closure (GMP).</p> <p align="center">...</p> <p>6-3. Facilities are required to comply with applicable state and local requirements (EO 12088, Section 1-1).</p> <p align="center">...</p>	<p>Examine copy of last review report to determine if noncompliance issues have been resolved. (1)(2)(5)</p> <p align="center">...</p> <p>Verify that copies of the following, which are applicable, are maintained at the ARCOM or Support Installation: (1)(2)(5)</p> <ul style="list-style-type: none"> - 40 CFR 280, <i>Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)</i>. - Executive Order (EO) 12088, <i>Federal Compliance with Pollution Standards</i>. - DOD Directive 4140.25M, <i>Procedures for The Management of Petroleum Products</i>. - DOD Directive 5030.41, <i>Oil and Hazardous Substances Pollution Prevention and Contingency Program</i>. - AR 200-1, <i>Environmental Protection and Enhancement</i>. - AR 420-49, <i>Heating, Energy Selection and Fuel Storage, Distribution, and Dispensing Systems</i>. - DEQPPM 79-3, <i>Management of Recoverable and Waste Liquid Petroleum Products</i>. - TM 5-675, <i>Repairs and Utilities: Solid Fuel Operations</i>. - TM 5-678, <i>Petroleum, Oil, and Lubricants (POL)</i>. - Appropriate state and local regulations. <p align="center">...</p> <p>Verify that the facility is complying with state and local requirements. (1)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (1)(2)</p> <p>(NOTE: Issues which are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - spill management - handling of wastewater and fuel sludge from tank cleaning - use of product recovery systems - containment.) <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (13) Fuels Maintenance Officer

**COMPLIANCE CATEGORY:
RESOURCE CONSERVATION
AND RECOVERY ACT, SUBTITLE I
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>6-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, recurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation, promotes good public relations and addresses systemic weakness in the overall operation of the program (GMP).</p> <p align="center">...</p>	<p>Determine what management systems are in place. (1)(2)</p> <p>Verify that the existing system addresses the issues associated with USTs by: (1)(2)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p>Determine if training is being conducted. (1)(2)</p> <p align="center">...</p>
<p>6-5. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p align="center">...</p>	<p>Determine if any new regulations concerning USTs have been issued since the finalization of the manual. (1)</p> <p>Verify that the facility is in compliance with newly issued regulations. (1)</p> <p>(NOTE: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p align="center">...</p>
<p>6-6. Facilities should have a plan for the management of reclaimed, recoverable, and waste liquid petroleum products (GMP).</p> <p align="center">...</p>	<p>Verify that a Management of Recoverable and Waste Liquid Petroleum Products Plan has been prepared and adopted. (2)(5)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
RESOURCE CONSERVATION
AND RECOVERY ACT, SUBTITLE I
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>6-7. Petroleum products that are not used for their intended purpose should be reclaimed, recovered, and disposed of as waste (GMP).</p> <p align="center">...</p> <p>SUBSTANDARD USTs</p> <p>6-8. Substandard systems must be upgraded, closed, or removed from service by 22 December 1998 (40 CFR 280.21(a) through 280.21(c)).</p>	<p>Verify that containers at accumulation points are properly marked and in good condition. (2)(5)</p> <p>Verify that mixed petroleum liquids contaminated by halogenated solvents or industrial chemicals are disposed of as hazardous waste. (2)(5)</p> <p>Verify that used crankcase oils/lubricants are being collected at vehicle hobby shops. (2)</p> <p align="center">...</p> <p>(NOTE: While the USEPA excludes tanks used for storing heating oil for consumptive use on the premises where stored from meeting the requirements in 40 CFR 280, AR 200-1, para 5-7 does not allow for this exemption. Findings written for these tanks are classified as Class III. See Appendix 6-1 for additional guidance on applicability of checklist items.)</p> <p>Determine if the facility has any USTs which need to be upgraded, closed, or removed from service. (1)(2)</p> <p>Verify that upgrading of steel USTs includes one of the following methods: (1)(2)</p> <ul style="list-style-type: none"> - internal lining according to the following requirements: <ul style="list-style-type: none"> - lining is installed so that it prevents releases due to structural failure or corrosion and meets a recognized code of practice - 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 - 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"> - tank is internally inspected and assessed to ensure that the tank is structurally sound and free of corrosion - the tank has been installed for less than 10 yr and is monitored monthly for releases - 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 - tank is assessed for corrosion holes by a method that is determined to be equally protective by the implementing agency - lining combined with cathodic protection: <ul style="list-style-type: none"> - if lining is installed according to requirements - if cathodic protection system meets requirements.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>6-8. (continued)</p> <p align="center">...</p> <p>NEW OR UPGRADED USTs</p> <p>6-9. New or upgraded USTs are required to be fitted with spill and overfill prevention equipment (40 CFR 280.20(c) and 280.21(d)).</p> <p align="center">...</p> <p>6-10. Facilities are required to use UST systems made of or lined with materials compatible with the substance stored (40 CFR 280.32).</p> <p align="center">...</p>	<p>Verify that spill and overfill equipment is added that meets the same standards as new USTs. (1)(2)</p> <p>Verify that piping that routinely contains regulated substances and is in contact with the ground is cathodically protected. (1)(2)</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>(NOTE: See Appendix 6-3 for the phase schedule for release detection.)</p> <p align="center">...</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)(2)(5)(13)</p> <p>Verify that overfill prevention equipment does one of the following: (1)(2)(5)</p> <ul style="list-style-type: none"> - automatically shuts off flow into the tank when the tank is less than 95 percent full, or - alerts the transfer operator when the tank is less than 90 percent full by restricting the flow into the tank or triggering a high-level alarm - restricts flow 30 minutes (min) prior to overfilling, alerts the operator with a high-level alarm 1 min before overfilling, or automatically shuts off flow into the tank so that none of the fittings are exposed to product due to overfilling. <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: Existing tanks must be upgraded by 1998.)</p> <p align="center">...</p> <p>Verify that the substances stored in UST systems are compatible with the system. (1)(2)</p> <p>Identify and check all USTs being used to store a substance other than that for which it was originally intended. (1)(2)(5)(12)(13)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>6-11. Notice must be given within 30 days when a UST system is brought into service after 8 May 1986 (40 CFR 280.22).</p> <p align="center">...</p>	<p>Determine if there are any tanks at the installation that were installed after 8 May 1986 by reviewing the inventory records. (1)(2)</p> <p>Verify that notice was given by reviewing records for proper notification forms. (1)(2)(5)(13)</p> <p>(NOTE: State forms may be used for notification in lieu of USEPA form 7530.)</p> <p align="center">...</p>
<p>6-12. Underground Storage Tank (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 align="center">...</p>	<p>Review UST plans to see if they conform to industry standards. (1)(2)(5)</p> <p>Verify that USTs meet the following: (1)(2)(5)(13)</p> <ul style="list-style-type: none"> - there is leak/spill prevention protection - the tank is constructed of one of the following materials: <ul style="list-style-type: none"> - fiberglass-reinforced plastic - steel which has one of the following types of cathodic protection: <ul style="list-style-type: none"> - coated with a suitable dielectric material - field installed cathodic protection (designed by a corrosion expert), and - impressed current systems which allow determination of current operating status - steel fiberglass-reinforced plastic composite - metal without additional corrosion protection provided that: <ul style="list-style-type: none"> - the site has been determined not to cause corrosion to the tank by a corrosion expert, and - records are maintained for the life of the tank that it is in a corrosion free environment - construction is in a manner that is deemed to prevent release of the regulated substance. <p>(NOTE: Piping must also meet these criteria with the exception of not being constructed of steel fiberglass-reinforced plastic composite.)</p> <p align="center">...</p>
<p>6-13. Facility of UST must be done by a certified installer and according to standard practices (40 CFR 280.20(d) and 280.20(e)).</p> <p align="center">...</p>	<p>Determine if there have been any new USTs installed at the facility. (1)(2)</p> <p>Verify that new USTs were installed by a certified installer by reviewing facility records and contracts. (1)(2)</p> <p>Verify that the procedures for the installation of new or pending USTs meet industry standards. (1)(2)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>TANK FILLING</p> <p>6-14. The filling of a UST must include the prevention of overfilling and spilling of the substance (40 CFR 280.30(a)).</p> <p align="center">...</p> <p>6-15. Facilities with UST systems are required to contain and immediately cleanup a spill or overflow and report it to the implementing agency within 24 hours (h) in specific situations (40 CFR 280.30(b) and 280.53).</p> <p align="center">...</p>	<p>Observe the filling operations if possible; otherwise, review records for reports of overfills or spills resulting from operations. Check grounds around fill-lines for visible or odorous indications of contamination. (1)(2)(5)(12)(13)</p> <p>Verify whether or not 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 product to be transferred. (1)(2)(5)</p> <p>Verify that fill-lines are capped and locked. (1)(2)(5)</p> <p>Verify that the transfer operation is monitored constantly. (1)(2)(5)</p> <p align="center">...</p> <p>Determine if the facility has reported, contained, and cleaned up any and all spills or overfills which met the following criteria: (1)(2)(5)(12)(13)</p> <ul style="list-style-type: none"> - spills or overfills of petroleum that resulted in a release to the environment of more than 25 gal or that caused a sheen on nearby surface water - spills or overfills of hazardous substances that result in a release to the environment in excess of the reportable quantity (see the <i>Hazardous Materials Management Appendices</i>). <p>(NOTE: Spills or overfills of hazardous substances equal to or greater than the reportable quantity must be immediately reported to the National Response Center (NRC).)</p> <p>Verify that the facility has contained and immediately cleaned up a spill or overflow of petroleum that is less than 25 gal and a spill or overflow of a hazardous substance that is less than the reportable quantity. (1)(2)(5)(12)(13)</p> <p>Verify that if these lesser quantities cannot be accomplished within 24 h, or another reasonable time period established by the implementing agency, the implementing agency is notified. (1)(2)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>CORROSION PROTECTION AND REPAIRS</p> <p>6-16. UST systems with corrosion protection must meet specific requirements (40 CFR 280.31).</p> <p align="center">...</p>	<p>Determine which UST systems at the facility have corrosion protection. (1)(2)(5)(13)</p> <p>Verify that the corrosion protection systems operate continuously to provide corrosion protection to the metal components that routinely contain regulated substances and are in contact with the ground. (1)(2)(5)(13)</p> <p>Verify that all cathodic protection systems are tested within 6 mo after installation and every 3 yr thereafter. (1)(2)(5)(13)</p> <p>Verify that UST systems with impressed current cathodic protection are inspected every 60 days. (1)(2)(5)(13)</p> <p>Verify that inspection records are maintained of the last 3 inspections for systems with impressed current cathodic protection and of the last 2 inspections for all other cathodic protection systems. (1)(2)(5)(13)</p> <p>Verify that inspections are conducted by a qualified cathodic protection tester. (1)(2)(5)(13)</p> <p align="center">...</p>

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REQUIREMENTS:**

REVIEWER CHECKS:

6-17. Repairs to USTs must be performed according to industry code (40 CFR 280.33, 280.43, and 280.44).

Determine which USTs have undergone repairs. (1)(2)(5)

Determine who does repairs to USTs. (1)(2)(5)

Verify that the following procedures are used to repair USTs: (1)(2)(5)

- fiberglass reinforced tanks are repaired by the manufacturer's authorized representative or according to industry standards
- metal pipe fittings and sections that have leaked due to corrosion are replaced whereas fiberglass may be repaired according to manufacturer's specifications.

Verify that tanks and piping that have been replaced or repaired are tested for tightness within 30 days. (1)(2)(5)

(NOTE: Tanks and piping need not be tested if:

- repairs are internally inspected
- the repaired portion is already monitored monthly
- an equally protective test is used.)

Verify that within 6 mo of repair, tanks with cathodic protection systems are tested as follows: (1)(2)

- every 3 yr thereafter for all cathodic protection systems
- every 60 days for impressed current cathodic protection systems.

Verify that records of repairs are maintained for the life of the tank. (1)(2)

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**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

**RELEASE
DETECTION/
RELEASES**

6-18. Facilities 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) and 280.40).

Determine what release detection systems are in use at the facility. (1)(2)

Verify that the installed release detection system can detect a release from any portion of the tank and the connected underground piping that routinely contains product. (1)(2)

Verify that the facility has a program in place (or at least in the proposed stage) for provisions of release detection. (1)(2)

Verify that an appropriate schedule is being complied with. (1)(2)

(NOTE: Any pressurized delivery lines must be retrofitted by 22 December 1990.)

(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.)

(NOTE: See Appendices 6-4 and 6-5 for information on release detection methodologies.)

...

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>6-19. UST systems containing petroleum must meet specific release detection system requirements (40 CFR 280.41, 280.43, and 280.44).</p> <p align="center">...</p>	<p>Verify that tanks are monitored every 30 days using the method in Appendix 6-4, except for: (1)(2)(5)(13)</p> <ul style="list-style-type: none"> - 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 - 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 - tanks which hold less than 550 gal may use weekly tank gauging. <p>Verify that underground piping which routinely contains a regulated substance has the following release detection done according to the methods in Appendix 6-4: (1)(6)(9)</p> <ul style="list-style-type: none"> - pressurized piping <ul style="list-style-type: none"> - equipped with automatic line leak detector - annual tightness testing or monthly monitoring - suction piping <ul style="list-style-type: none"> - line tightness testing every 3 yr or monthly monitoring - no release detection system is needed for suction piping which is below grade and: <ul style="list-style-type: none"> - operates at less than atmospheric pressure - is sloped so that contents of pipe will roll back to tank when suction is released - only one check valve is included in each suction line - check valve is located directly below and as close as practical to the suction pump. <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 align="center">...</p>
<p>6-20. Facilities with UST systems are required to report releases under specific conditions (40 CFR 280.50).</p> <p align="center">...</p>	<p>Determine if the facility has reported any and all releases which met the following criteria: (1)(2)(5)(13)</p> <ul style="list-style-type: none"> - 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 - 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 - monitoring results indicate a possible release. <p>Verify that the implementing agency was notified within 24 h (or time period specified by the implementing agency) of the release. (1)(2)(5)(13)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>6-21. Facilities 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 20.52).</p> <p align="center">...</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)(2)(5)(13)</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)(2)(5)(13)</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 align="center">...</p>
<p>6-22. Facilities with a confirmed release from petroleum or hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA 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 align="center">...</p>	<p>Verify that facility personnel are aware of the following initial response actions: (1)(2)(5)(13)</p> <ul style="list-style-type: none"> - the release is reported - immediate action is taken to prevent further release of the regulated substance into the environment - fire, explosion, and vapor hazards are identified and mitigated. <p align="center">...</p>

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**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

6-23. Facilities with a confirmed release from petroleum or hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA 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).

...

6-24. Facilities with a confirmed release from petroleum or hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA 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).

...

Verify that the following actions are performed: (1)(2)(5)(13)

- as much of the substance as is necessary to prevent further release is removed from the UST system
- 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
- monitoring and mitigation of any fire and safety hazards caused by vapors or free product is done
- hazards from contaminated soils that are excavated or exposed are remedied
- 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 have previously been confirmed.
- an investigation is done for the presence of free product and the removal of free product is done as soon as possible.

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)

...

Verify that the following information is collected: (1)(2)

- data on the nature and estimated quantities of the release
- 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
- results of site check
- results of free product investigation.

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)(2)

...

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>6-25. Facilities with a confirmed release from petroleum or hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA 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 align="center">...</p>	<p>Determine if there are release sites where free product has been confirmed on the facility. (1)(2)(5)(13)</p> <p>Verify that free product removal is done so that the spread of contamination is minimized. (1)(2)</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"> - the name of the person responsible for implementing the free product removal system - the estimated quantity, type, and thickness of free product observed or measured - the type of free product recovery system used - whether there will be any onsite/offsite discharge during the recovery operation and where this discharge will be located - the type of treatment used for any discharge - the steps taken to obtain any required permits - the disposition of the recovered free product. <p align="center">...</p>
<p>6-26. Facilities with a confirmed release from petroleum or hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA 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 align="center">...</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)(5)(13)</p> <ul style="list-style-type: none"> - evidence that groundwater wells have been affected - free product is evident - evidence that contaminated soil is in contact with groundwater - the implementing agency requests an investigation. <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> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>HAZARDOUS SUBSTANCE USTs</p> <p>6-27. Hazardous substance USTs must meet specific standards (40 CFR 280.42).</p> <p>...</p>	<p>Verify that existing hazardous substance USTs meet release detection standards for petroleum USTs. (1)(2)</p> <p>Verify that existing hazardous substance USTs meet the requirements for new hazardous substance USTs by 22 December 1998 as stated below: (1)(2)(5)(13)</p> <ul style="list-style-type: none"> - secondary containment is checked for evidence of a release at least every 30 days and is designed and constructed to: <ul style="list-style-type: none"> - contain regulated substances released until they are detected and removed - prevent releases of regulated substance to the environment at any time during the operational life of the UST - double-walled tanks are designed, constructed, and installed to: <ul style="list-style-type: none"> - contain releases from any portion of the inner tank within the outer wall, and - detect failure of the inner wall - external liners, including vaults, are designed, constructed, and installed in such a manner that: <ul style="list-style-type: none"> - 100 percent of the capacity of the largest tank is contained within its boundary - the interference of precipitation or groundwater intrusion is prevented with the ability to contain or detect release of regulated substances - the tank is completely surrounded. <p>Verify that underground piping is equipped with secondary containment which satisfies the requirements for UST secondary containment. (1)(2)</p> <p>Verify that piping which delivers regulated substances under pressure is equipped with an automatic line leak detector. (1)(2)</p> <p>Verify that when other release detection methods are used, they are approved by the implementing agency. (1)(2)</p> <p>...</p>

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**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

**DEFERRED UST
SYSTEMS**

6-28. Deferred UST systems (see definition) are required to meet specific standards (40 CFR 280.10(c) and 280.11).

Verify that deferred UST systems (whether single or double-walled) are not installed to store regulated substances unless: (1)(2)(5)(13)

- releases due to corrosion or structural failure will be prevented for the operational life of the system
- it is cathodically protected against corrosion, constructed of non-corrodible materials, steel clad with a noncorrodible material, or designed to prevent release
- it is constructed or lined with material that is compatible with the stored substance.

Verify that deferred systems meet the standards concerning release response and action for USTs containing petroleum or a hazardous substance found in 40 CFR 280.60 through 280.67. See checklist requirements based on these citations. (1)(2)

...

...

DOCUMENTATION

6-29. Facilities with USTs are required to meet specific reporting requirements (40 CFR 280.34(a)).

Verify that the facility has submitted the following when applicable: (1)(2)

- notifications of new USTs
- release reports
- planned or complete corrective actions
- notice of closure or change-in-service.

...

...

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REQUIREMENTS:**

REVIEWER CHECKS:

6-30. Facilities with USTs are required to meet specific record keeping requirements (40 CFR 280.34(b) 280.34(c), 280.45, and 280.74).

Verify that records are kept of the following: (1)(2)(5)(13)

- a corrosion expert's analysis of site corrosion potential if corrosion protection equipment is not used
- documentation of operation of corrosion protection equipment
- documentation of repairs
- recent compliance with release detection requirements
- results of any sampling, testing, or monitoring of release detection systems for at least 1 yr
- all written performance claims pertaining to any release detection for 5 yr from the date of installation
- written documentation of all calibration, maintenance, and repair of release detection equipment for at least 1 yr
- results of excavation zone assessments for 3 yr after permanent closure
- results of any site investigations.

Verify that records are available at one of the following: (1)(2)(5)(13)

- at the UST site and immediately available for inspection
- at a readily available alternative site and provided for inspection.

...

...

**CHANGES IN
SERVICE OR
CLOSURE**

6-31. USTs which are put out of service temporarily, must have continued maintenance (40 CFR 280.70).

Determine if the facility has any out-of-service USTs. (1)(2)(5)(12)

Verify that out of service USTs are being maintained for the following: (1)(2)(5)(12)

- corrosion protection
- release detection.

Verify that if the UST has been out-of-service near or over 1 yr, plans have been made for permanent closure. (1)(2)(5)

(NOTE: If the UST is empty, release detection is not required.)

(NOTE: An empty UST is one which has no more than 2.5 centimeters (cm) (1 inch (in.)) of residue or less than .3 percent by weight of total capacity of the UST system.)

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 are capped and secured. (2)(5)

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. (2)(5)

...

...

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (13) Fuels Maintenance Officer

**COMPLIANCE CATEGORY:
RESOURCE CONSERVATION
AND RECOVERY ACT, SUBTITLE I
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>6-32. 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)).</p> <p align="center">...</p>	<p>Determine if any of the USTs at the facility have been closed or have had a change in service. (1)(2)</p> <p>Verify that notification of closures and changes were given within 30 days. (1)(2)</p> <p align="center">...</p>
<p>6-33. UST closure must be done in one of the following methods:</p> <ul style="list-style-type: none"> - removed from ground - left in place with substance removed, and filled with an inert solid material and closing it to all future outside access (40 CFR 280.71(b)). <p align="center">...</p>	<p>Determine if there are any USTs at the facility which have been closed or are undergoing the closure process. (1)(2)(5)</p> <p>Verify that tanks being permanently closed are emptied and cleaned by removing all liquids and accumulated sludges. (1)(2)(5)</p> <p>Determine if there are abandoned USTs. (2)(5)(12)</p> <p>Verify that there are plans to close off abandoned USTs in an appropriate manner. (1)(2)(5)</p> <p>Verify that a site assessment was made after closure to ensure that no releases to the environment have occurred. (1)(2)(5)</p> <p align="center">...</p>
<p>6-34. Prior to a change-in-service, tanks must be emptied and cleaned and a site assessment conducted (40 CFR 280.71(c)).</p> <p align="center">...</p>	<p>Determine if there are any tanks which the facility has continued to use to store a non-regulated substance (a change-in-service). (1)(2)(5)(12)</p> <p>Verify that prior to the change, the tank was emptied and cleaned. (1)(2)(5)(12)</p> <p>Verify that prior to the change a site assessment was done. (1)(2)(5)</p> <p align="center">...</p>
<p>6-35. 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 align="center">...</p>	<p>Verify that measurements for the presence of a release have been done. (1)(2)</p> <p>(NOTE: These requirements are met if one of the leak detection methods outlined in checklist item 6-18 (40 CFR 280.40) indicates that a release has occurred.)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (13) Fuels Maintenance Officer

**COMPLIANCE CATEGORY:
RESOURCE CONSERVATION
AND RECOVERY ACT, SUBTITLE I
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>6-36. 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 280.73).</p> <p align="center">...</p> <p>6-37. Excavation zone assessment records shall be maintained for 3 yr (40 CFR 280.74).</p>	<p>Determine if the facility has any USTs which were closed prior to 22 December 1988. (1)(2)(5)</p> <p>Verify that the excavation zone of these USTs has been assessed and clean-up done as needed. (1)(2)</p> <p align="center">...</p> <p>Verify that excavation zone assessment records are maintained for 3 yr in one of the following ways: (1)(2)</p> <ul style="list-style-type: none"> - by the facility - at the implementing agency if they cannot be maintained at the closed facility.

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (13) Fuels Maintenance Officer

Appendix 6-1

UST Applicability Guide

**Applicable CFR
Citations**

Checklist #'s

USTs
(see definitions)

all as defined in 40 CFR 280.12

Excluded USTs
(see definitions)

none

Deferred USTs
(see definitions)

40 CFR 280.11 (6-28)

USTs storing fuel for
emergency generators

40 CFR 280.20 through 280.22 (6-8 through 6-13
280.30 through 280.34 6-14 through 6-17
280.50 through 280.53 6-20 through 6-37)
280.60 through 280.67
280.70 through 280.74

Appendix 6-2

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.

Appendix 6-3

Release Detection Requirements (40 CFR 280.43)

Each method of release detection for tanks used to meet the requirements for petroleum UST systems must be conducted in accordance with the following:

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:

1. inventory volume measurements for regulated substance inputs, withdrawals, and the amount still remaining in the tank are recorded each operating day
2. the equipment used is capable of measuring the level of product over the full range of the tanks height to the nearest 1/8 in.
3. the regulated substance inputs are reconciled with delivery receipts by measurements of the tank inventory volume before and after delivery
4. deliveries made through a drop tube that extends to within 1 foot of the tank bottom
5. product dispensing is metered and recorded within the local standards of product withdrawn
6. the measurement of any water level in the bottom of the tank is made to the nearest 1/8 in. at least once a month.

2. Manual gauging: manual tank gauging must meet the following requirements:

1. 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
2. level measurements are based on an average of two consecutive stick readings at both the beginning and end of the period
3. the equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest in.
4. 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
5. 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.

Appendix 6-3 (continued)

Table A

Nominal Tank Capacity	Weekly Standard (one test)	Monthly Standard (average of four)
550 gal or less	10 gal	5 gal
551-1000 gal	13 gal	7 gal
10,001-2000 gal	26 gal	13 gal

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:

1. 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
2. inventory control is conducted according to requirements (see paragraph 1 above).

5. Vapor monitoring: Testing or monitoring for vapors within the soil gas of the excavation zone must meet the following requirements:

1. the materials used as backfill are sufficiently porous (i.e., gravel, sand, crushed rock) to easily allow diffusion of vapors from releases into the excavation area
2. the stored regulated substance, or a tracer compound placed in the tank system, is sufficiently volatile (i.e., 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
3. 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
4. the level of background contamination in the excavation zone will not interfere with the method used to detect releases from the tank
5. 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
6. in the UST excavation zone, the site is assessed to ensure compliance with the requirements of paragraph 5 subparagraph 1 through 4 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
7. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.

Appendix 6-3 (continued)

6. Groundwater monitoring: Testing or monitoring for liquids in the groundwater must meet the following requirements:

1. the regulated substance stored is immiscible in water and has a specific gravity of less than one
2. groundwater is never more than 20 feet (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/second (sec) (i.e., the soil should consist of gravels, coarse to medium sands, coarse silts or other permeable materials)
3. 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
4. monitoring wells should be sealed from the ground surface to the top of the filter pack
5. monitoring wells or devices intercept the excavation zone or are as close to it as is technically feasible
6. the continuous monitoring devices or manual methods used can detect the presence of at least 1/8 in. of free product on top of the groundwater in the monitoring wells
7. within and immediately below the UST system excavation zone, the site is assessed to ensure compliance with the requirements of paragraphs 6 1-5 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
8. 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:

1. 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
2. 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:
 1. 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/sec for the regulated substance stored) to direct a release to the monitoring point and permit its detection
 2. 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
 3. 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
 4. 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

Appendix 6-3 (continued)

5. 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
 6. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.
 3. 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:
1. it can detect a 0.2 gal/h leak rate or a release of 150 gal within a mo with a probability of detection of 0.95 and a probability of false alarm of 0.05
 2. 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.

Each method of release detection for piping, used to meet the requirements must be conducted in accordance with the following:

- a. **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 pounds per square inch (psi) line pressure within 1 h. An annual test of the operation of the leak detector must be conducted in accordance with the manufacturer's requirements.
- b. **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.
- c. **Applicable tank methods:** Vapor monitoring, groundwater monitoring and interstitial monitoring may be used if they are designed to detect a release from any portion of the underground piping that routinely contains regulated substances.

Appendix 6-4

Options for Release Detection

The most immediate and demanding requirements of 40 CFR 280 are the release detection methods which must be implemented or installed in all UST systems. (See Appendix 6-3 for phase-in schedule). A synopsis of 40 CFR 280.20 - 280.45 follows. The type of release detection method used will vary with the type and age of the tank or pipeline. Remember that aircraft hydrant refueling systems and "field constructed" bulk tanks have been deferred and do not have to comply with 40 CFR 280 at this time. In addition to USTs used to store fuel, emergency generators are deferred from meeting the requirements for release detection. Emergency generator fuel tanks must comply with all other parts of this requirement.

Release Detection for Tanks

Option 1 - Combination of Precise Inventory Control and Tightness Testing

If tanks meet 40 CFR 280.20 new tank standards, tightness is required every 5 yr. If tanks do not meet new tank standards, tightness test is required every year until 1998 when the tank must either meet new tank standards or be closed.

Option 2 - Combination of Precise Inventory Control and an Automated Gauging Device

The automatic gauging device must be able to detect a leak of 0.2 gal/h.

Option 3 - Vapor Monitoring in Soils Surrounding Tank

- Only in sandy or gravelly soils
- Monthly gas sampling
- Must detect vapor levels above background levels
- Groundwater must not interfere
- Sufficient number of vapor monitoring wells

Option 4 - Groundwater Monitoring Near Tanks

- Stored liquid must be immiscible in water and have specific gravity < 1
- Groundwater must be within 20 ft of ground surface
- Soils must have hydraulic conductivity of 10^{-2} cm/sec or greater
- Proper monitoring well design and proper number of wells
- Use an automatic or manual method capable of detecting a 1/8 in. layer of floating fuel

Option 5 - Interstitial Monitoring

This method only applies to tanks surrounded by a secondary containment barrier. Monitoring wells must be placed between the tank and the containment barrier.

Option 6 - Any other Method (approved by the implementing agency)
which can detect a 0.2 gal/h leak or 150 gal release per mo with a 95 percent probability of false positives.

Pipeline Release Monitoring

The USEPA regulation places much more stringent requirements on pipes which convey regulated liquids under pressure. Whenever possible, base engineers should modify pumps and pipelines to reduce the length of pressurized piping. The following release detection requirements apply to piping:

Pressurized Piping

- Must be equipped with sensitive automatic leak detector with alarm or auto shut down capabilities
- Have annual tightness test or monthly monitoring system soil vapors, ground water monitoring, interstitial monitoring or other approved method.

Suction Piping

- Tightness test every 3 yr and in some cases no release detection is required at all.

INSTALLATION:	COMPLIANCE CATEGORY: RESOURCE CONSERVATION AND RECOVERY ACT, SUBTITLE I ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (13) Fuels Maintenance Officer

Section 7

**COMPREHENSIVE ENVIRONMENTAL RESPONSE,
COMPENSATION, AND LIABILITY ACT/SUPERFUND
AMENDMENTS AND REAUTHORIZATION ACTS
(CERCLA/SARA)**

SECTION 7

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACTS (CERCLA/SARA) AND RCRA CORRECTIVE ACTIONS

A. Applicability of this Protocol

This protocol applies to all U.S. Army Reserve facilities. Currently, this section contains protocols for implementing the requirements of the *CERCLA/SARA*.

The *CERCLA/SARA and RCRA Corrective Actions* protocol is used to determine the compliance status of the management activities associated with the identification, investigation, and cleanup of hazardous materials contamination.

Specific state regulations are not included in this protocol.

B. Federal Legislation

- *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 U.S. Code (USC) 9601-11050, 10 USC 2701-2810 et. al.. *The CERCLA/SARA* regulates the prevention, control, and compensation relating to environmental pollution.
- *The Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986*. 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. Federal facilities are not currently required to comply with *SARA Title III*.
- *The Resource Conservation and Recovery Act (RCRA), Subtitle C, as amended*. This law, Public Law (PL) 98-616 (42 USC 6921-6939b) established standards and procedures for the handling, storage, treatment, and disposal of hazardous waste. The 1984 amendments give the U.S. Environmental Protection Agency (USEPA) the authority to force treatment, storage, and disposal facilities to conduct corrective action for release from a facility.
- Executive Order (EO) 12088, *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 Executive Order requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

C. State/Local Requirements

- For Federal facilities SARA requires 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)).

- Some states have cleanup statutes that are based on collecting cleanup costs from responsible parties. These laws apply to non-NPL sites, and consequently certain authorities and requirements will vary from state to state.
- State (and local) Applicable or Relevant and Appropriate Requirements (ARARs) are those cleanup standards, standards of control and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal Law or limitations promulgated under Federal law or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a *CERCLA* site. Relevant and appropriate requirements, criteria, or limitations promulgated under Federal or state law that, while not applicable to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a *CERCLA* site, address problems or situations sufficiently similar to those encountered at the *CERCLA* site that is well suited to the particular site. ARARs are used to establish the standards for cleanup as a function of the chemicals involved, the location, the suspected health effects, and response action technologies proposed at the site.

D. Department of Defense (DOD) Regulations

None.

E. U.S. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, Chapter 9, *Environmental Restoration Program*, implements the remedial response aspect of *CERCLA*, as amended by *SARA*. It provides guidance for the management of Installation Restoration Programs (IRP) and Formerly Used Defense Sites (FUDS) programs. It details the procedures and the required documents necessary at each stage of the remedial process, from Preliminary Assessment/Site Inventory (PA/SI), through Remedial Investigation/Feasibility Study (RI/FS), to the Remedial Action (RA). AR 200-1 also provides guidance for writing oil and hazardous substance contingency plans. It also provides guidance for dealing with all manner of hazardous materials.
- AR 200-2, *Environmental Effects of Army Actions*, defines Army policy relative to compliance with the *National Environmental Policy Act (NEPA)* when projects are undertaken pursuant to the requirements of *CERCLA/SARA*. Basically, this section outlines the required environmental records to be completed during the course of a remedial action under *CERCLA*, from identification through completion. Other chapters in AR 200-2 give detailed information on preparing the documents: Environmental Assessments (EAs), Environmental Impact Statements (EISs), Categorical Exclusions (CXs), Findings of No Significant Impact (FNSIs), Notices of Intent (NOIs), and Records of Decision (RODs). (See Section 12, *National Environmental Policy Act*, and the Appendices to Section 16 of this manual, *Environmental Program Management*, for more information on these documents.)

F. Key Compliance Requirements

- The legal mandates for the Army Reserve Facility Program are *CERCLA* and *SARA*. Objectives of the program are to identify, investigate, cleanup and close out IRP sites.
- Hazardous Substance Release Reporting - Army Reserve facilities are required to notify the USEPA and appropriate state agencies when a release of a reportable quantity of a hazardous substance occurs. The release includes any discharge, spill, or leak to the air, water or onto the land as stipulated in 40 Code of Federal Regulations (CFR) 302, *Designation, Reporting Quantities, and Notification*.
- Community Right-to-Know - Army Reserve facilities that use or manufacture hazardous or toxic chemicals are required to comply with the regulations of *EPCRA*.

G. Key Compliance Definitions

These definitions were obtained from Army, DOD, and compliance regulations cited previously in this protocol.

- *CERCLA* - the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended (40 CFR 355.20).
- *Defense Environmental Restoration Account (DERA)* - the Department of Defense funding program for the Installation Restoration Program (IRP) (AR 200-1, para 9-4).
- *Extremely Hazardous Substance* - a substance listed in 40 CFR 355 (40 CFR 355.20).
- *Feasibility Study* - within the IRP (or *CERCLA*), the means for development, evaluation, selection, and description of remedial action alternatives (AR 200-1, para 9-7f(2)).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Hazardous Substances* - any substance designated pursuant to 40 CFR 302 (40 CFR 302.3).
- *Materials Safety Data Sheet (MSDS)* - the sheet required to be developed under Title 29 of the Code of Federal Regulations (40 CFR 370.2).
- *Mixture* - a heterogeneous association of substances where the various individual substances retain their identities and can usually be separated by mechanical means. Includes solutions or compounds, but does not include alloys or amalgams (40 CFR 355.20).
- *National Priorities List (NPL)* - the list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial response (AR 200-1, para 9-9).
- *Navigable Waters* - waters of the United States, including the territorial seas (40 CFR 302.3).
- *Release* - any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, but excludes: 1. any release which results in exposure to persons solely within a workplace with respect to a claim which such persons may assert against the employer of such persons, 2. emissions from the engine exhaust of a motor

vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine, 3. release of source, byproduct, or special nuclear materials from a nuclear incident, 4. normal application of fertilizer (40 CFR 302.3).

- *Remedial Action (RA)* - the actual construction or implementation phase that follows the remedial design of the selected cleanup alternative at a site (AR 200-1, para 9-7f(6)).
- *Remedial Investigation (RI)* - the IRP- or CERCLA-related process to determine the nature and extent of the problem posed by a release or threatened release (AR 200-1, para 9-7f(1)(c)).
- *Reportable Quantity* - that quantity, as set forth in 40 CFR 302, the release of which requires notification (40 CFR 302.3).
- *Site Inspection* - a technical phase that follows a preliminary assessment designed to collect more extensive information on a hazardous waste site. The information is used to score the site with the Hazard Ranking System to determine whether response action is needed (AR 200-1, para 9-7f(1)).
- *Threshold Planning Quantity* - TPQ (40 CFR 370.2).
- *Vessel* - every description of watercraft or other artificial contrivances used, or capable of being used, as a means of transportation on water (40 CFR 302.3).

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**COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION
AND LIABILITY ACT/SUPERFUND AMENDMENTS
AND REAUTHORIZATION ACTS (CERCLA/SARA) AND RCRA CORRECTIVE ACTIONS**

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All facilities	7-1 through 7-10	(1)(2)(5)
RCRA Corrective Actions	7-11	(1)(2)(5)
If the facility is considered the source of offsite contamination	7-12	(1)(2)(5)
If the facility releases hazardous substances	7-13 through 7-16	(1)(2)
Emergency planning	7-17 and 7-18	(1)(2)

Items numbered 7-7, 7-9, 7-16, and 7-17 are not Army Reserve applicable and are not included in this manual.

(a) CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager
- (5) Directorate of Engineering and Housing (DEH)/DPW

**COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION
AND LIABILITY ACT/SUPERFUND AMENDMENTS
AND REAUTHORIZATION ACTS (CERCLA/SARA) AND RCRA CORRECTIVE ACTIONS**

Plans and Maps to Review

- Information and maps delineating all *CERCLA* sites or spill sites
- Spill plan

Records to Review

- RCRA Part B Permit
- National Response Center (NRC) Notification Documentation
- Preliminary Assessment (*CERCLA*)
- Federal agency property transfer contract
- Policy establishing whether or not agency will comply with all or portions of Title III (*EPCRA*) and supporting documents/notices
- Groundwater quality data for all monitoring wells
- Spill reports
- Hazardous Material Inventory

Physical Features to Examine

- Disposal sites

People to Interview

- MUSARC Engineer/Facility Coordinator
- Facility Manager
- Directorate of Engineering and Housing (DEH)/DPW
- BASOPs ARCOM Environmental Managers

**COMPLIANCE CATEGORY:
 COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION,
 AND LIABILITY ACT / SUPERFUND AMENDMENT AND REAUTHORIZATION ACT
 AND RCRA CORRECTIVE ACTIONS
 ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ALL FACILITIES</p> <p>7-1. Determine actions or changes since last review (GMP). ...</p> <p>7-2. Copies of all relevant Federal, U.S. Army, and state/local regulations should be maintained at the facility (GMP). ...</p> <p>7-3. Facilities not included on the NPL are required to comply with state and local regulations (EO 12088, Section 1-1 and CERCLA/SARA Section 120(a)(4)). ...</p>	<p>Determine if noncompliance issues have been resolved by examining a copy of the previous review report. (2) ...</p> <p>Determine whether copies of the following regulations and policy letters, which are applicable, are maintained and kept current at the facility: (5)</p> <ul style="list-style-type: none"> - 32 CFR 650, <i>Environmental Quality.</i> - 40 CFR 264, <i>Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.</i> - 40 CFR 300, Subchapter J, <i>Superfund Programs.</i> - 40 CFR 302, <i>Reportable Quantities of Hazardous Materials (Table 302.4).</i> - 40 CFR 355, <i>Emergency Planning and Notification.</i> - 40 CFR 370, <i>Hazardous Chemicals Reporting: Community Right-To-Know.</i> - EO 12088, <i>Federal Compliance with Pollution Control Standards.</i> - CERCLA/SARA Section 120, <i>Federal Facilities.</i> - SARA Section 211, <i>DOD Environmental Restoration Program.</i> - AR 200-1, <i>Environmental Protection and Enhancement.</i> - Applicable state and local regulations. <p>...</p> <p>Verify that the facility is complying with state and local requirements. (2)</p> <p>(NOTE: Issues that are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - notification requirements - response plan requirements.) <p>...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW

**COMPLIANCE CATEGORY:
 COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION,
 AND LIABILITY ACT / SUPERFUND AMENDMENT AND REAUTHORIZATION ACT
 AND RCRA CORRECTIVE ACTIONS
 ECAAR**

**REGULATORY
 REQUIREMENTS:**

REVIEWER CHECKS:

7-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, recurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation, promotes good public relations and addresses systemic weakness in the overall operation of the program (GMP).

...

7-5. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).

...

7-6. Screening for past use of hazardous substances and the potential for contamination will be conducted at all major Army facilities and subinstallations, and other properties controlled by the Army (AR 200-1, para 9-7a).

...

7-7.

...

Determine what management systems are in place. (2)(5)
 Verify that the existing system addresses the issues associated with *CERCLA/SARA and RCRA Corrective Actions* by: (2)(5)
 - interviewing personnel
 - reviewing paperwork
 - observing the operation or activity.

Determine if training is being conducted. (2)(5)

...

Determine if any new regulations concerning *CERCLA/SARA and RCRA Corrective Actions* have been issued since the finalization of the manual. (1)
 Verify that the installation is in compliance with newly issued regulations. (1)
 (NOTE: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)

...

Determine if facility has been screened for past use of hazardous substances. (2)
 (NOTE: Examples of such screening are the WESTON study, past ECAS, and EIS/EA/PASs.)

...

This item is not Army Reserve applicable.

...

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW

**COMPLIANCE CATEGORY:
 COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION,
 AND LIABILITY ACT / SUPERFUND AMENDMENT AND REAUTHORIZATION ACT
 AND RCRA CORRECTIVE ACTIONS
 ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>7-8. In all CERCLA/SARA environmental restoration activities a PA/SI is required (40 CFR 300.420, AR 200-1 para 9-7f(1) and para 9-7(f)(5)).</p> <p align="center">...</p>	<p>Verify that in the IRP, an inventory of all the real property, the property over which the facility commander or other Army entity has control, has been done. (5)</p> <p>Verify that at the start of the PA a program of full coordination with Federal and state regulatory agencies was established. (1)(2)</p> <p>Verify that if a site investigation is required an environmental analysis in the form of an EA, EIS, or CX was prepared. (1)(2)(5)</p> <p>Verify that when a SI leads to a RI/FS that it is conducted in accordance with the provisions in AR 200-1 and 40 CFR 300.430 and that it was started within 6 mo after the facility was added to the NPL. (1)(2)(5)</p> <p>Verify that a ROD is signed by the BASOPS ARCOM Commander or the designated representative after the publication of the FS report. (1)(5)</p> <p>Verify that within 15 mo after the completion of the FS and the ROD, a selected alternative has been designed and substantial continuous onsite activity is underway. (2)(5)</p> <p>Verify that within 180 days after USEPA review of the RI/FS, the facility enters into an interagency agreement (IAG) with the USEPA for the expeditious completion of all necessary remedial actions. (2)(5)</p> <p align="center">...</p>
<p>7-9.</p> <p align="center">...</p>	<p>This item is not Army Reserve applicable.</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW

**COMPLIANCE CATEGORY:
 COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION,
 AND LIABILITY ACT / SUPERFUND AMENDMENT AND REAUTHORIZATION ACT
 AND RCRA CORRECTIVE ACTIONS
 ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>7-10. The facility must keep the public informed about and involved with IRP projects (40 CFR 300.415(a), 300.430(c), 300.430(e)(9)(iii)(I), 300.430(f)(3), 300.430(f)(6), and 300.435(c)).</p> <p align="center">...</p>	<p>Verify that the public is informed through the PAO, in a timely news release, about: (1)(5)</p> <ul style="list-style-type: none"> - the discovery of releases or threatened releases - the magnitude of any threat to public health and the environment associated with any such release or threatened release - proposed response actions with respect to any release or threatened release - the initiation of each distinct phase of a response action - findings and the availability of documents for review - discovery of offsite migration of contaminants - the signing of site-specific agreements with regulatory agencies. <p>Verify that all proposed public statements are coordinated with the Facility Manager, the OSC/RPM, the Staff Judge Advocate (SJA), PAO, and environmental staffs of the facility, the MACOM PAO and any other signatories of an IAG if applicable. (1)(5)</p> <p>Verify that the facility has established an Administrative Record and published a notice of availability to the general public. (1)(5)</p> <p>Verify that public participation activities, such as establishing an Administrative Record, providing a public comment period and developing a community relation plan are initiated prior to removal action. (1)(5)</p> <p>Verify that public participation activities begin with the initiation of the RI/FS, if not earlier. (1)(5)</p> <p>Verify that a community relations and response plan is prepared for any site on the NPL. (1)(5)</p> <p>Verify that public comment is solicited for 45 days on any draft FS and that the facility provided for a public meeting during the public comment period. (1)(5)</p> <p>Verify that the community relations plan was reviewed by the facility prior to the remedial design/remedial action phase, and changes to the plan are identified to the general public. (1)(5)</p> <p>Verify that the facility makes prompt notification to applicable USEPA, state and local authorities of the following: (1)(5)</p> <ul style="list-style-type: none"> - the discovery of releases or threatened releases of hazardous substances - the magnitude of any threat to public health and the environment that may be associated with any such release or threatened release - the proposed response actions with respect to any release or threatened release - the initiation of each distinct phase of a response action. <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW

**COMPLIANCE CATEGORY:
 COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION,
 AND LIABILITY ACT / SUPERFUND AMENDMENT AND REAUTHORIZATION ACT
 AND RCRA CORRECTIVE ACTIONS
 ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>RCRA CORRECTIVE ACTIONS</p> <p>7-11. Installations performing <i>RCRA Corrective Actions</i> must comply with the corrective action requirements set forth in their Part B <i>RCRA</i> permit (40 CFR 264.90 through 264.101).</p> <p align="center">...</p>	<p>Review the installations Part B permit for corrective action requirements. (1)(5)</p> <p>Determine if the Federal or state government has <i>RCRA Corrective Action</i> authority. (1)(5)</p> <p>(NOTE: In some states, the state has authority for the <i>RCRA</i> base program and the Federal government has authority for the <i>RCRA Corrective Action</i> program.)</p> <p>Determine if the installation is following required schedules and providing necessary submissions (i.e., work plans, reports, etc) to regulators. (1)(5)</p> <p>Verify that the installation program is addressing all significant releases from solid waste management units on the installation. (1)(5)</p> <p align="center">...</p>
<p>OFFSITE CONTAMINATION</p> <p>7-12. The Army is required to conduct response actions outside of facility boundaries where the facility is reasonably considered the sole or the major source of the release (AR 200-1 para 9-8).</p> <p align="center">...</p>	<p>Determine if data indicates the contamination is migrating from a source on Army-controlled property to outside the facility boundaries. (1)(2)</p> <p>Verify that a process is in place to notify the following: (1)(2)(5)</p> <ul style="list-style-type: none"> - the MACOM environmental, legal and public affairs staffs - the USEPA regional office and state and local authorities. <p>Verify that offsite response plans are coordinated with USEPA, state, and local authorities, and have been authorized by Deputy Assistant Secretary of the Army (DASA) Environmental Safety and Occupational Health (ESOH). (1)(2)</p> <p>Verify that the BASOPS ARCOM seeks to minimize future commitments and liabilities. (1)(2)(5)</p> <p align="center">...</p>
<p>RELEASES</p> <p>7-13. Any spill of a hazardous substance must be reported to the installation on-scene coordinator (IOSC) immediately (AR 200-1 para 8-3(a)).</p>	<p>Verify that spills of hazardous substances have been reported to the IOSC (See Appendix 7-1). (1)(2)</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW

**COMPLIANCE CATEGORY:
 COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION,
 AND LIABILITY ACT / SUPERFUND AMENDMENT AND REAUTHORIZATION ACT
 AND RCRA CORRECTIVE ACTIONS
 ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>7-14. Releases in excess or equal to reportable quantities of hazardous substances shall be reported to the NRC immediately (40 CFR 302.1 through 302.6).</p> <p align="center">...</p> <p>7-15. Facilities with releases that are continuous and stable in quantity and rate are required to meet limited notification requirements (40 CFR 302.8).</p> <p align="center">...</p> <p>7-16.</p> <p align="center">...</p>	<p>Verify that spills in excess of the reportable quantities listed in column 40 CFR 302.4 in Appendix 7-1 have been reported. (1)(2)</p> <p>Verify that a procedure is in place for the notification of the NRC immediately after becoming aware of the release. (1)(2)</p> <p>Verify that if mixtures or solutions of hazardous substances are released, except for radionuclides, it is reported when either of the following occurs: (1)(2)</p> <ul style="list-style-type: none"> - 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 - 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. <p>(NOTE: Notification requirements for radionuclide releases are not included in this protocol.)</p> <p align="center">...</p> <p>Determine if the facility has any releases that are continuous and stable in quantity and rate. (1)(2)</p> <p>Verify that the following notifications have been given: (2)</p> <ul style="list-style-type: none"> - initial telephone notification - initial written notification within 30 days of the initial telephone notification - follow-up notification within 30 days of the first anniversary date of the initial written notification - notification of changes in: <ul style="list-style-type: none"> - the composition or source of the release - information submitted in the initial written notification - the follow-up notification required on the first anniversary date of the initial written notification - notification when there is an increase in the quantity of the hazardous substances being released in any 24 hour (h) period that represents a statistically significant increase. <p>(NOTE: Instead of the initial written report or follow-up report, the installation may submit a copy of the Toxic Release Inventory form submitted under SARA Title III section 313 for the previous 1 July provided that conditions are met as described in 40 CFR 302.8(j)).</p> <p align="center">...</p> <p>This item is not Army Reserve applicable.</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW

**COMPLIANCE CATEGORY:
 COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION,
 AND LIABILITY ACT / SUPERFUND AMENDMENT AND REAUTHORIZATION ACT
 AND RCRA CORRECTIVE ACTIONS
 ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>EMERGENCY PLANNING</p> <p>7-17.</p> <p align="center">...</p> <p>7-18. Facilities which are required to prepare or have available an MSDS for a hazardous chemical under Occupational Safety and Health Administration (OSHA) are required to meet specific reporting requirements (40 CFR 370.20 through 370.28).</p>	<p>This item is not Army Reserve applicable.</p> <p align="center">...</p> <p>Verify that MSDSs are submitted to the emergency commission and the fire department with jurisdictions over the facility for each hazardous chemical present at the facility according to the following thresholds: (1)(2)</p> <ul style="list-style-type: none"> - for all hazardous chemicals present at the facility at any one time in amounts equal to or greater than 10,000 pounds (lb) - for all extremely hazardous substances present at the facility in amounts greater than or equal to 500 lb or the TPQ (See Appendix 7-1). <p>Verify that the facility submitted MSDSs on or before 17 October 1990 (or within 3 mo after the facility has become subject to these requirements), for all hazardous chemicals and extremely hazardous substances. (1)(2)</p> <p>Determine that if instead of submitting MSDSs, the following has been submitted: (1)(2)</p> <ul style="list-style-type: none"> - a list of hazardous chemicals for which the MSDS is required, grouped by hazard category - the chemical or common name of each hazardous chemical - any hazardous component of each hazardous chemical except when reporting mixture. <p>Verify that revised MSDSs are provided within three mo after the discovery of significant new information concerning the hazardous chemical. (1)(2)</p> <p>Verify that a Tier I or Tier II form has been submitted on or before 1 March 1990 (or 1 March of the first year after the facility first becomes subject to these requirements), and annually thereafter, to the emergency response commission, emergency planning committee, and the fire department with jurisdiction over the installation for: (1)(2)</p> <ul style="list-style-type: none"> - all hazardous chemicals present at the facility at any one time in amounts equal to or greater than 10,000 lb (4540 kilograms (kg)) during the preceding year - extremely hazardous substances present at the facility in amounts greater than or equal to 500 lb (227 kg) (approx. 55 gal) or the TPQ, whichever is lower.

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW

Appendix 7-1

Consolidated List of Chemicals Covered in Title III of Superfund Amendments and Reauthorization Act (SARA)

This consolidated chemical list includes chemicals subject to reporting requirements under Title III of SARA of 1986. This consolidated chemical list does not contain all chemicals that are subject to reporting requirements in Section 311 and 312 of SARA Title III. These hazardous chemicals, for which MSDSs must be developed under OSHA 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 referenced 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 TPQs, is found in 40 CFR 355.
2. CERCLA Hazardous Substances (RQ) Chemicals - Releases of which are subject to reporting under the CERCLA, or "Superfund," of 1980. Such releases are also subject to reporting under Section 304 of Title III. CERCLA hazardous substances and their RQ are listed in 40 CFR 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.

Appendix 7-1 (continued)

For additional copies of this list, address requests to:

Title III Hotline
US Environmental Protection Agency
WH-562A
401 M Street, SW
Washington, DC 20640
Phone: (800) 535-0262

Key to Symbols in the Consolidated Chemical List

- # - Indicates that the RQ is subject to change when an assessment of potential carcinogenicity and/or 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.

Appendix 7-1 (continued)

SARA TITLE III 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 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
1,Amino-2-methyl- anthraquinone			x		82-28-0
1-Butanamine,N-butyl-N- nitroso-		10	x	U172	924-16-3
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	U091	119-90-4
(1,1'-Biphenyl)-4,4'diamine, 3,3'dimethyl-		10	x	U095	119-93-7
1,1-Dichloroethane		1000		U076	75-34-3
1,1-Dichloroethylene		100	x	U078	75-35-4
1,2-Benzenedicarboxylic acid,[bis(2-ethylhex- yl)]ester		100	x	U028	117-81-7
1,2-Benzenedicarboxylic acid, diethyl ester (diethyl phthlate)		1000	x	U088	84-66-2
1,2-Benzenediol,4-[1-hy- droxy-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-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-diox- ide		10	x	U193	1120-71-4
1,2-trans-Dichloroethylene		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

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (b)	Haz. Sub. RQ 40 CFR 302.4 (b)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
1,3-Butadiene			x		
1,3-Dichloropropylene		100	x	U084	542-75-6
1,3-Isobenzofurandione		5000	x	U190	85-44-9
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-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-dinitrophenol		100		P034	131-89-5
2-Ethoxyethanol		100	x		110-80-5
2-Furancarboxaldehyde		5000		U125	98-01-1
2-Methoxyethanol			x		109-86-4
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-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
2,4-Diaminosole			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

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
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			37534-95-5
2,5-Furandione		5000	x	U147	108-31-6
2,6-Dichlorophenol		100		U062	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-di- methyl-2-propynyl) benzamide		5000		U192	23950-58-5
4-Aminoazobenzene			x		60-09-3
4-Aminobiphenyl			x		92-67-1
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 ethe.			x		101-80-4
4,4'-Isopropylidenediphenol			x		80-05-7
4,4'-Methylene bis(N,N-di- methyl) benzenamine			x		101-61-1
4,4'-Methylenedianiline			x		101-77-9
4,4'-Thiodianiline			x		139-65-1
6-dinitrophenoll					
5-Nitro-o-anisidine			x		99-59-2
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- ethoxyphenyl)-		100		U187	62-44-2
Acetamide,N-(aminothi- 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
Acetic acid, thallium(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 thiosemicarbazide	1000/10,000				1752-30-3
Acetonitrile		5000	x	U003	75-05-8

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
Acetophenone		5000		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
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		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			1336-21-6
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
Ammonium silicofluoride		1000			16919-19-0
Ammonium sulfamate		5000			7773-06-0
Ammonium sulfate (solution)			x		7783-20-2

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
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
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

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	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-dimeth- yl-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-(chloro- methyl)-4-nitro-	500/10,000				100-14-1
Benzene,1-methyl-2,4- dinitro-		10	x	U105	121-14-2
Benzene,1-methylethyl- (Cumene)		5000	x	U055	98-82-8
Benzene,1,2-dichloro		100	x	U070	95-50-1
Benzene,1,2,4,5- tetrachloro-		5000		U207	95-94-3
Benzene,1,3-dichloro		100	x	U071	541-73-1
Benzene,1,3-diisocy- anatomethyl		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
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- (toulene)		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				
Benzenesulfonyl chloride		100		U020	98-09-9
Benzidine		1	x	U021	92-87-5
Benzimidazole,4,5-di- chloro-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

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
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
Benzonitrile		5000			100-47-0
Benotrichloride	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- (((methyla	500/10,000				15271-41-7
Biphenyl			x		92-52-4
Bis(2-chloroethoxy) methane		1000		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
Boron trifluoride	500				7637-07-2
Bromadiolone	100/10,000				18772-56-7
Bromine	500				7726-95-6
Bromoacetone		1000		P017	598-31-2
Bromochlorodi- fluoromethane (Halon 1211)			x		353-59-3
Bromoform		100	x	U225	75-25-2
Bromotrifluoro- methane (Halon 1301)			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			
Butyraldehyde			x		123-72-8
Butyric acid		5000			107-92-6

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (b)	Haz. Sub. RQ 40 CFR 302.4 (b)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
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
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 dodecylbenzene 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
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

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
Chlorinated fluorocarbon (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
Chlormequat 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
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
Chloromethyl methyl ether	100	10	x	U046	107-30-2
Chlorophacinone	100/10,000				3691-35-8
Chloroprene			x		126-99-8
Chlorothalonil			x		1897-45-6
Chloroxuron	500/10,000				1982-47-4
Chlorpyrifos		1			2921-88-2
Chlorosulfonic 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-trilomethylidyne))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
Coumatetralyl	500/10,000				5836-29-3
Cresol(s) (mixed isomers)		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 hyperoxide			x		80-15-9
Cupferron			x		135-20-6

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
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 sulfate		10			7758-98-7
Cupric sulfate ammoniated		100			10380-29-7
Cupric tartrate		100			815-82-7
Cyanides (soluble cyanide 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
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)phthalate (DEHP)			x		177-81-7
Di-n-octyl phthalate		5000	x	U107	117-84-0
Di-n-propylnitrosamine (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
Dibromotetrafluor- ethane (Halon 2402)			x		124-73-2
Dibutyl phthalate		10	x	U069	84-74-2
Dicamba		1000			1918-00-9
Dichlone		1			117-80-6
Dichlorobenzene (mixed isomers)		100	x		25321-22-6

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
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
Dichloromethyl- phenylsilane	1000				149-74-6
Dichloropropane		1000			26638-19-7
Dichloropropane- Dichloropropene (mixture)		100			8003-19-8
Dichloropropene		100			26952-23-8
Dichlorotetrafluoro- ethane (CFC-114)			x		
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
Diethyl-p-nitrophenyl phosphate		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
Diisopropylfluorophosphate	100	100		P043	55-91-4
Dimetox	500				115-26-4
Dimethoate	500/10,000	10		P044	60-51-5
Dimethyl-p-phenyl- enediamine	10/10,000				99-98-9
Dimethyl phosphoro- chloridothioate	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
Dinoterb	500/10,000				1420-07-1
Dioxathion	500				78-34-2
Diphacinone	10/10,000				82-66-6

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (b)	Haz. Sub. RQ 40 CFR 302.4 (b)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
Diphosphoramidate, 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
Dithiazinone iodide	500/10,000				514-73-8
Dithiobiuret	100/10,000	100		P049	541-53-7
Diuron		100			330-54-1
Dodecylbenzenesulf- onic 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
Ethane, 1,1,1,2- tetrachloro-		100		U208	630-20-6
Ethane, 1,1,1,2,2- tetrachloro-		100	x	U209	79-34-5
Ethane, hexachloro		100	x	U131	67-72-1
Ethanesulfonyl chloride, 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- chloroethyl)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

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
Ethylene thiourea		10	x	U116	96-45-7
Ethylenebisdithiocarbamic- acid, salts & esters/		5000		U114	111-54-6
Ethylenediamine	10,000	5000			107-15-3
Ethylenediamine tetra- acetic acid (EDTA)		5000			60-00-4
Ethyleneimine	500	1	x	P054	151-56-4
Ethylenethiocyanate	10,000				542-90-5
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 citrate		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 sulfate		1000			10045-89-3
Ferrous chloride		100			7758-94-3
Ferrous sulfate		1000			7720-78-7
Ferrous sulfate		1000			7782-63-0
Flourouracil	500/10,000				51-21-8
Fluometuron	100/10,000				4301-50-2
Fluorene		5000	x		2164-17-2
Fluorine	500	10		P056	86-73-7
Fluoroacetamide	100/10,000	100		P057	7782-41-4
Fluoroacetic acid	10/10,000				640-19-7
Fluoroacetyl chloride	10				144-49-0
Fonofos	500				359-06-8
Formaldehyde	500	100	x	U122	944-22-9
Formaldehyde cyanohydrin	1000				50-00-0
Formetanate hydrochloride	500/10,000				107-16-4
Formic acid		5000		U123	23422-53-9
Formothion	100				64-18-6
Formparanate	100/10,000				2540-82-1
Fosthietan	500				17702-57-7
Fuberidazole	100/10,000				21548-32-3
Fulminic acid, mercu- ry(II) salt		10		P065	3878-19-1
Fumaric acid		5000			628-86-4
Furan	500	100		U124	110-17-8
Furan, tetrahydro-		1000		U213	110-00-9
Gallium trichloride	500/10,000				109-99-9
Glycidylaldehyde		10		U126	13450-90-3
Guanidine,N-nitroso-N methyl-N'-nitro		10		U163	765-33-4
Heptachlor		1	x	P059	70-25-7
Heptachlor epoxide		1			76-44-8
Hexachloro-1,3-butadiene		1	x	U128	1024-57-3
Hexachlorocyclopentadiene	100	10	x	U130	87-68-3
					77-47-4

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
Hexachloronaphthalene			x		1335-87-1
Hexachlorophene		100		U132	70-30-4
Hexachloropropene		1000		U234	1888-71-7
Hexaethyl tetraphosphate		100		P062	757-58-4
Hexamethylenediamine, N,N'-dibutyl-	500				4835-11-4
Hexamethylphosphoramide			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		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
is-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 diisocyanate	100				4098-71-9
Isoprene		100			78-79-5
Isopropanolamine dode- cylbenzene sulfonate		1000			42504-46-1
Isopropyl alcohol (mfg- strong acid processes)			x		67-63-0
Isopropyl chloroformate	1000				108-23-6
Isopropylmethylpyrazolyl dimethylcarbamate	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

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
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
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		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
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		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

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
Methanesulfanyl chloride, trichloro	500	100		P118	594-42-3
Methanesulfonyl fluoride	1000				558-25-8
Methanol		5000	x	U154	67-56-1
Methapyrene		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
Methoxyethylmercuric acetate	500/10,000				151-38-2
Methyl 2-chloroacrylate	500				80-63-7
Methyl acrylate			x		96-33-3
Methyl bromide	1000	1000	x	U029	74-83-9
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		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-(phenyliso- cyanate)(MBI)			x		101-68-8
Methylmercuric dicy- anamide	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
Monocrotophos (Mono)chloropenta- fluoroethane (CFC 115)	10/10,000				6923-22-4
			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-methylurea		1	x		684-93-5

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (b)	Haz. Sub. RQ 40 CFR 302.4 (b)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
N-Nitrosodiphenylamine		100	x		86-30-6
N-Nitrosomethylvinylamine		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 sulfate		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
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
Nitriiotriacetic acid			x		139-13-9
Nitrobenzene	10,000	1000	x	U169	98-95-3
Nitrocyclohexane	500				1122-60-7
Nitrofen			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
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

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
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			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 (Cuprie acetoarsenite)	500/10,000	1			12002-03-8
Pentaborane	500				19624-22-7
Pentachloroethane		10		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
Phenol,2,2'-thiobis (4-chloro-6-methyl	100/10,000				4418-66-0
Phenol,2,3,4,6-tetrachloro		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-methylethyl), 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 hydro- chloride	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-nitrophe- nyl)O-phenyl ester	500				2703-13-1
Phosphonothioic acid, methyl-O-ethyl-O-(4- (methylthio)phenyl) Ester	100				50782-69-9
Phosphonothioic acid, methyl-,s-(2-(bis(1- methylethyl)amino Ethyl o-Ethyl Ester					
Phosphoric acid		5000	x		7664-38-2
Phosphoric acid, dimethyl	500				3254-63-5

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
4-(methylthio)phenyl ester					
Phosphorothioc acid	500	100		P040	297-97-2
O,O-diethyl, O-pyrazinyl ester					2587-90-8
Phosphorothioc acid,O,O- dimethyl-S-(2- methylthio)ethyl est	500				
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 biphenyls (PCBs)		1	x		1336-36-3
Potassium arsenate		1			7784-41-0
Potassium arsenite	500/10,000	1			10124-50-2
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
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
Pyrethrins		1			121-21-1
Pyrethrins		1			121-29-9
Pyrethrins		1			8003-34-7

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
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
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(N3))	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 dodecylbenzene 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 phosphate,dibasic		5000			10039-32-4
Sodium phosphate,dibasic		5000			10140-65-5
Sodium phosphate,dibasic		5000			7558-79-4
Sodium phosphate,tribasic		5000			10101-89-0
Sodium phosphate,tribasic		5000			10124-56-8
Sodium phosphate,tribasic		5000			10361-89-4

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
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				13410-01-0Sodium
Sodium selenite	100/10,000	100			10102-18-8
Sodium selenite		100			7782-82-3
Sodium tellurite	500/10,000				10102-20-2
Strannane,acetoxy- 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-chloropropyl 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
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(I) 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
Thallos chloride	100/10,000	100		U216	7791-73-9
Thallos malonate	100/10,000				2757-18-8
Thallos 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		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

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
Thiourea,(2-chlorophenyl)-	100/10,000	100		P026	5344-82-1
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-diisocyanate	500	100	x		584-84-9
Toluene,2,6-diisocyanate	100	100	x		91-08-7
Toxaphene(Campheclor)		1	x	P123	8001-35-2
Trans 1,1-dichlorobutene	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(chloromethyl) silane	100				1558-25-4
Trichloro(dichlorophenyl) 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 dodecylbenzene sulfonate		1000			27323-41-7
Triethoxysilane	500				998-30-1
Triethylamine		5000			121-44-8
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		U236	72-57-1
Uracil,5-[bis(2-chloroethyl)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

Appendix 7-1 (continued)

Chemical Name	Extremely Haz. Sub. 40 CFR 355 (lb)	Haz. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Haz. Wastes that are Haz. Mat.	CAS No.
Zinc acetate		1000			557-34-6
Zinc ammonium chloride		1000			52628-25-8
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)carbonyl)oxy)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



INSTALLATION:	COMPLIANCE CATEGORY: COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT/SUPERFUND AND REAUTHORIZATION ACT AND RCRA CORRECTIVE ACTIONS ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) MUSARC engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW

Section 8

TOXIC SUBSTANCES CONTROL ACT (TSCA)

SECTION 8

TOXIC SUBSTANCES CONTROL ACT (TSCA)

A. Applicability of this Protocol

This protocol applies to all Army Reserve facilities. Currently this section contains protocols for polychlorinated biphenyls (PCBs). PCBs are regulated on the Federal level by the U.S. Environmental Protection Agency (USEPA), though some states have also promulgated regulations. Specific state regulations are not included in this protocol.

The *TSCA* protocol is used to determine the compliance status of the management activities associated with: PCBs and in-service and out-of-service PCB Items.

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 of the United States developed in *TSCA* on chemical substances is as follows:
 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 (15 USC 2601(b)).

Upon request by the USEPA, each Federal department and agency is authorized to:

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 to the USEPA such 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 (15 USC 2625(a)).
- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*, of 13 October 1978, requires Federally owned and operated facilities to comply with applicable Federal, state, and local environmental requirements. 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. Additionally, the EO requires each agency to ensure that sufficient funds for environmental compliance are included in the agency budget.

C. State/Local Requirements

Some states have agreements with the USEPA to administer the Federal regulations. 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 to 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:

- PCBs may be regulated as a hazardous waste.
- PCBs may be regulated to a lower concentration. For example, regulated PCBs in one state are defined to be materials and fluids that contain PCBs at a concentration greater than 7 parts per million (ppm).
- Shipments of PCBs may require manifest documents.
- Analyses may be required to quantify the PCB concentration in all PCB Items.
- Additional inspections of select PCB Items and specific disposal requirements for PCBs and PCB Items may also be required.
- Generators of PCBs and PCB Items may be required to obtain disposal permits.

D. Department of Defense (DOD) Regulations

- None.

E. U.S. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, Chapter 5, para 6, *Polychlorinated Biphenyls (PCBs)*, mandates Army Reserve compliance with TSCA and other applicable Federal statutes. It also outlines a recordkeeping system for PCBs and PCB-related Items.

F. Key Compliance Requirements

- The Federal PCB regulations allow PCB Equipment (Transformers and Capacitors) that are in service to remain in service. While in service, they must be labeled, inspected, and any leaks detected must be corrected. Once taken out of service, PCB Equipment can be stored for disposal for 1 year (yr) in a specially designed storage area. PCB fluids must be disposed of by incineration in a specially licensed incinerator and PCB Equipment (without the fluid) must be disposed of in a specially licensed landfill.

G. Key Compliance Definitions

These definitions were obtained from Army, DOD, and compliance regulations sited previously.

- *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):
 - Small Capacitor - a capacitor that contains less than 1.36 kilogram (kg) or 3 pounds (lb) of dielectric fluid.
 - Large, High-Voltage Capacitor - a capacitor that contains 1.36 kg or 3 lb or more of dielectric fluid and operates at 2000 volts (V) alternating current (ac) or direct current (dc) or higher.
 - Large, Low-voltage Capacitor - a capacitor that contains 1.36 kg (3 lb) or more of dielectric fluid and operates below 2000 V (ac or dc).
- *Chemical Waste Landfill* - a 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 operating the landfill as required (40 CFR 761.3).

- *Commercial Storer of PCB Waste* - the owner or operator of each facility 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 form 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 gallons (gal) of PCBs, the owner or operator is not required to seek approval as a commercial storer of PCB waste (40 CFR 761.3).
- *Disposal* - to intentionally or accidentally 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 nonimpervious) 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 Situations* - a condition that exists, for continuing use of a PCB Transformer, 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 hours (h) for installation, or
 2. Immediate replacement is necessary to continue service for power users.
- *EPA Identification Number* - the 12-digit number assigned to a facility by USEPA upon notification of PCB waste activity (40 CFR 761.3).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *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 meters of a nonindustrial, nonsubstation building (40 CFR 761.3).
- *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).
- *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).
- *Marked* - 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).
- *Non-PCB Transformers* - any transformer that contains less than 50 ppm PCBs; however, 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).
- *PCB or PCBs* - any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contains such a 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 PCB. This includes capacitors, transformers, electric motors, pumps, pipes etc (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 Container* - any package, can, bottle, bag, barrel, drum, tank, or other device that contains PCBs or PCB Articles and whose surface has 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 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 Part 761 (40 CFR 761.3).
- *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).
- *Retrofill* - to remove PCB or PCB contaminated dielectric fluid and to 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).

TOXIC SUBSTANCES CONTROL ACT (TSCA)

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
PCBs:		
All facilities with PCBs	8-1 through 8-7	(1)(2)(5)(12)(19)
Documentation	8-8 through 8-10	(1)(2)(5)(12)
Transformers	8-11 through 8-18	(1)(2)(5)(12)(19)
PCB Spills	8-19 through 8-21	(1)(2)(5)(12)(19)
PCB Items	8-22 through 8-25	(1)(2)(12)(19)
PCBs in Research	8-26	
PCB Storage	8-27 through 8-31	(1)(2)(5)(12)(19)
Transportation	8-32 and 8-33	(1)(2)(5)(12)(19)
Disposal	8-34 through 8-44	(1)(2)(5)(12)(19)

Items numbered 8-7, 8-9, 8-10, 8-26, and 8-34 are not Army Reserve applicable and are not included in this manual.

(a) CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager
- (5) Directorate of Engineering and Housing (DEH)/DPW
- (12) Environmental Coordinator (EC)
- (19) Utilities Division

TOXIC SUBSTANCES CONTROL ACT (TSCA)

Plans and Maps to Review

- Spill plan

Records to Review

- Inspection, storage, maintenance, and disposal records for PCBs/PCB Items
- PCB Equipment inventory and sampling results
- Correspondence with regulatory agencies concerning PCB noncompliance situations
- Annual reports

Physical Features to Examine

- PCB storage areas
- Equipment, fluids, and other items used or stored at the facility containing PCBs

People to Interview

- MUSARC Engineer/Facility Coordinator
- Facility Manager
- Directorate of Engineering and Housing (DEH)/DPW
- Environmental Coordinator (EC)
- Utilities Division
- BASOPs ARCOM Environmental Managers

**COMPLIANCE CATEGORY:
TOXIC SUBSTANCES CONTROL ACT (TSCA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ALL FACILITIES</p> <p>8-1. Determine actions or changes since previous review of PCB management (GMP).</p> <p align="center">...</p> <p>8-2. The facility should maintain current and effective regulations on PCB management (GMP).</p> <p align="center">...</p> <p>8-3. Army Reserve facilities are required to comply with state and local requirements (EO 12088, Section 1-1).</p> <p align="center">...</p> <p>8-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, re-occurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation, promotes good public relations and addresses systemic weakness in the overall operation of the program (GMP).</p> <p align="center">...</p>	<p>Examine copy of previous review report to determine if noncompliance issues have been resolved. (1)(2)(5)(12)</p> <p>Determine if facility changes relative to PCB Equipment have occurred since previous review which would affect scope of review. (1)(2)(5)(12)</p> <p align="center">...</p> <p>Determine if copies of the following regulations, which are applicable, are maintained at the ARCOM or Support Installation: (1)(2)</p> <ul style="list-style-type: none"> - 40 CFR 761, <i>PCB Regulations.</i> - 40 CFR 268, <i>Land Disposal Restriction.</i> - 40 CFR 372, <i>Toxic Chemical Release Reporting.</i> - Executive Order (EO) 12088, <i>Federal Compliance with Pollution Standards.</i> - AR 200-1, <i>Environmental Protection and Enhancement.</i> - Spill Prevention Control and Countermeasure (SPCC) Plan. - Installation Spill Cleanup Plan (ISCP). - Copies of any state regulations on PCB use and disposal if applicable. <p align="center">...</p> <p>Verify that the facility is complying with state and local requirements. (1)(5)(12)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (1)(2)</p> <p>(NOTE: Issues which are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - definitions of PCB-Contaminated - storage, labeling, and disposal requirements.) <p align="center">...</p> <p>Determine what management systems are in place. (1)(2)</p> <p>Verify that the existing system addresses the issues associated with TSCA by: (1)(2)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p>Determine if training is being conducted. (1)(2)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (19) Utilities Division

**COMPLIANCE CATEGORY:
TOXIC SUBSTANCES CONTROL ACT (TSCA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-5. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in this manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p align="center">...</p>	<p>Determine if any new regulations concerning PCBs have been issued since the finalization of the manual. (1)</p> <p>Verify that the facility is in compliance with newly issued regulations. (1)</p> <p>(NOTE: For findings under this item, the Regulatory Requirement and the Basis of Findings should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (19) Utilities Division

**COMPLIANCE CATEGORY:
TOXIC SUBSTANCES CONTROL ACT (TSCA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-6. Certain equipment that contains PCBs must be marked with an M₁ marking (40 CFR 761.40 and 761.45).</p> <p style="text-align: center;">...</p> <p>8-7.</p> <p style="text-align: center;">...</p>	<p>Inspect equipment containing PCBs and verify that they are marked with an M₁ marking easily read by any person inspecting or servicing the equipment (See Appendix 8-1 for a sample of the marking): (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - PCB Containers with PCBs in concentrations of 50 to 500 ppm - PCB Transformers (500 ppm or greater) - PCB Large High Voltage Capacitors - equipment containing a PCB Transformer (500 ppm or greater) or a PCB Large High Voltage Capacitor at the time of removal from service - PCB Large Low Voltage Capacitors at the time of removal from service - electric motors using PCB coolants with a concentration of 50 to 500 ppm - hydraulic systems using PCB hydraulic fluid with concentrations of 50 to 500 ppm - heat transfer systems (other than PCB Transformers) using PCB concentrations of 50 to 500 ppm - PCB Article Containers containing any of the above - each storage area used to store PCBs and PCB Items for disposal - 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 - 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). <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 facility. (1)(2)(5)(12)(19)</p> <p>(NOTE: Marking Format Large PCB Mark (M₁) letters and striping, on a white or yellow background, sufficiently durable to equal or exceed the life of the PCB Article. The size shall be 15.25 centimeters (cm) (6 inches (in.)) on each side. If the article is too small to accommodate this size, a smaller label (M₁) may be used.)</p> <p>(NOTE: Marking of PCB Contaminated electrical equipment (50-500 ppm) is not required.)</p> <p>(NOTE: See Appendix 8-2 for dielectric fluid trend names and manufacturers.)</p> <p style="text-align: center;">...</p> <p>This item is not Army Reserve applicable.</p> <p style="text-align: center;">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>DOCUMENTATION</p> <p>8-8. A written annual document log must be prepared by 1 July of each calendar year, covering the previous year for all facilities 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 Transformer (500 ppm or greater), or 50 or more PCB Large, High- or Low- Voltage Capacitors (40 CFR 761.180(a)).</p>	<p>Verify that the annual document log and annual records (manifests certificates of disposal) are kept for at least 5 yr after the facility stops using or storing PCBs and PCB items in the listed quantities. (1)(2)(5)(12)</p> <p>Verify that the written annual document log contains the following: (1)(2)(5)(12)</p> <ul style="list-style-type: none"> - identification of facility - calendar year covered - manifest number for every manifest generated - total number (by type) of PCB Articles, PCB Article Containers, and PCB Containers placed into storage for disposal or disposed of during the calendar year - total weight placed into storage for disposal or disposed of during the calendar year of: <ul style="list-style-type: none"> - PCBs in PCB Articles - contents of PCB Article Container - contents of PCB Containers - bulk PCB Waste - a list of PCBs and PCB Items remaining in-service at the end of the calendar year. The total weight of any PCBs and PCB Items in containers including identification of container contents and the total number of PCB Transformers, PCB Large, High- and Low-Voltage Capacitors, and the total weight of PCBs in PCB Transformers - a record of each telephone call or other form of verification to confirm the receipt of PCB Waste transported by independent transport.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-8. (continued)</p> <p>...</p>	<p>Verify that the annual document log contains the following for each manifest, for unmanifested waste, and for any PCBs or PCB Items received from or shipped from another facility owned or operated by the generator: (1)(2)(12)</p> <ul style="list-style-type: none"> - date removed from service for disposal (first date material placed in PCB Container) - date placed into transport for offsite storage/disposal - date of disposal (if known) - weight of PCB Wastes <ul style="list-style-type: none"> - total - bulk PCB Wastes - in each article -PCB Transformers or Capacitors - total in each container -PCB Containers - total weight of contents and of the PCB Article (in kg) in each PCB Article Container - serial number or other unique ID No. (except for bulk wastes) - description of the contents for PCB Containers and Article Containers. <p>Verify that the annual record includes the following information is provided: (1)(2)(12)</p> <ul style="list-style-type: none"> - all signed manifests generated or received at the facility during the calendar year - all certificates of disposal that have been generated or received during the calendar year. <p>...</p>
<p>8-9.</p> <p>...</p>	<p>This item is not Army Reserve applicable.</p> <p>...</p>
<p>8-10.</p> <p>...</p>	<p>This item is not Army Reserve applicable.</p> <p>...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>TRANSFORMERS</p> <p>8-11. PCB Transformers with PCBs at concentrations of 500 ppm or greater that are in use or in storage for reuse shall not pose an exposure risk to food and feed (40 CFR 761.30(a)(1)(i)).</p> <p align="center">...</p> <p>8-12. PCB Transformers with PCBs at concentrations of 500 ppm or greater are subject to certain registration requirements (40 CFR 761.30(a)(1)(vi)).</p> <p align="center">...</p> <p>8-13. Combustible materials, including but not limited to paints, solvents, plastics, paper, and sawed wood, must not be stored near a PCB Transformer with PCBs at concentrations of 500 ppm or greater (40 CFR 761.30(a)(1)(viii)).</p> <p align="center">...</p>	<p>Determine if there are any PCB Transformers on the facility, in use or in storage for reuse, that pose an exposure risk to food and feed by reviewing the PCB Inventory. (1)(2)(5)(12)(19)</p> <p align="center">...</p> <p>Verify that all PCB Transformers, with PCB concentrations of 500 ppm or greater, including those in storage for reuse, are registered with post fire department, or the fire department with jurisdiction, with the following information: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - physical location of PCB Transformer(s) - principle constituent of dielectric fluid (i.e., PCBs, mineral oil, silicone oil, etc.) - name and telephone number of contact person knowledgeable of PCB Transformer(s). <p align="center">...</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. (1)(2)(5)(12)(19)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-14. PCB Transformers with PCBs at concentrations of 500 ppm or greater 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 align="center">...</p>	<p>Determine if there are any transformers located in or near commercial buildings. (1)(2)(5)(12)(19)</p> <p>Verify 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)(2)(5)(19)</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)(2)(5)(19)</p> <p>Determine where any of the following PCB Transformers are in use in or near commercial buildings or located in sidewalk vaults and if plan exists to equip such PCB Transformers with electrical protection to avoid transformer failure that would result in release of PCBs: (1)(2)(5)(19)</p> <ul style="list-style-type: none"> - Radial PCB Transformers and lower secondary voltage network PCB Transformers (voltage is greater than 480 V) - Radial PCB Transformers with higher secondary voltages (greater than or equal to 480 V including 480/277 V system). <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)(2)(5)(19)</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)(2)(5)(19)</p> <ul style="list-style-type: none"> - electrical protection such as current-limiting fuses to avoid transformer ruptures - disconnect equipment to insure complete deenergization of the transformer in case of a sensed abnormal condition. <p>Verify that all lower secondary voltage radial PCB Transformers, in use in or near commercial buildings 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)(2)(5)(19)</p> <p>Verify that if PCB Transformers are in use in or near commercial buildings, they have been registered with the DEH and the following information provided: (1)(2)(5)(19)</p> <ul style="list-style-type: none"> - specific location of PCB Transformer(s) - principal constituent of dielectric fluid (i.e., PCBs, mineral oil, silicone oil, etc.) - type of transformer. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-15. PCB transformers are required to be properly serviced (40 CFR 761.30(a)(2)).</p> <p align="center">...</p>	<p>Interview persons performing transformer servicing and determine what servicing activities are properly conducted as follows: (1)(2)(5)(12)</p> <ul style="list-style-type: none"> - transformers classified as PCB-contaminated electrical equipment (50-500 ppm) are only serviced with dielectric fluid containing less than 500 ppm PCB - the transformer coil is not removed during servicing of PCB Transformers with PCB concentrations of 500 ppm or greater - PCBs removed during servicing are captured and are either reused as dielectric fluid or disposed of properly - the PCBs from a PCB Transformer (500 ppm or greater) are not mixed with or added to dielectric fluid from PCB-contaminated electrical equipment (50-500 ppm) - 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 (50-500 ppm). <p>(NOTE: PCB Transformers (500 ppm or greater) may be serviced with dielectric fluid at any concentration.)</p> <p align="center">...</p>
<p>8-16. Inspections must be performed once every 3 months (mo) for all in-service PCB Transformers (500 ppm or greater PCB) (40 CFR 761.30(a)(1)(ix), 761.30(a)(1)(xii), 761.30(a)(1)(xiii), 761.30(a)(1)(xiv)).</p>	<p>Verify that applicable transformers are inspected at least once every 3 mo by reviewing the inspection records. (1)(2)(5)(12)</p> <p>Determine whether any PCB Transformers have been leaking. (1)(2)(5)(12)</p> <p>Verify that when leaking PCB Transformers have been found, proper reporting procedures have been followed. (1)(2)(5)(12)</p> <p>Verify that the following information is recorded for each PCB Transformer inspection: (1)(2)(5)(12)</p> <ul style="list-style-type: none"> - location of transformer - dates of each visual inspection - date when any leak was discovered - name of person conducting inspection - location and estimate of the dielectric fluid quantity for any leaks - data and description of any cleanup, containment, or repair performed - results of any daily inspections for transformers with uncorrected active leaks. <p>(NOTE: Reduced visual inspection of at least once every 12 mo is allowed for PCB Transformers with impervious, undrained secondary containment capacity of 100 percent of dielectric fluid and for PCB Transformers tested and found to contain less than 60,000 ppm PCBs.)</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-16. (continued)</p> <p align="center">...</p> <p>8-17. PCB Transformers with concentrations of PCBs at 500 ppm or greater 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 align="center">...</p> <p>8-18. When a PCB Transformer with concentrations of PCBs at 500 ppm or greater is involved in a fire, the facility is required to immediately report the incident to the National Response Center (NRC) (40 CFR 761.30(a)(1)(xi)).</p> <p align="center">...</p> <p>PCB SPILLS</p> <p>8-19. Facilities are required to report spills of more than 10 lb of PCBs of concentrations of 50 ppm or greater (40 CFR 761.120(a)(1), 761.123(d)(2), and 761.125(a)).</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>Verify that records of inspection and maintenance are kept for 3 yr after disposal.</p> <p align="center">...</p> <p>Verify that cleanup and/or containment of released PCBs has been initiated within 48 h of its detection or as soon as possible. (1)(2)(5)(12)(19)</p> <p>Verify that leaking PCB Transformers are inspected daily. (1)(2)(5)(12)(19)</p> <p>Determine if plans exist to repair or replace transformers to eliminate the source of the leak. (1)(2)(12)</p> <p>Verify that cleaned up material is disposed of according to appropriate requirements, see checklist items on DISPOSAL. (2)(23)</p> <p align="center">...</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)(2)(5)(12)(19)</p> <p>Verify that the NRC was notified and the following measures were taken: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - floor drains were blocked - water runoff was contained. <p align="center">...</p> <p>Verify that when a spill of 10 lb or more directly contaminates surface water, sewers, or drinking water the facility notifies the regional USEPA office within 24 h after discovery of the spill and acts on the guidance given by the USEPA. (1)(2)(5)(12)(19)</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-19. (continued)</p> <p align="center">...</p> <p>8-20. Cleanup of low concentration spills of less than 1 lb of PCBs (less than 270 gal 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 align="center">...</p>	<p>Verify that if a spill of 10 lb or more directly contaminates grazing land or a vegetable garden the facility notifies the USEPA regional office within 24 h after discovery and begins the cleanup of the spill. (1)(2)(5)(12)(19)</p> <p>Verify that when a spill of 10 lb or more occurs which does not directly contaminate surface waters, sewers, drinking water supplies, grazing land, or a vegetable garden the facility notifies the USEPA Regional office within 24 h after discovery of the spill and begins decontamination of the spill area. (1)(2)(5)(12)(19)</p> <p>(NOTE: Spills greater than 1 lb are required to be reported to the NRC under 40 CFR 302.1 through 302.6, see appropriate checklist items in CERCLA/SARA.)</p> <p align="center">...</p> <p>Verify that solid surfaces are double washed/rinsed and all indoor, residential surfaces other than vault areas are cleaned to 10 micrograms (µg) per 100 cm² by standard commercial wipe tests. (1)(2)(5)(12)(19)</p> <p>Verify that all soil within the spill area (visible traces of soil and buffer of 1 lateral foot (ft) 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)(5)(12)(19)</p> <p>Verify that the above cleanup requirements are done within 48 hr after identifying the spill unless an emergency or adverse weather delays the process. (1)(2)(5)(12)(19)</p> <p>Verify that the cleanup is documented with records and certification of decontamination and the records are maintained for 6 yr. (1)(2)(5)(12)(19)</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> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-21. Cleanup of high-concentration spills and low concentration spills involving 1 lb or more of PCBs by weight (270 gal or more 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 (c)).</p>	<p>Verify that the following actions are taken within 24 h (or within 48 h for PCB Transformer with PCB concentrations of greater than 500 ppm) of discovery of the spill: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - notification of the USEPA regional office and the NRC - the area of the spill is cordoned off or otherwise identified to include the area with visible traces of the spill and a 2 ft buffer zone (If there are no visible traces, the area of the spill may be estimated) - clearly visible signs are placed advising persons to avoid the area - the area of visible contamination is recorded and documented, identifying the extent and center of the spill - cleanup of visible traces of the fluid from hard surfaces is initiated - removal of all visible traces of the spill on soil and other media such as gravel, sand, etc is started. <p>Verify that if the spill occurs in an outdoor substation: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - contaminated solid surfaces are cleaned to a PCB concentration of 100 µg/cm² (as measured by standard wipe tests) - soil contaminated by the spill is cleaned to either 25 ppm PCBs by weight or 50 ppm PCBs by choice of the facility if a label to notice is placed in the area indicating the level of cleanup - post-cleanup sampling is done. <p>Verify that if the spill occurs in a restricted access area other than an outdoor substation: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - high-contact solid surfaces are cleaned to 10 µg/100 cm² (as measured by standard wipe tests) - low-contact, indoor, impervious solid surfaces are decontaminated to 10 µg/100 cm² - low contact, indoor, nonimpervious surfaces are cleaned to either 10 µg/100 cm² or 100 µg/100 cm² and encapsulated at the option of the facility - low-contact, outdoor surfaces (both impervious and nonimpervious are cleaned to 100 µg/100 cm² - soil contaminated by the spill is cleaned to 25 ppm PCBs by weight - post-cleanup sampling is done.

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**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

8-21. (continued)

Verify that spills in nonrestricted access locations are decontaminated as follows: (1)(2)(5)(12)(19)

- furnishings, toys, and other easily replaceable household items are disposed of and replaced
- indoor solid surfaces and high-contact outdoor solid surfaces are cleaned to 10 µg/100 cm² as measured by standard wipe tests)
- indoor vault areas and low-contact, outdoor, impervious solid surfaces are decontaminated to 10 µg/100 cm²
- at the option of the facility, low-contact, outdoor, nonimpervious solid surfaces are cleaned to either 10 or 100 µg/100 cm² and encapsulated
- soil is decontaminated to 10 ppm PCBs by weight provided that the soil is excavated to a minimum depth of 10 in. and replaced with clean soil
- post-cleanup sampling is done.

Verify that records documenting all cleanup and decontamination are maintained for 5 yr. (1)(2)(5)(12)(19)

(NOTE: The occurrence/discovery of the spill on the weekend or overtime costs are not considered acceptable reasons to delay response.)

(NOTE: The final numerical cleanup standards do not apply to spills directly into surface waters, drinking water, sewers, grazing lands, and vegetable gardens.)

(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.)

...

...

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>PCB ITEMS</p> <p>8-22. PCBs may be used in heat transfer and hydraulic systems in a manner other than a totally enclosed manner in concentrations less than 50 ppm if specific requirements are met (40 CFR 761.30(d) through 761.30(e)).</p> <p align="center">...</p> <p>8-23. Electromagnets, switches, and voltage regulators may contain PCBs at any concentrations if certain requirements are met (40 CFR 761.30(h)).</p> <p align="center">...</p> <p>8-24. Capacitors may contain PCBs at any concentration subject to certain requirements (40 CFR 761.30(i)).</p> <p align="center">...</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)(2)(19)</p> <p>Verify that no fluid containing greater than 50 ppm PCB is added to heat transfer or hydraulic systems. (1)(2)(19)</p> <p>Verify that results from analyses, which are performed to demonstrate presence of less than 50 ppm PCB, are retained for confirmation for at least 5 yr. (1)(2)(19)</p> <p>Confirm that heat transfer or hydraulic systems are free from leaks of dielectric PCBs. (1)(2)(19)</p> <p align="center">...</p> <p>Verify that no electromagnets are used or stored on the facility that contain greater than 500 ppm PCB poses an exposure risk to food or feed. (1)(12)(19)</p> <p>Verify that electromagnets that contain greater than 500 ppm PCB which pose an exposure risk to food or feed are inspected at least weekly to determine if they are leaking. (1)(12)(19)</p> <p>Verify that electromagnets, switches, and voltage regulators, that contain 500 ppm or greater PCB, are not rebuilt and no removal or reworking of internal components is done during servicing. (1)(12)(19)</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 with less than 500 ppm PCB. (1)(12)(19)</p> <p>Verify that PCBs removed or captured are either reused as dielectric fluid or disposed of properly. (1)(12)(19)</p> <p>Verify that dielectric fluid containing a mixture of fluids with less than 500 ppm PCBs is not used as dielectric fluid in any electrical equipment. (1)(12)(19)</p> <p align="center">...</p> <p>Verify that all PCB Large, High- and Low-Voltage Capacitors that pose an exposure risk to food and feed have been removed. (1)(12)(19)</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)(12)(19)</p> <p>Verify that Capacitors have been free from leaks of dielectrical PCBs. (1)(12)(19)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-25. Circuit breakers, reclosers, and cable may contain PCBs at any concentration for remainder of their useful lives subject to certain conditions. (40 CFR 761.30(m)).</p> <p align="center">...</p> <p>PCBs IN RESEARCH</p> <p>8-26.</p> <p align="center">...</p> <p>PCB STORAGE</p> <p>8-27. 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 (40 CFR 761.65(a) through 761.5(b) and 761.65(c)(8)).</p> <p align="center">...</p>	<p>Verify that any Circuit Breakers, Reclosers, and Cables used at the facility are serviced using only dielectric fluid which contains less than 50 ppm PCB and have been free from leaks. (1)(12)(19)</p> <p align="center">...</p> <p>This item is not Army Reserve applicable.</p> <p align="center">...</p> <p>Inspect the PCB storage area and verify that the following provisions are present: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - 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 - a 6-in. tall containment curb circumscribing 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 largest PCB Article or 25 percent of the total internal volume of all PCB Articles or Containers stored, whichever is greater - drains, valves, floor drains, expansion joints, sewer lines or other openings that would allow liquids to flow from the curbed area, must not present - floors and curbing shall be constructed of continuous, smooth, and impervious material - location is not below a 100-yr flood water elevation. <p>Verify that PCB Articles or PCB Containers are removed from storage and disposed of within 1 yr from the date they were placed in storage. (1)(2)(5)(19)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-28. PCB Items may also be stored in other areas that 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 align="center">...</p>	<p>Verify that only the following items are stored in areas used as 30 day storage areas and that they are properly marked: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - nonleaking PCB Articles and PCB Equipment - leaking PCB Articles and PCB Equipment placed in a nonleaking PCB Container which contains sufficient absorbent material to absorb liquid contained in the PCB Article or equipment - PCB Containers in which nonliquid PCBs have been placed - PCB Containers in which liquid PCBs at a concentration between 50 to 500 ppm have been placed and Containers marked to indicate less than 500 ppm PCB. <p>Verify that area has been included in the facility SPCC Plan, and ISCP. (1)(2)(5)(12)(19)</p> <p align="center">...</p>
<p>8-29. Nonleaking and structurally undamaged PCB Large, High-Voltage Capacitors and PCB Contaminated Electric Equipment (50 to 500 ppm) that have not been drained of free-flowing dielectric fluid may be stored on pallets next to a storage area that complies with the storage area requirements (40 CFR 761.65(c)(2)).</p> <p align="center">...</p>	<p>Determine that 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)(2)(5)(12)(19)</p> <p>Verify that capacitors and equipment stored outside the storage facility are on pallets and inspected at least weekly. (1)(2)(5)(12)(19)</p> <p align="center">...</p>
<p>8-30. 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 align="center">...</p>	<p>Verify that the following practices are conducted at any areas where PCBs or PCB Items are stored: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - movable equipment used for handling PCBs and PCB Items that directly contact PCBs are not removed from storage areas unless decontaminated - inspections for leaks of all PCB Articles and PCB Containers in storage are done at least once every 30 days - any leaked PCBs are immediately cleaned up and any spill absorbent material is properly disposed of - PCB Articles and Containers are marked with the date when placed into storage - PCB Articles and PCB Containers are positioned so that they can be located by the date they were placed into storage - containers in which PCBs are accumulated have a record that includes quantity and date of each batch. <p align="center">...</p>

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**COMPLIANCE CATEGORY:
TOXIC SUBSTANCES CONTROL ACT (TSCA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-31. Containers used for the storage of PCBs must comply with the shipping container specification of the Department Of Transportation (DOT) (40 CFR 761.65(c)(6) through 761.65(c)(7)).</p> <p align="center">...</p> <p>TRANSPORTATION</p> <p>8-32. A generator who offers a PCB waste for transport for commercial offsite storage or offsite disposal must prepare a manifest (40 CFR 761.207 through 761.210).</p> <p align="center">...</p>	<p>Inspect PCB storage area for containers. (1)(2)(5)(12)(19)</p> <p>Verify that DOT specifications are on drums/containers. Typical specifications are 5, 5B, 17C. (1)(2)(5)(12)(19)</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 containers used for storage of liquid PCBs are containers without removable heads. (1)(2)(5)(12)(19)</p> <p>Verify that if the facility uses containers larger than DOT approved containers, it has prepared a SPCC Plan covering the containers storing PCBs. (1)(2)(5)(12)(19)</p> <p align="center">...</p> <p>Verify that a manifest (USEPA Form 8700-22) has been prepared when needed and that it contains: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - 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, and - the unique identifying number of each PCB Article Container, the date of removal from service, type of waste, and the weight of PCB waste contained - 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 kg of the PCB waste in each PCB Article. <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. (1)(2)(5)(12)(19)</p> <p>Verify that the generator maintains a copy of the signed manifest for at least 3 yr after receipt of waste by the initial transporter. (1)(2)(5)(12)(19)</p> <p>(NOTE: This applies to PCB wastes as defined in 40 CFR 761.3, and that contain greater than 50 ppm PCB unless the concentration was reduced below 50 ppm by dilution.)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
TOXIC SUBSTANCES CONTROL ACT (TSCA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-33. 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 should 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 align="center">...</p>	<p>Verify that a procedure is in place so that if the generator does not receive a copy within 45 days of the date the waste was accepted by the initial transporter, an Exception Report was filed with the USEPA containing the following information: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - a legible copy of the manifest for which the generator does not have confirmation of delivery - a cover letter signed by the generator or his authorized representative explaining the efforts taken to locate the PCB waste and the results of those efforts. <p align="center">...</p>
<p>DISPOSAL</p>	
<p>8-34.</p> <p align="center">...</p>	<p>This item is not Army Reserve applicable.</p> <p align="center">...</p>
<p>8-35. PCB liquids greater than 50 ppm must be disposed of in an incinerator which is approved by the USEPA to incinerate PCBs (40 CFR 761.60(a)(1)).</p> <p align="center">...</p>	<p>Verify that all shipments were made to USEPA licensed PCB incinerators by checking DRMO manifests for all PCB shipments over the past 3 yr. (2)(12)</p> <p>(NOTE: Other disposal provisions apply to:</p> <ul style="list-style-type: none"> - mineral oil dielectric fluid from PCB-Contaminated Electrical Equipment with a concentration greater than 50 ppm but less than 500 ppm - liquids, other than mineral oil dielectric fluids, with PCB concentrations between 50 and 500 ppm - rags, solids, and other debris contaminated with PCBs at concentrations greater than 50 ppm - PCB Articles.) <p align="center">...</p>

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**COMPLIANCE CATEGORY:
TOXIC SUBSTANCES CONTROL ACT (TSCA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-36. 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 align="center">...</p>	<p>Verify that mineral oil dielectric fluid as described is disposed of in one of the following methods: (2)(12)</p> <ul style="list-style-type: none"> - an USEPA approved incinerator - 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 - an approved high efficiency boiler. <p>Verify that if the fluid is burned in an high efficiency boiler: (2)(12)</p> <ul style="list-style-type: none"> - the boiler is rated at a minimum of 50 million British thermal units (MBtu)/h. - the carbon monoxide (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 - 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 - the mineral oil dielectric fluid does not compromise more than ten percent (on a volume basis) of the total fuel feed rate. - the mineral oil dielectric fluid is not fed into the boiler unless the boiler is operating at its normal operating temperature - the operator of the boiler does one of the following: <ul style="list-style-type: none"> - continuously monitors and records the CO concentrations and excess oxygen percentages in the stack gas while burning mineral oil dielectric fluid - 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 of mineral oil dielectric fluid per year - the primary fuel feed rates, the mineral oil dielectric fluid feed rates, and total quantities of both primary fuel and mineral oil dielectric fluid fed to the boiler are measured and recorded at regular intervals of no longer than 15 min - the CO 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 mineral oil dielectric fluid to the boiler stops immediately. <p>Verify that 30 days before burning mineral oil dielectric fluid, a written notice of the burning is given the to USEPA Regional Administrator. (2)(12)</p> <p>Verify that the following information is obtained by persons burning mineral oil dielectric fluid in a boiler and kept at the boiler location for 5 yr: (2)(12)</p> <ul style="list-style-type: none"> - emissions data - the quantity of mineral oil dielectric fluid burned in the boiler each month. <p align="center">...</p>

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**COMPLIANCE CATEGORY:
TOXIC SUBSTANCES CONTROL ACT (TSCA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-37. PCB contaminated fluids other than mineral oil dielectric fluid of concentrations greater than 50 ppm but less than 500 ppm shall be disposed of according to specific requirements (40 CFR 761.60(a)(3)).</p>	<p>Determine whether any PCB fluids meeting these criteria were processed for disposal in the last year. (1)(2)(5)(12)(19)</p> <p>Verify that disposal was done at: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - a USEPA-approved incinerator - a USEPA-approved chemical waste landfill - a high efficiency boiler. <p>Verify that if the fluid is burned in an high efficiency boiler: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - the boiler is rated at a minimum of 50 MBtu/h - the CO concentration in the stack is 50 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 - 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 - the waste does not compromise more than 10 percent (on a volume basis), of the total fuel feed rate. - the waste is not fed into the boiler unless the boiler is operating at its normal operating temperature - the operator of the boiler does one of the following: <ul style="list-style-type: none"> - continuously monitors and records the CO concentrations and excess oxygen percentages in the stack gas while burning the waste fluid - 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 of waste fluid per year - 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 - the CO 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. <p>Verify that before burning waste fluid, approval has been obtained from the USEPA Regional Administrator. (1)(2)(5)(12)(19)</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: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - emissions data - the quantity of waste fluid burned in the boiler each month - a waste analysis. <p>Verify that such PCB fluids were disposed of by an approved method at a licensed facility. (1)(2)(5)(12)(19)</p>

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**COMPLIANCE CATEGORY:
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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-38. 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 align="center">...</p>	<p>Determine if any contaminated soil or debris has been disposed of by the facility. (1)(2)(5)</p> <p>Verify that disposal of contaminated soil or debris was conducted at a properly licensed facility. (1)(2)(5)(12)(19)</p> <p align="center">...</p>
<p>8-39. PCB Transformers with concentrations of PCBs at 500ppm or greater must be disposed of in either a USEPA approved incinerator or a chemical waste landfill (40 CFR 761.60(b)(1)).</p> <p align="center">...</p>	<p>Determine if the PCB Transformers are being disposed of at a USEPA-approved incinerator or a chemical waste landfill. (1)(2)(5)(12)(19)</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. (1)(2)(5)(12)(19)</p> <p align="center">...</p>
<p>8-40. PCB Capacitors must be disposed of in accordance with certain facility regulations (40 CFR 761.60(b)(2)).</p> <p align="center">...</p>	<p>Verify that disposal of PCB Capacitors was done accordingly: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - PCB Small Capacitors (less than 3 lb of PCBs) disposed of in a solid waste landfill - PCB Large, High- or Low-Voltage Capacitors (greater than 3 lb of PCBs) containing more than 500 ppm incinerated in a USEPA approved incinerator. <p>(NOTE: The large, high, or low-voltage capacitors may be disposed of in a chemical waste landfill upon approval of the USEPA.)</p> <p>Verify that capacitors in storage areas are placed in DOT containers with absorbent material. (1)(2)(5)(12)(19)</p> <p align="center">...</p>
<p>8-41. 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 align="center">...</p>	<p>Verify that the machines are drained of all free-flowing liquid. (1)(2)(5)(12)(19)</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. (1)(2)(5)(12)(19)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>8-42. PCB contaminated electrical equipment, except capacitors, shall be disposed of by draining off the free-flowing liquid (40 CFR 761.60(b)(4)).</p> <p align="center">...</p>	<p>Verify that the free-flowing liquid is drained from electrical equipment prior to disposal. (1)(2)(5)(12)(19)</p> <p align="center">...</p>
<p>8-43. PCB Articles shall be disposed of properly (40 CFR 761.60(b)(5)).</p> <p align="center">...</p>	<p>Verify that PCB Articles with concentrations at 500 ppm or greater are disposed of in either: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - a USEPA-approved incinerator - a chemical waste landfill if all free-flowing liquids have been removed. <p>Verify that PCB Articles with PCB concentration between 50 and 500 ppm are drained of all free-flowing liquid. (1)(2)(5)(12)(19)</p> <p align="center">...</p>
<p>8-44. PCB Containers shall be disposed of properly (40 CFR 761.60(c)).</p>	<p>Verify that PCB Containers with concentrations of 500 ppm or greater is disposed of in one of the following ways: (1)(2)(5)(12)(19)</p> <ul style="list-style-type: none"> - in a USEPA-approved incinerator - in a chemical waste landfill if first the container is drained of any liquid PCBs. <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. (1)(2)(5)(12)(19)</p>

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Appendix 8 - 1

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 _____ or nearest U.S. EPA office.

In case of accident or spill, call the _____ or the U.S. Coast Guard National Response Center: 800: 424-8802

Appendix 8 - 2

Dielectric Fluid Trend Names and Manufacturers

1. U.S. Manufactured Dielectrics:

Name	Manufacturer
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
Diaclor	Sangamo Electric
Dykanol	Cornell Dubilier
Elemex	McGraw Edison
Eucarel	Electric Utilities Co.
Hylvol	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:

Name	Manufacturer
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.

INSTALLATION:	COMPLIANCE CATEGORY: TOXIC SUBSTANCES CONTROL ACT (TSCA) ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

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Section 9

**FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT
(FIFRA)**

SECTION 9

FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT (FIFRA)

A. Applicability of this Protocol

This protocol applies to any Army Reserve facility that uses, stores or handles pesticides. Pesticides are regulated on the Federal level, on the state level, and by specific Department of Defense (DOD) and U.S. Army regulations (ARs). This protocol integrates the requirements of these regulations into a single document that normally will apply to any facility that handles pesticides.

Much of the guidance for pest management involves Operation and Maintenance (O&M) procedures. This protocol combines O&M guidance and compliance matters. It is used to determine the compliance status of operations, facilities, and equipment used to store and apply pest control chemicals. The protocol addresses the adequacy of facilities, operating procedures, personnel qualifications, and reporting of pesticide use.

B. Federal Legislation

- *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. The USEPA may by regulation, or as part of an order issued under section 136d of this Act or an amendment to such an order:
 - issue requirements and procedures to be followed by any person who stores or transports any container of a pesticide the registration of which has been suspended or cancelled, any rinsate containing the pesticide, or any other material used to contain or collect excess or spilled quantities of the pesticide
 - issue requirements and procedures to be followed by any person who disposes of stocks of any container of a pesticide the registration of which has been suspended, any rinsate containing the pesticide, or any other material used to contain or collect excess or spilled quantities of the pesticide
 - issue requirements and procedures for the disposal of any container of a pesticide the registration of which has been cancelled, any rinsate containing the pesticide, or any other material used to contain or collect excess or spilled quantities of the pesticide (7 USC 136q(a)(3)).

C. State/Local Requirements

State pesticide regulatory programs are to be at least as stringent as the FIFRA. State and local pesticide regulations in many cases provide more stringent standards or specifically identify a requirement that may be qualitatively regulated under the Federal program.

State and local pesticide programs generally include regulations addressing the following topics:

- restrictions or requirements for the sale, distribution, or use of selected pesticides
- disposal requirements for excess pesticides and pesticide wastes such as pesticide containers
- restrictions on the control of specific animal or insect species
- specifications for bulk pesticide storage tanks storage facilities
- operational requirements for selected application methods
- recordkeeping and applicator certification requirements.

D. DOD Regulations

- DOD Directive 4150.7, *Pest Management Program*, 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 Pesticide Applicators establishes the policies and curriculum for granting certification of personnel.
- DOD 4160.21-M, *Defense Utilization and Disposal Manual*, in Chapter 9, *Hazardous Property Management*, sets out guidance for the handling, processing, and disposing of hazardous property in accordance with applicable environmental, safety, and other laws and regulations.

E. U.S. Army Regulations

- AR 200-1, *Environmental Protection and Enhancement*, prescribes responsibilities, policies, and procedures to preserve, protect, and restore the quality of the environment.

- AR 420-76, *Pest Management*, provides policies, standards, and procedures for pest control activities at U.S. Army Reserve facilities. It sets minimum levels of pest management operations in real property maintenance activities (RPMA) and states that these operations are to be compatible with national environmental protection mandates.

F. Key Compliance Requirements

- **Certification** - A specific number of certified pesticide applicators must be present at each facility according to the productive man-years stipulated by the pest control needs of the facility (DOD 4150.7, Appendix 9-1). Certification must be obtained for specific facility pest management activities (40 CFR 171.3).
- **Storage, Mixing, and Personnel Facilities** - Facilities are required to provide some separation for select components of the pest management shop. Pesticides shall be stored separate from other operations and where food is located, stored, prepared, or served. Facilities shall provide areas for mixing, equipment storage, decontamination, and personnel amenities as well as systems for spill containment, ventilation, personnel safety, entry control, and runoff retention (40 CFR 165).

G. Key Compliance Definitions

These definitions were obtained from the Federal, DOD, and ARs previously cited in this protocol.

- **Acute LD_{50}** - 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 the signal word "Caution" on the front panel (see definition of 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 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 the signal word "Danger" on the front panel (see definition of Toxicity Category) (40 CFR 156.10(h)).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *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).
- *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:
 - "Excess pesticides" means all pesticides that cannot be legally sold pursuant to the act or that are to be discarded.
 - "Organic pesticides" means carbon-containing substances used as pesticides, excluding metallo-organic compounds.
 - "Inorganic pesticides" means noncarbon-containing substances used as pesticides.
 - "Metallo-organic pesticides" means a class of organic pesticides containing one or more metal or metalloid atoms in the structure (40 CFR 165.1).
- *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).
- *Public Health Exemption* - an application that 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 therefore 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 116.2):
 - a significant economic loss
 - a significant risk to endangered species, threatened species, beneficial organisms, or the environment.
- *Toxicity Category* - the ranking of pesticides on which required warnings and precautionary statements are based. 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 the signal word "Warning" on the front panel (see 40 CFR 156.10 for listing of indicators necessary to meet specific criteria of toxicity categories) (40 CFR 156.10(h)).

FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT (FIFRA)

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS	CONTACT THESE PERSONS OR GROUPS: (a)
All facilities	9-1 through 9-14	(1)(2)(5)(11)(12)
Pesticide application	9-15 through 9-22	(1)(2)(5)(11)(17)
Storing, mixing, or preparing pesticides	9-23 through 9-42	(2)(5)(11)(12)
Disposal	9-43 through 9-46	(1)(2)(5)(11)(12)

Items numbered 9-7 through 9-10, 9-12, 9-13, and 9-20 are not Army Reserve applicable and are not included in this manual.

(a) CONTACT/LOCATION CODE:

- (1) MUSARC Engineer / Facility Coordinator
- (2) Facility Manager
- (5) Directorate of Engineering and Housing (DEH)/DPW
- (11) Entomology Shop
- (12) Environmental Coordinator (EC)
- (17) Health Physician/Preventive Medicine Officer



FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT (FIFRA)

Plans and Maps to Review

- Installation pest management plan

Records to Review

- Records of pesticides purchased by the facility (purchase orders, inventory)
- Pesticide application records
- Description of the facility's pest control program
- Certification status of pesticide applicators
- Pesticide disposal manifests
- Any emergency exemption granted to the Federal agency by the USEPA
- Contracts for pest management
- Recent ventilation rating for pesticide fume hood and pesticide mixing/storage rooms
- Staffing requirements for pest management program

Physical Features to Examine

- Personnel protection equipment
- Pesticide application equipment
- Pesticide storage areas, including storage containers
- DEH/Department of Logistics (DOL) Supply and storage areas
- Military Unit storage/supply areas
- Field Sanitation Training Sites

People to Interview

- MUSARC Engineer / Facility Coordinator
- Facility Manager
- Directorate of Engineering and Housing (DEH)/DPW
- Entomology Shop
- Environmental Coordinator (EC)
- Health Physician/Preventive Medicine Officer
- BASOPs ARCOM Environmental Managers

**COMPLIANCE CATEGORY:
FEDERAL INSECTICIDE, FUNGICIDE,
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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ALL FACILITIES</p> <p>9-1. Determine actions or changes since previous review of the pest management program (GMP).</p> <p align="center">...</p> <p>9-2. Current copies of all relevant Federal, DOD, U.S. Army, Army Reserve, and state/local regulations and guidance should be maintained (GMP).</p> <p align="center">...</p> <p>9-3. All Army Reserve facilities are required to comply with state and local requirements (EO 12088, Section 1-1).</p> <p align="center">...</p>	<p>Examine copy of previous review report to determine if of noncompliance issues have been resolved. (1)(2)(5)(12)</p> <p>(NOTE: The term PESTICIDE refers to insecticides, rodenticides, herbicides, and other pest control chemicals.)</p> <p align="center">...</p> <p>Verify whether copies of the following regulations, which are applicable, are kept at the ARCOM or Support Installation: (1)(2)(5)(11)(12)</p> <ul style="list-style-type: none"> - 40 CFR 152, <i>Pesticide Registration and Classification Procedures.</i> - 40 CFR 165, <i>Regulations for the Acceptance of Certain Pesticides and Recommend Procedures for the Disposal and Storage of Pesticides and Pesticide Containers.</i> - 40 CFR 166, <i>Exemption of Federal and state Agencies for use of Pesticides Under Emergency Conditions.</i> - 40 CFR 171, <i>Certification of Pesticide Applicators.</i> - Executive Order (EO) 12088, <i>Federal Compliance with Pollution Standards.</i> - DODR 4145.19-1, <i>Storage and Materials Handling.</i> - DOD Directive 4150.7, <i>Pest Management Program.</i> - DOD 4160.21-M, <i>Hazardous Property Management.</i> - AR 200-1, <i>Environmental Protection and Enhancement.</i> - AR 420-76, <i>Pest Management.</i> - TIM No.14, <i>Protective Equipment for Pest Control Personnel.</i> - TIM No.15, <i>Pesticide Spill Prevention and Management.</i> - TIM No.16, <i>Pesticide Fires: Prevention, Control and Clean-up.</i> - TIM No.17, <i>Pest Control Facilities.</i> - TIM No.21, <i>Pesticide Disposal Guide for Pest Control Shops.</i> - Applicable state and local pesticide regulations. <p align="center">...</p> <p>Verify that the facility is complying with state and local requirements. (1)(2)(5)(12)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (1)(2)(5)(11)(12)</p> <p>(NOTE: Issues that are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - certification of applicators - restricted use pesticides - application procedures - disposal methods.) <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>9-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, re-occurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation, promotes good public relations and addressing systemic weakness in the overall operation of the program (GMP).</p> <p align="center">...</p>	<p>Determine what management systems are in place. (1)(2)(5)(11)(12)</p> <p>Verify that the existing system addresses the issues associated with FIFRA by: (1)(2)(5)(11)(12)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p>Determine if training is being conducted. (1)(2)(5)(11)(12)</p> <p align="center">...</p>
<p>9-5. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p align="center">...</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>(NOTE: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p align="center">...</p>
<p>9-6. All pesticides present on the facility must be registered or ruled exempt from the registration requirements (40 CFR 152.15 through 152.30).</p> <p align="center">...</p>	<p>Verify that pesticide products at the facility are registered unless the product is considered exempt, such as the following: (1)(2)(5)(11)(12)</p> <ul style="list-style-type: none"> - certain biological control agents - certain human drugs - treated articles or substances such as paint treated with a pesticide - pheromones and pheromone traps - preservatives for biological specimens - vitamin hormone products - pesticide transferred between registered establishments operated by the same producer - a pesticide distributed or sold under an experimental use permit - a pesticide transferred solely for export - a pesticide distributed or sold under an emergency exemption. <p align="center">...</p>
<p>9-7.</p>	<p>This item is not Army Reserve applicable.</p>
<p>9-8.</p>	<p>This item is not Army Reserve applicable.</p>

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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
9-9.	This item is not Army Reserve applicable.
9-10.	This item is not Army Reserve applicable.
9-11. Contracts for facility pest control services must be reviewed and approved prior to advertisement for bid (AR 420-76, para 3-12c, 3-12d, 4-3a, 4-3c, and 4-3k).	<p>Determine whether contracts for pest control services have been approved (preferably in writing) by the MACOM PMC. (1)(2)(5)(11)(12)</p> <p>Verify whether contract pest control services are monitored by a DOD trained and certified Quality Assurance Evaluator (QAE). (1)(2)(5)(11)(12)</p> <p>Verify whether contractor employees are certified (DOD certification is not required) to apply pesticides. (1)(2)(5)(11)(12)</p> <p align="center">...</p>
9-12.	This item is not Army Reserve applicable.
9-13.	This item is not Army Reserve applicable.
9-14. Facilities are required to store any pesticide, pesticide container, or pesticide residue according to specific restrictions (AR 420-76, para 4-2a(2) and 4-2(a)(3)).	<p>Verify that pesticides, pesticide container, and/or pesticide residues are stored so that: (1)(2)(5)(11)(12)</p> <ul style="list-style-type: none"> - it is not inconsistent with labeling - food or feed contamination does not occur. <p>Verify that pesticides and pesticide related waste generated by the civilian community are not stored or turned in at the facility. (1)(2)(5)(11)(12)</p> <p>(NOTE: These requirements are based on recommendations found in 40 CFR 165.7.)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>PESTICIDE APPLICATION</p> <p>9-15. Individuals who apply or supervise the application of pesticides are required to be certified under the DOD plan for certification of pesticide applicators (AR 200-1, para 3-1).</p> <p align="center">...</p> <p>9-16. Persons applying restricted use pesticides must be certified to apply restricted use pesticides (40 CFR 171.9).</p> <p align="center">...</p> <p>9-17. All government pest control personnel must be participating in a medical surveillance program (AR 40-5, para 10-15).</p> <p align="center">...</p>	<p>Verify that applicators are trained and certified if they: (2)(17)</p> <ul style="list-style-type: none"> - are full time employees who perform pest management activities at least 25 percent of their on-duty time - apply restricted-use, state licensed, or controlled pesticides. <p>Verify that part-time pesticide applicators (less than 25 percent on-duty time) who do not use restricted use or controlled pesticides are trained in: (2)(17)</p> <ul style="list-style-type: none"> - the safe efficient, and environmentally sound use of pesticides. - other integrated pest management techniques. <p>Verify that the facility has an appropriate number of certified pesticide applicators required to perform pest management operations at the facility (see Appendix 9-1). (2)(17)</p> <p align="center">...</p> <p>Verify that applicators are trained and/or certified. (1)(2)(5)(11)</p> <p>Verify that training recertification is scheduled and performed as required to maintain certification and that certification is relevant to the pest management activities undertaken. (1)(2)(5)(11)</p> <p>Verify that if contractors are utilized for pest management, they are certified as needed. (1)(2)(5)(11)</p> <p>(NOTE: Appendix 9-2 contains a list of Federally restricted use pesticides.)</p> <p align="center">...</p> <p>Determine whether all government pesticide applicators are participating in a medical surveillance program. (1)(2)(5)(11)(17)</p> <p>(NOTE: Contract pesticide applicators should be in a medical surveillance program provided by their employer.)</p> <p>Verify whether the medical surveillance consists of, at a minimum: (2)(17)</p> <ul style="list-style-type: none"> - annual physical examination - periodic blood cholinesterase tests. <p>(NOTE: This requirement is based on recommendations found in 40 CFR 165.10(e)(2)(vi).)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>9-18. Personal protective equipment and clothing must be provided, at employer (Army Reserve or contractor) expense (DODR 4145.19-1, para 3-415a(1) and 3-415a(6), AR 11-34, para 3-5b(2), AR 385-32, para 4a, and AR 420-76, para 4-1c).</p> <p align="center">...</p>	<p>Determine if a ventilation system is specifically provided for all indoor pesticide mixing/preparation areas. (1)(2)(5)(11)(17)</p> <p>Verify that an emergency deluge shower and eyewash station are located to provide immediate access to all personnel performing mixing. (2)(11)(17)</p> <p>Verify that personal protective clothing and equipment is provided and used by pest management personnel. The following equipment to be used depends upon magnitude and type of operations: (2)(11)(17)</p> <ul style="list-style-type: none"> - respirators - masks - gloves - safety shoes - coveralls - specialized personal protective equipment for fumigation. <p>Verify that operations include health and safety procedures emphasizing good work habits, reduction or elimination of hazards, and use of personal protective equipment. (2)(11)(17)</p> <p>Verify that laundering of protective clothing is provided by the facility or employer. (2)(11)(17)</p> <p>Verify that protective clothing and equipment is stored separately from chemical areas. (2)(11)(17)</p> <p>Verify that appropriate/approved respirators are being used when handling and applying pesticides. (2)(11)(17)</p> <p>Verify that respirator cartridge/canisters are changed at appropriate intervals. (2)(11)(17)</p> <p>Verify that a log of respirator cartridge/canister use is maintained. (2)(11)(17)</p> <p>Verify that periodic fit testing of respirators is conducted. (2)(11)(17)</p> <p>Verify that severely contaminated clothing is disposed of as a pesticide waste. (2)(11)(17)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>9-19. Vehicles used for pesticide applications must be dedicated to pest control operations and must meet specific design requirements (DODR 4145.19-1, para 3-415a(3), and AR 420-76, para 4-1d and 4-1e(1)).</p> <p align="center">...</p>	<p>Determine which vehicles are used for pesticide applications. (1)(2)(5)(11)</p> <p>Verify that vehicles used during pest control operations are single-purpose. (1)(2)(5)(11)</p> <p>Verify that pest control vehicles have separate cab and cargo compartments. (1)(2)(5)(11)</p> <p>Verify that lockable storage is provided on the vehicles. (1)(2)(5)(11)</p> <p>Verify that spill cleanup kits are placed on vehicles. (1)(2)(5)(11)</p> <p>Verify that a portable eye wash is available for use on vehicles at remote application sites. (1)(2)(5)(11)</p> <p align="center">...</p>
<p>9-20.</p> <p align="center">...</p>	<p>This item is not Army Reserve applicable.</p> <p align="center">...</p>
<p>9-21. Public safety should be ensured when applying or using pesticides (GMP).</p> <p align="center">...</p>	<p>Confirm elimination of hazardous exposure to the general public by checking for the following: (2)(5)(11)</p> <ul style="list-style-type: none"> - appropriate signs for treatment area are posted - scheduling for low use periods or restricted usage for a number of days - water use restrictions and reentry times are followed according to the pesticide labels. <p align="center">...</p>
<p>9-22. Pesticides for sale in post exchanges and commissaries must meet specific restrictions (AR 40-5, para 10-4h).</p> <p align="center">...</p>	<p>Verify that pesticides for sale in post exchanges and commissaries are registered as "General Use" pesticides. (2)</p> <p>Verify that no "Restricted Use" pesticides or pesticides with labels indicating that only professional pest management personnel may use the product are sold in the post exchange or commissary (see Appendix 9-2). (2)</p> <p>Verify that the pesticides are arranged separately on sales display shelves and in storage according to type. (2)</p> <p>Verify that they are segregated from all food products. (2)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>STORE, MIX, OR PREPARE PESTICIDES</p> <p>9-23. When pesticides are present in quantities that would be harmful to human health or the environment if a spill were to occur, the pesticide storage and mixing facility must be included in the Spill Prevention Control and Countermeasure (SPCC) Plan (AR 200-1, para 8-4a(2)(d)).</p> <p align="center">...</p> <p>9-24. Stored pesticides should be addressed in the Installation Spill Contingency Plan (ISCP) (AR 200-1, para 8-5).</p> <p align="center">...</p>	<p>Verify that the SPCC Plan identifies the pesticide storage facility and addresses measures to prevent or minimize impact of a pesticide spill at the facility. (2)(5)(11)(12)</p> <p>Verify that the SPCC Plan includes an inventory of pesticides stored in the pesticide storage facility. (2)(11)(12)</p> <p align="center">...</p> <p>Verify that the ISCP addresses procedures and techniques used to contain and clean up a pesticide spill at the pesticide storage facility. (5)(11)(12)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>9-25. Sites where pesticides are mixed and/or stored must meet specific requirements (AR 420-76, para 4-1b(1)).</p> <p align="center">...</p>	<p>Verify that pesticides are mixed and/or stored only in facilities where due regard has been given to the hazardous nature of pesticide, site selection, protective enclosures and operating procedures. (2)(5)(11)(12)</p> <p align="center">...</p>
<p>9-26. Storage facilities for pesticides must meet specific structural and operating requirements (AR 420-76, para 4-1b(2)).</p> <p align="center">...</p>	<p>Verify that storage is in a dry, well-ventilated, separate room, building, or covered area where fire protection is provided. (2)(5)(11)(12)</p> <p>Verify that the storage area is protected from freezing temperatures and direct sunlight. (2)(5)(11)(12)</p> <p>Verify that rigid containers are stored in an upright position. (2)(5)(11)(12)</p> <p>Verify that all containers are stored off the ground with labels plainly visible to permit ready access and inspections. (2)(5)(11)(12)</p> <p>Verify that herbicides and insecticides are stored separately with sufficiently safe segregation, with the use of 4 ft aisles, in order to avoid cross-contamination or adverse reactions. (2)(5)(11)(12)</p> <p>Verify that stored pesticides are inspected monthly to determine the condition of the containers. (2)(5)(11)(12)</p> <p align="center">...</p>
<p>9-27. Movable equipment used for handling pesticides must be labeled and handled according to specific requirements (AR 420-76, para 4-1b(3)).</p> <p align="center">...</p>	<p>Verify that mobile equipment used for pesticide applications that might be used for other purposes is labeled CONTAMINATED WITH PESTICIDES. (2)(5)(11)(12)</p> <p>Verify that mobile equipment is not removed unless thoroughly decontaminated. (2)(5)(11)(12)</p> <p align="center">...</p>
<p>9-28. Pre-fire plans for pesticide storage areas are required to be updated annually (AR 420-76, para 4-1f).</p> <p align="center">...</p>	<p>Verify that the pesticide management coordinator has a pre-fire plan and that it is updated annually. (2)(5)(11)(12)</p> <p align="center">...</p>
<p>9-29. Pesticides in deteriorated or leaking containers will be recontainerized or overpacked in approved containers (AR 240-76, para 4-2c).</p>	<p>Verify that leaking pesticide containers are recontainerized or overpacked to prevent further leakage. (2)(5)(11)(12)</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>9-30. A pesticide spill cleanup kit must be strategically located where pesticides are stored and mixed (AR 420-76, para 4-1e(1)).</p> <p align="center">...</p>	<p>Verify that a pesticide spill cleanup kit is available to clean up and detoxify spills in the pesticide storage facility, transportation equipment, mixing areas. (2)(5)(11)(12)</p> <p align="center">...</p>
<p>9-31. Sites where pesticides and excess pesticides are stored or mixed must meet specific requirements (AR 420-76, para 4-1b(1)).</p> <p align="center">...</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 runoff or percolation by: (2)(5)(11)(12)</p> <ul style="list-style-type: none"> - inspecting area surrounding facilities and determine proximity to surface water - noting location relative to floodplains, depth of groundwater, and general soil types and typical permeabilities. <p>Verify that, when needed, drainage from the site is contained by natural or artificial barriers or dikes. (2)(5)(11)(12)</p> <p>(NOTE: These requirements only apply to pesticides or excess pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol.)</p> <p>(NOTE: These requirements are based on recommendations found in 40 CFR 165.10(b).)</p> <p align="center">...</p>
<p>9-32. Storage or mixing facilities for pesticides must meet specific structural requirements (AR 420-76, para 4-1b(1)).</p> <p align="center">...</p>	<p>Verify that storage is in a dry, well-ventilated, separate room, building, or covered area where fire protection is provided. (2)(5)(11)(12)</p> <p>Verify that the entire storage facility is secured by a climb-proof fence and doors and gates are kept locked to prevent unauthorized entry. (2)(5)(11)(12)</p> <p>(NOTE: These requirements are based on recommendation found in 40 CFR 165.10(c)(1).)</p> <p>(NOTE: These requirements only apply to pesticides or excess pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol.)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>9-33. The storage of pesticides and excess pesticides must meet specific operational requirements (AR 420-76, para 4-1b(1)).</p> <p align="center">...</p>	<p>(NOTE: These requirements only apply to pesticides or excess pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol.)</p> <p>Verify that: (2)(5)(11)(12)</p> <ul style="list-style-type: none"> - pesticide containers are stored with labels plainly visible - all containers are in good condition - the lids and bungs on metal or rigid plastic containers are tight - the pesticides are segregated and stored under a sign containing the name of the formulation - rigid containers are stored upright and all containers are stored off the ground. <p>Verify that a complete inventory is kept indicating the number and identity of containers in a storage unit. (2)(5)(11)(12)</p> <p>Verify that containers are inspected regularly for corrosion and leaks and that absorbent material is available for spill cleanup. (2)(5)(11)(12)</p> <p>Verify that excess pesticides and their containers are segregated according to the method of disposal. (2)(5)(11)(12)</p> <p>(NOTE: These requirements are based on recommendations found in 40 CFR 165.10(d).)</p> <p align="center">...</p>
<p>9-34. Decontamination facilities are required for personnel at installations which use pesticides (AR 420-76, para 4-1b(1)).</p> <p align="center">...</p>	<p>Verify that facilities, such as safety showers and eye lavages, are available for personnel decontamination. (2)(5)(11)(12)</p> <p>(NOTE: These requirements are based on recommendations found in 40 CFR 165.10(c)(4).)</p> <p>(NOTE: These requirements only apply to pesticides or excess pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol.)</p> <p align="center">...</p>
<p>9-35. Specific decontamination facilities should be available for personnel (GMP).</p> <p align="center">...</p>	<p>Verify that a hot shower is available for personnel to use at the end of the day. (2)(5)</p> <p>Verify that change room/locker space is provided for changing to/from protective clothing. (2)(5)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>9-36. Decontamination facilities are required for equipment at sites where pesticides are used (AR 420-76, para 4-1b(1)).</p> <p align="center">...</p>	<p>Verify that facilities are available for the decontamination of equipment, including vehicles which have been used for pesticide applications. (2)(5)</p> <p>Verify that berms, curbing, impervious surfaces and catchment drains which are used to impound washwater resulting from decontamination prevent spillage of washwater. (2)(5)</p> <p>Verify that drains impound washwater and do not connect to sanitary sewer or stormwater systems unless permitted to do so under a National Pollutant Discharge Elimination System (NPDES) permit. (2)(5)</p> <p>Verify that the procedure for disposal of washwater resulting from decontamination activities is the same as for excess pesticides. (2)(5)</p> <p>(NOTE: These requirements are based on recommendations found in 40 CFR 165.10(c)(4).)</p> <p>(NOTE: These requirements only apply to pesticides or excess pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol.)</p> <p align="center">...</p>
<p>9-37. Outdoor sites/facilities used to mix pesticides are required to meet specific parameters (AR 420-76, para 4-1b(1)).</p> <p align="center">...</p>	<p>(NOTE: These requirements only apply to pesticides or excess pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol.)</p> <p>Verify that berms, curbing, impervious surfaces are present to contain liquids resulting from accidental spills during mixing operations. (2)(5)</p> <p>Verify that drains do not connect to sanitary sewer or stormwater systems unless permitted to do so under a NPDES permit. (2)(5)</p> <p>Verify that personnel decontamination facilities are available at or near the site. (2)(5)</p> <p align="center">...</p>
<p>9-38. Outdoor mixing sites should meet specific requirements (GMP).</p> <p align="center">...</p>	<p>Verify that the outdoor mixing site has a wind screen. (2)(5)</p> <p>Verify that the outdoor mixing site has a frost free elevated water fill pipe. (2)(5)</p> <p align="center">...</p>

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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>9-39. Facilities where pesticides are stored, used, and mixed are required to follow specific practices and procedures to ensure safety (AR 420-76, para 4-1b(1)).</p> <p align="center">...</p>	<p>Verify that no food consumption, drinking, smoking, or tobacco use is undertaken in any area where pesticides are present. (2)(5)(11)(12)</p> <p>Verify the following practices are performed in pest management operations: (2)(5)(11)(12)</p> <ul style="list-style-type: none"> - persons handling pesticides keep hands away from mouths and eyes and wear rubber gloves during all pesticide handling - persons handling pesticides wash hands immediately upon completion of working with pesticides and always prior to eating, smoking or using toilet facilities - persons handling concentrated pesticides wear protective clothing which is removed if found to be contaminated - persons working regularly with organophosphates and N-alkyl carbamate pesticides have periodic physical examinations, including cholinesterase tests - a stock of protective clothing is available - self-contained breathing apparatus and impermeable suits are available when handling pesticides which can potentially be absorbed through the skin - inspect all containers for leakage prior to handling - do not store next to food or feed or other articles intended for consumption by humans or articles - do not permit unauthorized persons in the storage area. <p>(NOTE: These requirements only apply to pesticides or excess pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol.)</p> <p>(NOTE: These requirements are based on recommendations found in 40 CFR 165.10(e) and 165.10(f).)</p> <p align="center">...</p>
<p>9-40. Pesticide storage or mixing facilities and equipment which contain or use pesticides are required to have signs and safety procedures posted (AR 420-76, para 4-1b(1)).</p>	<p>Verify that signs which read DANGER, POISON, PESTICIDE STORAGE are posted on or near entries to storage facilities. (2)(5)(11)(12)</p> <p>Verify that safety precautions and accident prevention measures are posted. (2)(5)(11)(12)</p> <p>Verify that an inventory of pesticides is displayed outside of the storage facility identifying all chemicals in storage. (2)(5)(11)(12)</p> <p>Verify that mobile equipment used for pesticide applications is labeled CONTAMINATED WITH PESTICIDES. (2)(5)(11)(12)</p> <p>(NOTE: These requirements are based on recommendations found in 40 CFR 165.10(c)(2) through 165.10(c)(3), 165.10(e) and 165.10(g)(2).)</p> <p>(NOTE: These requirements only apply to pesticides or excess pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol.)</p>

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**COMPLIANCE CATEGORY:
FEDERAL INSECTICIDE, FUNGICIDE,
AND RODENTICIDE ACT (FIFRA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>9-41. Where large quantities of pesticides 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 (AR 420-76, para 4-1b(1)).</p> <p align="center">...</p>	<p>Verify that notification has been submitted and includes a statement of the hazards that pesticides may present during a fire. (2)(5)(11)(12)</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. (2)(5)(11)(12)</p> <p>Verify that the fire chief has the home telephone numbers of the person(s) responsible for the pesticide storage facility. (2)(5)(11)(12)</p> <p>(NOTE: These requirements are based on recommendations found in 40 CFR 165.10(g)(1).)</p> <p>(NOTE: These requirements only apply to pesticides or excess pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol.)</p> <p align="center">...</p>
<p>9-42. Certain precautions are to be taken in the event of a fire at a pesticide storage or mixing areas (AR 420-76, para 4-1b(1)).</p> <p align="center">...</p>	<p>Verify that the following procedures are practiced by interviewing the Fire Chief: (2)(5)(11)(12)</p> <ul style="list-style-type: none"> - fire fighting personnel wear supplied air suits and rubberized clothing - personnel avoids breathing or otherwise contacting toxic smoke and fumes - personnel washes completely as soon as possible after encountering smoke and fumes - the water used in fire fighting is contained within the storage site drainage system - individuals who might be threatened by the fumes/smoke are evacuated - firemen take cholinestrase tests after fighting fires involving organophosphate or N-alkyl carbamate pesticides. <p>(NOTE: These requirements are based on recommendations found in 40 CFR 165.10(g)(3).)</p> <p>(NOTE: These requirements only apply to pesticides or excess pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol.)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
FEDERAL INSECTICIDE, FUNGICIDE,
AND RODENTICIDE ACT (FIFRA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>DISPOSAL</p> <p>9-43. Disposal must be initiated for all excess pesticides and strict turn-in procedures followed (DOD Directive 4160.21 M, para VI(B)(77), and AR 420-76, para 4-2b).</p> <p align="center">...</p> <p>9-44. Facilities are required to dispose of any pesticide, pesticide container, or pesticide residue according to specific restrictions (AR 420-76, para 4-2a(2) and 4-2(a)(3)).</p> <p align="center">...</p>	<p>Verify that reports have been made to the Engineering and Housing Support Center. (2)(5)(11)(12)</p> <p>(NOTE: The best method for disposal of excess pesticides, if not restricted by a suspension or cancellation notice by USEPA, is to use them in accordance with label directions.)</p> <p>Verify that paperwork to turn in excess serviceable pesticides that cannot be used and unserviceable pesticides has been submitted to the facility DRMO and it is ensured that DRMO has proper storage facilities and adequate space. (2)(5)(11)(12)</p> <p>(NOTE: Pesticides awaiting disposal must be stored in accordance with 40 CFR 165.10. Therefore, DRMO may or may not take physical custody of the pesticides.)</p> <p align="center">...</p> <p>Verify that pesticides, pesticide container, and/or pesticide residues are disposed of so that: (1)(2)(5)(11)(12)</p> <ul style="list-style-type: none"> - it is not inconsistent with labeling - open dumping of pesticides or pesticide containers is not done - open burning is not done except when allowed by state and local regulation - food or feed contamination does not occur - water dumping or ocean dumping does not occur. <p>Verify that pesticides and pesticide related waste generated by the civilian community are turned in at the facility. (1)(2)(5)(11)(12)</p> <p>(NOTE: These requirements are based on recommendations found in 40 CFR 165.7.)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
FEDERAL INSECTICIDE, FUNGICIDE,
AND RODENTICIDE ACT (FIFRA)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

9-45. Excess spray and rinse water must be disposed of in a manner that does not constitute open dumping (AR 420-76, para 4-2d(1) and AR 40-5, para 10-5c).

Verify that the following procedures are in effect to limit excess finished spray: (2)(5)(11)(12)

- proper calculation
- mixing only the amount of chemical required for each job.

Verify that excess finished spray is not disposed of in the sanitary sewer but is disposed of using one of the following methods: (1)(2)(5)(11)(12)

- in accordance with label directions
- disposed of as a pesticide-related waste.

Verify that container and equipment rinse water is handled in one of the following ways: (1)(2)(5)(11)(12)

- saved for use as diluent in a subsequent spray operation, or
- disposed of as a pesticide related waste.

(NOTE: These requirements are based on recommendations found in 40 CFR 165.8 and 165.9.)

...

...

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**COMPLIANCE CATEGORY:
FEDERAL INSECTICIDE, FUNGICIDE,
AND RODENTICIDE ACT (FIFRA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>9-46. Empty pesticide containers must be disposed of in a manner that does not constitute open dumping (AR 420-76, para 4-2d).</p>	<p>Verify through interviewing personnel managing pesticides, that empty pesticide containers are: (2)(5)(11)(12)</p> <ul style="list-style-type: none"> - drained for 1 minute (min) into the spray or mix tank - triple rinsed - rendered unusable (crushed and punctured) - disposed of in an approved landfill - recycled in accordance with label instructions or approved recycling plan. <p>Determine which of the following types of containers the installation has onsite: (2)(5)(11)(12)</p> <ul style="list-style-type: none"> - Group I Containers: combustible containers which formally contained organic or metallo-organic pesticides - Group II Containers: noncombustible containers which formally held organic or metallo-organic pesticides - Group III Containers: containers (both combustible and noncombustible) which formerly held organic mercury, lead, cadmium, or arsenic or inorganic pesticides. <p>Verify that Group I Containers are disposed of in a pesticide incinerator or buried in a specially designated landfill. (2)(5)(11)(12)</p> <p>Verify that Group II Containers are triple-rinsed and containers not in good condition punctured prior to transport to a recycling facility or disposal. (2)(5)(11)(12)</p> <p>Verify that Group III Containers are triple rinsed and punctured prior to disposal in a sanitary landfill. (2)(5)(11)(12)</p> <p>(NOTE: These requirements are based on recommendations found in 40 CFR 165.8 and 165.9.)</p>

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Appendix 9 - 1

Requirements for Installation Pest Management Program			
Pest Control Recognized Requirements Man-Hours*	Minimum No. of Certified Full-time Pesticide Applicators Required	Installation Pest Management Plan	Onsite Program Review
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 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 man-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.

Appendix 9-2

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 ¹	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.
Azinphos methyl	All liquids with a concentration greater than 13.5%. All other formulations.	do do	do Under further evaluation.	do

*do means same as above.

Appendix 9-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification ¹	Criteria Influencing Restriction
Calcium cyanide	As sole active ingredient. No mixture registered.	do	Restricted	do
Carbofuran	All concrete suspensions and wettable powders 40% and greater. All granular formulations. All granular and fertilizer formulations.	do	do	Acute inhalation toxicity.
		Rice	Under evaluation.	
		All uses except rice.	do	
Chlorfenvinphos	All concentrate solutions or emulsifiable concentrates 21% and greater.	All uses (domestic and non-domestic).	Restricted	Acute dermal toxicity.
Chloropicrin	All formulations greater than 2%. All formulations. All formulations 2% and less.	All uses	Restricted	Acute inhalation toxicity
		Rodent control	Restricted	Hazard to non-target organisms.
		Outdoor uses (other than rodent control).	Unclassified	
Clonitralid	All wettable powders 70% and greater. All granulars and wettable powders. Pressurized sprays 0.55% and less.	All uses	do	Acute inhalation toxicity.
		Molluscide uses.	do	Effects on aquatic organisms.
		Hospital antiseptics.	Unclassified	

*do means same as above.

Appendix 9-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification ¹	Criteria Influencing Restriction
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	
Demeton	1 % fertilizer formulation, 1985 % 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.
	All granular formulations, emulsifiable concentrates and concentrated solutions.	All uses.	do	
Dicrotophos	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 ² greater than 30%.	All uses	Restricted	Acute dermal toxicity.
	Concentrate solutions or emulsifiable concentrates ² 30% and less and wettable powders 25% and less.	Livestock and agricultural uses (nondomestic uses only).	Unclassified	
	All solutions ² 3% and greater	Domestic	Restricted	

Appendix 9-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification ¹	Criteria Influencing Restriction
Dioxathion (Continued)	2.5% solutions ² with toxaphene and malathion.	All uses.	Under evaluation.	
Disulfoton	All emulsi- fiable con- centrates 65% and greater, all emulsifiable con- centrates and concentrate solutions 21% and greater with fensulfothion 43% and greater, all emulsifiable con- centrates 32% and greater in com- bination with 32% fensulfothion and greater. Non-aqueous solution 95% and greater. Granular formulations 10% and greater.	do	Restricted	do Acute inhalation toxicity.
		Commercial seed treatment.	Restricted	Acute dermal toxicity.
		Indoor uses (greenhouse).	do	Acute inhalation toxicity.
Endrin	All emulsions, dusts, wettable powders, pastes, and granular formulations 2 % and above. All concen- trations less than 2 %.	All uses.	Restricted.	Acute dermal toxicity. Hazard to nontarget organisms.
		do	do	Hazard to non- target organisms.

*do means
same as above.

Appendix 9-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification ¹	Criteria Influencing Restriction
EPN	All liquid and dry formulations greater than 4%.	All uses.	Restricted	Acute dermal toxicity; acute inhalation toxicity; residue effects on avian species. Effects on aquatic organisms.
		Aquatic uses.	Restricted	
Ethoprop	Emulsifiable concentrates 40% and greater. All granular and fertilizer formulations.	do	do	Acute dermal toxicity.
		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. Dust and granular formulations 2 % and below.	do	Restricted	Inhalation hazard to humans. Acute dermal toxicity. Residue effects or mammalian, aquatic, avian species.
		do	do	
		do	do	
		do	do	
Fenamiphos	Emulsifiable concentrates 35% and greater.	do	do	Acute dermal toxicity.

*do means same as above.

Appendix 9-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification ¹	Criteria Influencing Restriction
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	

*do means same as above.

Appendix 9-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification ¹	Criteria Influencing Restriction
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. Residue effects on avian species.
	Dust formulations 2.5% and greater.	All uses	Restricted	
Methidathion	All formulations.	All uses except stock, safflower, and sunflower.	Restricted	Residue effects on avian species.
	All formulations.	Nursery stock, safflower, and sunflower	Unclassified	
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	

Appendix 9-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification ¹	Criteria Influencing Restriction
Methomyl (continued)	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	
Methyl bromide	All formulations in containers greater than 1.5 lb	All uses.	Restricted	Other hazards-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	do
Methyl parathion	All dust and granular formulations less than 5 %.	do	do	Other hazards-accident history. All foliar applications restricted based on residue

Appendix 9-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification ¹	Criteria Influencing Restriction
Methyl parathion (continued)	Microencapsulated. All dust and granular formulations 5 % and greater and all wettable powders and liquids.	do	do	effects on mammalian and avian species. Residue effects on avian species. Hazard to bees. Acute dermal toxicity. Residue effects on mammalian and avian species.
	All emulsifiable concentrates and liquid concentrates.	do	do	do
	Psycodid filter fly liquid formulations. 2 % dusts.	do	do	Acute dermal toxicity.
Monocrotophos	Liquid formulations 19% and greater.	do	do	Residue effects on avian species.
	Liquid formulations 55% and greater.	do	do	Residue effects on mammalian species. 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.

Appendix 9-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification ¹	Criteria Influencing Restriction
Nicotine (alkaloid) (Continued)	Liquid and dry formulations 1.5% and less.	All uses (domestic and non-domestic).	Unclassified	
Paraquat (dichloride) and paraquat bis(methyl sulfate)	All formulations and concentrations except those listed below. Pressurized spray formulations containing 0.44 % Paraquat bis(methyl sulfate) and 15 % petroleum distillates as active ingredients. Liquid fertilizers containing concentrations of 0.025 % paraquat dichloride and 0.03 percent atrazine; 0.03 % paraquat dichloride and 0.37 % atrazine, 0.04 % paraquat dichloride and 0.49 % atrazine.	All uses.	Restricted	Other hazards. Use and accident history, human toxicological data.
		Spot weed and grass control.	do	
		All uses.	Unclassified	
Phorate	Liquid formulations 65% and greater.	do	Restricted	Acute dermal toxicity. Residue effects on avian species (applies to foliar

*do means same as above.

Appendix 9-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification¹	Criteria Influencing Restriction
Phorate (continued)	All granular formulations.	Rice	Restricted	applications only). Residue effects on mammalian species (applies to foliar application only). Effects on aquatic organisms.
Phosacetim	Baits 0.1% and greater.	All uses.	Restricted	Hazard to non-target species. Residues effects on mammalian species. Residue effects on avian species.
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.

*do means same as above.

Appendix 9-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification ¹	Criteria Influencing Restriction
Picloram	All formulations and concentrations except tordon 101R.	do	do	Hazard to non-target 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 ³	All capsules and ball formulations.	All uses.	Restricted	Inhalation hazard to humans.
Sodium fluoroacetate	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 non-target avian species. Use and accident history. Hazard to non-target organisms.
	All dry baits, pellets and powder formulations.	All uses calling for burrow builders.	do	
	All dry baits, and pellets and powder formulations 0.5 % and below.	All uses except subsoil.	do	do
	do	All sub-soil uses.	Unclassified	do

*do means same as above.

Appendix 9-2 (continued)

Active Ingredient	Formulation	Use Pattern	Classification¹	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 non-domestic 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 formulations 10% and greater.	Domestic uses.	Restricted	Acute oral toxicity.

*do means same as above.

NOTES:

- ¹ "Under evaluation" means no classification decision has been made and the use/formulation in question is still under active review within the USEPA.
- ² Percentages given are the total of dioxathion plus related compounds.
- ³ Note: M-44 sodium cyanide capsules may only be used by certified applicators who have also taken the required additional training.

This table lists uses of pesticide products containing the active ingredients specified that have been classified for restricted use and are limited to use by or under the direct supervision of a certified applicator.

INSTALLATION:	COMPLIANCE CATEGORY: FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT (FIFRA) ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) MUSARC Engineer / Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (11) Entomology Shop (12) Environmental Coordinator (EC) (17) Preventive Medicine Officer/Health Physician

Section 10

NATIONAL HISTORIC PRESERVATION ACT (NHPA)

AND

CULTURAL RESOURCES

SECTION 10

NATIONAL HISTORIC PRESERVATION ACT (NHPA) AND CULTURAL RESOURCES

A. Applicability of this Protocol

This protocol integrates the requirements of all Federal laws and regulations dealing with historic properties, including historic and prehistoric districts, sites, buildings, structures, and objects, into a single document that applies to all installations.

B. Federal Legislation

- *Antiquities Act of 1906.* Within this Act, 16 U.S. Code (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* (Public Law (PL) 74-292; 16 USC 470-470w-6) authorizes the designation of national historic sites and landmarks, authorizes interagency efforts to preserve historic resources.
- *National Historic Preservation Act (NHPA) 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):

- 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
 - provide leadership in the preservation of the prehistoric and historic resources of the United States and of the international community of nations
 - 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
 - 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
 - encourage the public and private preservation and utilization of all usable elements of the Nation's historic built environment
 - 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) 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 or eliminate damage to the environment and biosphere and stimulate the health and welfare of humans (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 humans 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)).

- Executive Order (EO) 11593, *Protection and Enhancement of the Cultural Environment*, 13 May 1971 (reprinted as a note at 16 USC 470) directs Federal agencies to provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the Nation; to ensure the preservation of cultural resources; to locate, inventory, and nominate to the National Register all properties under their control that meet the criteria for nomination; and to

ensure that cultural resources are not inadvertently damaged, destroyed, or transferred before the completion of inventories and evaluation for the National Register.

- *The Historic and Archaeological Data-Preservation Act* (PL 93-291; 16 USC 469-469c) directs Federal agencies to notify the Secretary of the Interior 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 archaeological data. It also provides for funding historical and archaeological protection for such projects.
- *The 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)).

Whenever the Administrator of General Services takes a survey of the public buildings needs of the Federal government within a geographical area, he or she must request that within 60 days the Advisory Council on Historic Preservation identify any existing buildings within such geographical area that:

- are of historic, architectural, or cultural significance
 - would be suitable, whether or not in need of repair, alternation, or addition, for acquisition or purchase to meet the public buildings needs of the Federal government (40 USC 611(c)).
- *The American Indian Religious Freedom Act of 1978* (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 Indians, Eskimos, Aleuts, 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.
 - *The 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 19 October 1979 (16 USC 470aa(b)).

- *The Native American Graves Protection and Repatriation Act of October 1990*, 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 (25 USC 3002(c)):

- such items are excavated or removed pursuant to a permit issued which must be consistent with this Act
- 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
- the ownership and right of control of the disposition of such items must be as provided in subsections A. and B. of this section
- proof of consultation or consent under paragraph 2 is shown.

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.

The Federal agency or museum, upon the request of a Native American party designated, must expeditiously return the remains and associated funerary objects and other objects if:

- the cultural affiliation of Native American human remains and associated funerary objects with a particular Indian tribe or Native Hawaiian organization is established under this Act
- the cultural affiliation with a particular Indian tribe or Native Hawaiian organization is shown with respect to unassociated funerary objects, sacred objects or objects of cultural patrimony under this Act.

C. State/Local Requirements

- Army Reserve policy is to cooperate with the states to the maximum extent possible.
- The State Historic Preservation Officer (SHPO) is an important participant in Federal agency compliance with the NHPA and an important source of technical advice. The SHPO must be consulted during review of installation undertakings under Section 106 of the Act.

D. Department of Defense (DOD) Regulations

- DOD Directive 4710.1, *Archaeological and Historic Resources Management*, 21 June 1984, provides policy, prescribes procedures, and assigns responsibilities for the management of archaeological and historic resources located in and on waters and lands under DOD control. It establishes the policy that DOD components will integrate the archaeological and historical preservation requirements of applicable laws with the planning and management of activities under DOD control.

E. U.S. Army Regulations (ARs)

- AR 420-40, *Historic Preservation*, provides policy and regulatory guidance on historic preservation. It establishes the Army and Army Reserves' goals to protect buildings, structures, sites, and objects of historical, architectural, archaeological, or cultural value located on Army Reserve-controlled property, as required by NHPA, ARPA, and other laws. It contains definitions of pertinent terms, and descriptions of compliance procedures.

F. Key Compliance Requirements

- Historic Preservation - Army Reserve facilities are required to protect, restore, and maintain culturally significant properties and to locate, inventory, and nominate to the Secretary of the Interior all properties under their ownership or control that appear to qualify for listing on the National Register of Historic Places. They must consider effects of their actions on eligible properties and consult with the SHPO and Advisory Council. Facilities with such properties must also develop a historic preservation plan that ensures compliance with these responsibilities.

- **Archaeological Resources** - Army Reserve facilities must protect all archaeological resources. No archaeological resource on Federal land, including pottery, dwellings, and other artifacts, can be removed, excavated, damaged, or disturbed without an archaeological permit.
- **Native American Rights** - Army Reserve facilities must recognize the rights of Native Americans to have access to sites and objects of religious significance and to practice traditional religious ceremonies and rites. Native American groups also have the right to the return of cultural items found on Federal property, or maintained by Federal agencies. They also must be notified in the event of any discoveries of such cultural items.

G. Key Compliance Definitions

These definitions were obtained from regulations cited previously in this protocol.

- **Area of Potential Effects (APE)** - the geographical area or areas within which an undertaking may cause changes in the character or use of historic properties, if any such properties exist (36 Code of Federal Regulations (CFR) 800.2(c)).
- **Advisory Council on Historic Preservation (ACHP)** - the Council established by Title II of the NHPA to advise the President and Congress, to encourage private and public interest in historic preservation, and to comment on Federal agency action under Section 106 of the NHPA (36 CFR 65.3 and Section 201(a) of PL 94-422, title II).
- **Archaeological Resource** - any material remains of past life or activities which are of archeological interest. Such resources include, but are not limited to: pottery, basketry, bottles, weapons, weapon projectiles, tools, structures or portions of structures, pit houses, rock paintings, rock carvings, intaglios, graves, human skeletal materials, or any portion or piece of any kind of the foregoing items (16 USC 470bb).
- **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, 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).
- *Collection* - material 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).
- *Cultural Affiliation* - there is a relationship of shared group beliefs, 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 Service* - managing and preserving a collection according to professional museum and archival practices (36 CFR 79.4).
- *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).
- *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).
- *Federal Agency Official* - any officer, employee, 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 National Historic Preservation Act and EO 11593, including nominating properties under the agency's ownership or control to the National Register (36 CFR 60.3).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures and stewardship.
- *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 USCA 470w(8)).
- *Historic Property* - any prehistoric or historic district, site, building, structure, or object included in, or eligible for, inclusion on the National Register. The term includes artifacts, records, and material remains related to such property (16 USC 470w(5)).
- *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 States 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)).
- *Landmark* - a National Historic Landmark is a district, site, building, structure, or object, in public or private ownership, judged by the Secretary to possess national significance in American history, archaeology, architecture, engineering, and culture, and so designated by the Secretary (36 CFR 65.3).
- *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)
 - components of structures and features (such as houses, mills, piers, fortifications, earthworks, and mounds)
 - intact or fragmentary artifacts of human manufacture
 - intact or fragmentary natural objects used by humans (such as rock crystals, feathers, and pigments)
 - by-products, waste products, or debris resulting from manufacture or use of man-made or natural materials
 - organic waste (such as vegetable and animal remains)
 - human remains
 - components of petroglyphs, pictographs, intaglios, or other works of artistic or symbolic representation
 - environmental and chronometric specimens remains
 - components of shipwrecks or
 - 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 received 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* - the bureau of the Department of the Interior to which the Secretary of the Interior has delegated the authority and responsibility for administering the National Register program (36 CFR 60.3(h)).
- *National Register of Historic Places* - the listing of districts, sites, buildings, structures, and objects of national, state, or local significance in American history, architecture, archaeology, or culture that is maintained by the Secretary of the Interior (Keeper of the Register) (36 CFR 65.3).
- *Native American* - of, or relating to, a tribe, people, or culture that is indigenous to the United States (PL 101-601, Section 2).
- *Native Hawaiian* - any individual which 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 101-601, Section 2).
- *Nominate* - to complete and submit National Park Service forms 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).
- *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 such items 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 Institute (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 person's management and care commensurate with the person's duties and responsibilities (36 CFR 79.4).
- *Religious Remains* - material 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 Object* - specific ceremonial objects which are needed by traditional Native American religious leaders for the practice of their traditional Native American religions by their present 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 Advisory Council on Historic Preservation when an undertaking may affect a property on, or eligible for, the National Register (36 CFR 800.3 through 800.9).
- *Significant* - having a characteristic that makes a property eligible for listing on the National Register (DOD Directive 4710.0).
- *State Historic Preservation Officer (SHPO)* - the official, appointed pursuant to USC 470a(b)(1), who is responsible for administering the NHPA within a state or jurisdiction (36 CFR 60.3).
- *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 101-601, 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:
 - those carried out by or on behalf of the agency
 - those carried out with Federal financial assistance
 - those requiring a Federal permit, license or approval
 - those subject to state or local regulation administered pursuant to a delegation of approval by a Federal agency (NHPA, Section 301(7)).

**NATIONAL HISTORIC PRESERVATION ACT (NHPA)
AND
CULTURAL RESOURCES**

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS	CONTACT THESE PERSONS OR GROUPS(a)
All Facilities	10-1 through 10-5	(1)(2)
NHPA Section 110	10-6	(1)(2)
NHPA Section 106	10-7 through 10-10	(1)(2)
Archaeological Resources Protection Act (ARPA)	10-11	(1)(2)
Native American Protection and Repatriation Act	10-12 and 10-13	(1)(2)
Curation of Federally Owned and Administrated Archaeological Collections	10-14	(1)(2)
American Indian Religious Freedom Act	10-15	(1)(2)
Records Management and Administration	10-16	(1)(2)
NEPA/NHPA	10-17	(1)(2)
AR 420-40	10-18	(1)(2)

(a) CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager

**NATIONAL HISTORIC PRESERVATION ACT (NHPA)
AND
CULTURAL RESOURCES**

Plans and Maps to Review

- Installation Master Plan
- Historic Preservation Plan
- Archaeological site forms and maps
- NEPA mitigation plans

Records to Review

- For construction (including maintenance, demolition, rehabilitation, etc.) 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.
- Nominations to National Register
- Correspondence with SHPO for consensus determinations of eligibility; determinations of no effect, effect, no adverse effect, and adverse effect.
- Standard Operating Procedures (SOP) for ensuring compliance
- MOA and Programmatic Memoranda
- ARPA permits
- Curation inventories and bailment agreements
- Inventory of historic properties
- Cultural resources reports, contracts, and scopes of work

Physical Features to Examine

- Sites of historic, archaeological, or Native American interest (designation, protection, and interpretation)
- Repositories of archaeological records and collections
- Buildings and structures of potential historical significance (National, state, or local)
- Freshwater wetlands

People to Interview

- MUSARC Engineer/Facility Coordinator
- Facility Manager
- Environmental Coordinator (EC)
- BASOPs ARCOM Environmental Managers



**COMPLIANCE CATEGORY:
NATIONAL HISTORIC PRESERVATION ACT (NHPA)
AND CULTURAL RESOURCES
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ALL FACILITIES</p> <p>10-1. Determine actions or changes since previous review (GMP). ...</p> <p>10-2. Installations should maintain a current file of applicable Federal, DOD, U.S. Army, ARNG, and state and local regulations for cultural resources management (GMP). ...</p> <p>10-3. Facilities should comply with applicable state and local requirements (GMP). ...</p>	<p>Examine copy of previous review report to determine if noncompliance issues have been resolved. Check accuracy of previous review report. (1)(2) ...</p> <p>Verify that the following document, which are applicable, are maintained and kept current at the ARCOM or Support Installation: (1)(2)</p> <ul style="list-style-type: none"> - 32 CFR 229, <i>Protection of Archaeological Resources: Uniform Regulations.</i> - 36 CFR 79, <i>Curation of Federally-owned and Administered Archeological Collections.</i> - 36 CFR 800, <i>Protection of Historic and Cultural Properties.</i> - 36 CFR 1222-1238, <i>Records Management.</i> - AR 420-40, <i>Historic Preservation.</i> - PL 101-601 - 16 USC 470ii - 25 USC 3001 - <i>National Environmental Policy Act (NEPA).</i> - <i>National Historic Preservation Act (NHPA).</i> - Applicable state and local regulations. <p>...</p> <p>Verify that the installation is complying with state and local requirements. (1)(2)</p> <p>Verify that the installation is operating according to permits issued by the state or local agencies. (1)(2)</p> <p>(NOTE: Issues which are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - designation of state historic sites - protection of state historic sites.) <p>...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>10-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, re-occurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation, promotes good public relations and addresses systemic weakness in the overall operation of the program (GMP).</p> <p style="text-align: center;">...</p> <p>10-5. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p style="text-align: center;">...</p>	<p>Determine what management systems are in place. (1)(2)</p> <p>Verify that the existing system addresses the issues associated with historic and cultural resources by: (1)(2)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p>Determine if training is being conducted. (1)(2)</p> <p style="text-align: center;">...</p> <p>Determine if any new regulations concerning historic and cultural resources 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: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p style="text-align: center;">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>NHPA Section 110</p> <p>10-6. Unless exempted, facility must have a program for the identification, evaluation, nomination to the National Register of Historic Places, and protection of historic properties (<i>NHPA</i> 110(a)(2)).</p> <p style="text-align: center;">...</p>	<p>Verify that the facility has either: (1)(2)</p> <ul style="list-style-type: none"> - written notification from DA Headquarters (through ENVR (Con)) that it has been exempted from this requirement by the Advisory Council on Historic Preservation (ACHP) pursuant to Section 214 of the <i>NHPA</i> - a Historic Preservation or Cultural Resource Management Officer or Coordinator (HPO) officially designated in writing by the commander (may be an additional duty assignment, but HPO should be assigned to devote at least 10 percent of his or her work time to HPO duties) <ul style="list-style-type: none"> - a written position description for the HPO - a written performance elements and standards for the HPO - written evidence that within the last 3 years (yr) the HPO and/or personnel reporting to the HPO have successfully completed at least one training class in Cultural Resource Management - a written description of its <i>NHPA</i> 110(a)(2) program, with written justification for each work element and allocation of personnel and other assets - personnel and other assets assigned to the program in accordance with the written description. <p style="text-align: center;">...</p>

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**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

NHPA Section 106

10-7. The facility must identify historic properties potentially affected by its undertakings (36 CFR 800.4).

Verify that the facility has either: (1)(2)

- written notification from DA Headquarters (through ENVR (Con)) that it has been exempted from Section 106 requirements by the ACHP pursuant to Section 214 of the *NHPA*
- planned, initiated, conducted, continued, permitted, or participated in no actions that could result in the modification of land or buildings, or have visual, auditory, or atmospheric effects on any land or buildings, regardless of their ownership or historical significance
- in place a Historic Preservation or Cultural Resource Management Plan (CRMP) approved by the State Historic Preservation Officer (SHPO) and ACHP that excuses it from the below requirement in any or all cases (in which case see 10-15).

Verify that the facility has the following: (1)(2)

- for each of the actions included in the sample of action files inspected:
 - a written determination by the HPO that the action is not an undertaking subject to review under Section 106 of *NHPA* because it either is not under the direct or indirect jurisdiction of a Federal Agency or because it has no potential to affect historic properties
 - a written or graphically depicted area of potential effects (APE), including all alternative sites of the undertaking and all areas where the undertaking, at each alternative site, could have physical, visual, audible or atmospheric effects on historic properties if any such properties exist in such areas and either
 - written certification by the HPO that the APE has been determined, in accordance with the Secretary of the Interior's *Standards and Guidelines for Identification*, to contain no historic properties, and written evidence that this certification and any supporting documents have been provided to the SHPO and the SHPO has not objected to the certification
 - a written description of the effort undertaken, in accordance with 36 CFR 800.4(a) through (c) to identify historic properties in the APE, together with a description of each such property, with written evidence that this documentation has been provided to the SHPO, and that:

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>10-7. (continued)</p> <p style="text-align: center;">...</p> <p>10-8. The facility must determine what effects (if any) each of its undertakings may have on historic properties, and commit to resolve any effects that are adverse (36 CFR 800.5).</p> <p style="text-align: center;">...</p>	<ul style="list-style-type: none"> - no properties included in, or that might be eligible for, the National Register of Historic Places (Register) were identified, that the SHPO was so notified, and did not object within 30 days of notification - properties included in the Register were identified, and that the SHPO was so notified - properties that might be eligible for the Register were identified, and were evaluated in consultation with the SHPO in accordance with 36 CFR 800.4(c). <p style="text-align: center;">...</p> <p>If the sample of actions reviewed includes undertakings in whose APES historic properties were identified (See 10-4), verify that the facility in each case: (1)(2)</p> <ul style="list-style-type: none"> - applied the Criteria of Effect (36 CFR 800.9(a)) and made a determination of effect in accordance with 36 CFR 800.5(a), as evidenced by correspondence with the SHPO documenting the facility's determination that the Criteria either are or are not met - if the undertaking would have an effect, supplied the Criteria of Adverse Effect (36 CFR 800.9(b)-(c)) in accordance with 36 CFR 800.5(c) and made a determination of adverse effect or no adverse effect, as evidenced by a letter transmitting a determination of no adverse effect to the ACHP in accordance with 36 CFR 800.5(d) or by a letter notifying the ACHP of adverse effect in accordance with 36 CFR 800.5(e). <p style="text-align: center;">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>10-9. The facility must consult with the SHPO and others to resolve adverse effects of undertakings on historic properties, execute an MOA if agreement is reached (36 CFR 800.5(e)(4)), and seek the comments of the ACHP if agreement is not reached (36 CFR 800.5(e)(6)).</p> <p style="text-align: center;">...</p> <p>10-10. The facility must implement MOAs it has executed (36 CFR 800.6(c)(1)).</p> <p style="text-align: center;">...</p>	<p>Verify that either: (1)(2)</p> <ul style="list-style-type: none"> - no undertaking with which the facility has been involved has been determined to have an adverse effect on an historic property, either by the Facility or as the result of objection by the SHPO or ACHP - for each undertaking that was determined to have an adverse effect on a historic property, the Facility carried out (or is carrying out) consultation with the SHPO and other interested persons, as evidenced by correspondence, public notices, and other documents generated during consultation, and: <ul style="list-style-type: none"> - executed (or is in the process of executing) an MOA with the SHPO, ACHP and other interested persons in accordance with 36 CFR 800.5(d)(4), as evidenced by draft and/or final MOAs - upon termination of consultation pursuant to 36 CFR 800.5(e)(6) by the SHPO or ACHP, referred the matter to Headquarters, Department of the Army (HQDA) (ENVR (Con)) for resolution, as evidenced by a referral memorandum - upon concluding that further consultation would not be productive, referred the matter to HQDA (ENVR (Con)) through the Major Army Command (MACOM) for a determination as to whether the Army should terminate consultation pursuant to 36 CFR 800.5(e)(6), as evidenced by a referral memorandum. <p style="text-align: center;">...</p> <p>If the facility has executed any MOAs, verify that they have been implemented, as evidenced by contracts, plans and specifications, or other documentation or by visual inspection. (1)(2)</p> <p style="text-align: center;">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
NATIONAL HISTORIC PRESERVATION ACT (NHPA)
AND CULTURAL RESOURCES
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

**ARCHAEOLOGICAL
RESOURCES
PROTECTION ACT
(ARPA)**

10-11. The facility must regulate the excavation of archeological sites on Federal lands under its jurisdiction (16 USC 470ii and 32 CFR 229).

Verify that the facility has either: (1)(2)

- jurisdiction over no land that might contain archeological sites, as evidenced by certification to this effect by DA Headquarters (ENVR (Con)), concurred in by the SHPO
- a program to identify and inventory archeological sites, as evidenced by survey reports, inventory files, and related documents, such as:
 - a copy of 32 CFR 229 on file
 - written evidence that the commander has charged military police, game wardens, and/or other law enforcement personnel with enforcement of 16 USC 470ii
 - written evidence that within the last 5 yr the HPO and/or personnel reporting to the HPO, and/or military police, game wardens, and/or other law enforcement personnel have successfully completed at least one training class pertaining to cultural resource protection.

Verify that the facility has either: (1)(2)

- received no applications during the last year for permits to excavate archeological sites
- processed any such applications, and administered any such permits, in accordance with 32 CFR 229 as evidenced by files containing completed permit applications meeting the requirements of 32 CFR 229.6, copies of notifications to Indian tribes where applicable pursuant to 32 CFR 229.7, permits containing terms and conditions consistent with 32 CFR 229.9, and where a permit has been in effect for 1 yr or more, the written results of an annual or more frequent performance review by the facility pursuant to 32 CFR 229.9(g).

...

...

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
NATIONAL HISTORIC PRESERVATION ACT (NHPA)
AND CULTURAL RESOURCES
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

**NATIVE AMERICAN
GRAVES
PROTECTION AND
REPATRIATION ACT**

10-12. The facility must prepare an inventory and summary of any collections of Native American artifacts that it manages or that are managed by others (except the Smithsonian Institution) on its behalf, and give related Native American groups the opportunity to claim and have repatriated Native American cultural items related to such groups (*Native American Graves Protection and Repatriation Act* of 1990 (PL 101-601), Sections 5 and 6).

...

10-13. The facility must consult with appropriate Native American groups in the issuance of permits for archeological excavations, and must halt work and engage in other activities in the event a Native American cultural item is discovered during construction, land use, or other activities (*Native American Graves Protection and Repatriation Act* (PL 101-601) Section 3).

Verify that the facility has either: (1)(2)

- a written statement signed by the commander that it maintains no collections of Native American artifacts, and has no contracts, cooperative agreements, or other arrangements, formal or informal, under which other parties (i.e., museums) maintain such collections
- completed a summary of any unassociated funerary objects, sacred objects, and cultural patrimony as defined at 25 USC 3001 in each collection
- initiated an inventory of any such collection, and scheduled it to be complete by October 1995, to identify Native American human remains and associated funerary objects as defined at 25 USC 3001, as evidenced by relevant directions, memoranda, or other action documents
- has initiated consultation with potentially affected Native American groups about ownership and repatriation of such Native American cultural items, as evidenced by notices, memoranda, minutes of meetings, and correspondence.

...

Verify that the facility has either: (1)(2)

- permitted the excavation or removal of no archeological sites thought to contain Native American cultural items during the last year
- permitted such excavation or removal in accordance with its program to implement the ARPA, and has consulted with appropriate Indian or Native Hawaiian groups in the issuance of any permit, as evidenced by memoranda, minutes of meetings, and correspondence in the permit files
- included in any permit issued for the excavation or removal of Native American cultural items the provision that the ownership and right of control of the disposition of such items shall be as provided in subsections 3(a) and (b) of the *Native American Graves Protection and Repatriation Act*, as evidenced by appropriate language in permit documents
- not experienced the inadvertent discovery of Native American cultural items during any of its activities or the activities of any tenant, contractor, permit holder, easement holder, dependent, or visitor
- assured that activities in the vicinity of any such discovery that might harm such items have been halted
- notified DA Headquarters (ODEP (Consv)) and handled the discovery as directed by DA Headquarters, as evidenced by relevant coordination documents.

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
NATIONAL HISTORIC PRESERVATION ACT (NHPA)
AND CULTURAL RESOURCES
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

**CURATION OF
FEDERALLY OWNED
AND ADMINSTRATED
ARCHAEOLOGICAL
COLLECTIONS**

10-14. The facility must manage archeological collections according to standards established by regulation (36 CFR 79.5(b)).

Verify that the facility has either: (1)(2)

- a written statement signed by the commander that it maintains no collections of archeological material and/or data, either derived from Native American sites or from sites created by other ethnic groups such as settler communities, and has no contracts, cooperative agreements, or other arrangements, formal or informal, under which other parties (i.e., museums) maintain such collections
- a written statement signed by the Federal, state, local, museum, or academic official legally responsible for the repository in which such collection(s) are housed, guaranteeing that such collections are being and will be maintained in accordance with 36 CFR 79, except for any Native American cultural items repatriated in accordance with the Native American Graves Protection and Repatriation Act.

...

...

**AMERICAN INDIAN
RELIGIOUS FREEDOM
ACT**

10-15. The facility must consult with Native American groups regarding actions that might affect sites of traditional religious or cultural importance to them, or impede their access to such sites for religious purposes, or otherwise impede the practice of traditional religions (NHPA 101(d)(6)(B) and American Indian Religious Freedom Act).

Verify that the facility has either: (1)(2)

- jurisdiction over no activities that are likely to have effects on sites of traditional cultural and religious importance to Native American groups, or on access to such sites, or otherwise on the practice of traditional Native American religions, as evidenced by certification to this effect by DA Headquarters (ENVR (Con))
- initiated efforts to contact Native American groups that might have traditional religious or cultural interests in areas under the facility's jurisdiction, or be subject to effect by actions over which the facility has jurisdiction, or that may carry out traditional religious or cultural activities that could be affected by such actions, as evidenced by correspondence, memoranda, and minutes of meetings.

...

...

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
NATIONAL HISTORIC PRESERVATION ACT (NHPA)
AND CULTURAL RESOURCES
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

**RECORDS
MANAGEMENT AND
ADMINISTRATION**

10-16. The facility must manage its records, including both documents and nondocument records such as videotape, audiotape, and electronic records, in accordance with the regulations of the Archivist of the United States in order to preserve their historical value and make them available to scholarship (36 CFR 1222, 1228, 1230, 1232, 1234, 1236, and 1238).

...

NEPA/NHPA

10-17. The facility must consider the effects of its actions and ongoing management activities on social institutions and lifeways regarded by communities as contributing to the maintenance of culturally pleasing surroundings (NEPA Section 101(b)(2)).

...

Verify that the facility has disposal schedules for all records that have been approved by the National Archives and Records Administration (NARA), as evidenced by documents certifying NARA approval. (1)(2)

...

Verify that the facility has either: (1)(2)

- been involved in no actions requiring an Environmental Assessment (EA) or Environmental Impact Statement (EIS) under NEPA during the last year
- identified and analyzed effects (if any) of any action requiring such review on the social and cultural institutions, lifeways, and aesthetic qualities of any community, neighborhood, or social or ethnic group potentially affected by such action, as evidenced by the presence of such discussion in the applicable EA or EIS.

...

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

**COMPLIANCE CATEGORY:
NATIONAL HISTORIC PRESERVATION ACT (NHPA)
AND CULTURAL RESOURCES
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

AR 420-40

10-18. Installations with historic properties should prepare and implement a Historic Preservation Plan (HPP) to guide their management. This may be integrated into a CRMP that addresses a broader subset of, or all, cultural resources (AR 420-40).

Verify that the facility has either: (1)(2)

- elected not to prepare an HPP or CRMP, as evidenced by a decision memorandum signed by the commander
- negotiated a Programmatic Agreement (PA) with the SHPO, ACHP, and other interested parties stipulating the content and nature of the HPP or CRMP, as evidenced by correspondence on the subject
- completed a PA and is preparing an HPP or CRMP as evidenced by a copy of the PA and documents associated with HPP/CRMP preparation
- an HPP or CRMP in place that:
 - has been reviewed by the SHPO and ACHP in accordance with the applicable PA, as evidenced by documents signed by SHPO and ACHP representatives
 - is being implemented, as evidenced by implementation schedules, plans, budget documents, and other written material
 - is coordinated with Master Planning, Range Control, Integrated Training Area Management (ITAM), and other planning activities, as evidenced by references to the HPP or CRMP in documents guiding implementation of such activities, or by computer-based or other demonstrable systems of coordination
 - has a definite schedule for review and updating, as evidenced by documents or other provisions contained in the HPP or CRMP, in the PA, or elsewhere providing for such review and updating.

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager



INSTALLATION:	COMPLIANCE CATEGORY: NATIONAL HISTORIC PRESERVATION ACT (NHPA) AND CULTURAL RESOURCES ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager

Section 11

NATURAL RESOURCES MANAGEMENT

SECTION 11

NATURAL RESOURCES MANAGEMENT

A. Applicability of this Protocol

This protocol applies to all Army Reserve facilities with improved, semi-improved and unimproved grounds. Plans and programs for protection, enhancement, and management of natural resources such as vegetation and wildlife, and their habitats, are included in this protocol.

B. Federal Legislation

- *The Endangered Species Act (ESA) of 1973 as amended*, Public Law (PL) 100-478, requires the Army to carry out programs to protect, conserve and assist in recovery of Federally listed endangered and threatened plants and wildlife. Such programs must be developed and carried out with consultation and assistance from the Departments of the Interior (DOI) and Commerce and the proper state agencies. All Army actions authorized, funded, or carried out must not jeopardize the continued existence of Federal endangered or threatened plants and wildlife, nor result in the destruction or adverse modification of critical habitat. Any Army action that may affect Federal listed species or their critical habitats requires consultation with the U.S. Fish and Wildlife Service (U.S. FWS). Federal regulations codified in 50 Code of Federal Regulations (CFR) 402 and 50 CFR 17 interpret and implement the *ESA*. The Army is also required to recognize and consider all state listed species when undertaking any action which may conflict with the protection and conservation of the state species.
- *The Sikes Act* (16 U.S. Code (USC) 670a-670f) requires fish and wildlife conservation and mandates facilities to execute cooperative plans with the U.S. FWS and state for managing fish and wildlife. It allows facilities to charge fees for hunting and fishing permits, and requires that the receipts from the sale be properly accounted for and used for fish and wildlife conservation on the facility where collected.
- *The Fish and Wildlife Conservation Act (FWCA) of 1980* (PL 96-366; 16 USC 2901 et seq) promotes state programs for the purpose of conserving, restoring, or otherwise benefiting nongame fish and wildlife, their habitats, and their uses.

- PL 86-337 (10 USC 2671) requires that all hunting, fishing, and trapping on military facilities be in accordance with the fish and game laws of the state in which the facility is located, and that the hunters, fishers and trappers possess appropriate state licenses.
- 10 USC 2665 provides for sales of forest products on Army installations. Funds generated by these sales are used to reimburse the forest management expenses, pay state entitlement (40 percent of installation net proceeds go to state for county roads and schools). The Army-wide net reserve at the end of the fiscal year, after states' entitlement are paid, goes to the Department of Defense (DOD) Natural Resources Reserve Account which is dispersed, DOD-wide, first to cover otherwise unfunded forestry expenses and then other natural resource projects.
- *The Wild and Scenic Rivers Act of 1960* (30 CFR 297) prohibits the use of Federal funds for activities that would have an adverse affect on those characteristics that caused a river to be classified as wild, scenic, or recreational.
- *The Farmland Protection Policy Act of 1981* (7 CFR 658) minimizes the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural use. Facility lands, when suitable and available, may be leased for cropland or grazing. 10 USC 2667 provides for the use of the funds generated by those leases for the administrative costs of the leases as well as the financing of multiple-use land management programs at the facility.
- Executive Order (EO) 11987, *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.
- Section 404 of the *Clean Water Act (CWA)* (32 USC 1344) requires the identification, delineation and protection of wetlands and requires permits for actions which affect wetlands.
- EO 11988, *Floodplain Management*, and 11990, *Protection of Wetlands*, address the actions Federal agencies must take to
 1. identify and protect wetlands and floodplains
 2. minimize the risk of flood loss and destruction of wetlands
 3. preserve and enhance the natural and beneficial values of both floodplains and wetlands.
- EO 11989, *Use of Off-Road Vehicles (ORVs) on The Public Lands*, specifies that ORVs may not be used on Federal lands without special use permits and only within specified locations.

- *The Migratory Bird Treaty Act* (PL 65-186; 50 CFR 20) protects migratory birds, their nests, and eggs. Construction, repairs, and other such actions that can harm nests, eggs, or individuals are covered under the act. A depredation permit is required before any person may take, possess, or transport migratory birds, or disturb the nests, eggs, or young.
- *National Environmental Policy Act (NEPA) of 1969* (PL 91-190; 42 USC 4321-4347) states the policy of the Federal government to preserve important historic, cultural, and natural aspects of our national heritage and requires consideration of environmental concerns during project planning and execution. This act requires Federal agencies to prepare an Environmental Impact Statement (EIS) for every Federal action that affects the quality of the human environment, including both natural and cultural resources. It is implemented by regulations issued by the Council on Environmental Quality (CEQ) (40 CFR 1500-1508) which are incorporated into Army Regulation (AR) 200-2, *Environmental Effects of Army Actions*. (See *National Environmental Policy Act*, Section 12 of this manual, for regulations pertaining to the EIS process.)

C. State/Local Requirements

Army Reserve policy is to cooperate with the states to the maximum extent possible.

States develop regulations and good management practices (GMPs) for the protection of surface waters and prevention of nonpoint source pollution. These GMPs primarily apply to agricultural and silvicultural (forestry) activities, but are also to be followed whenever any activity may affect surface waters or contribute to nonpoint source pollution. Army Reserve management plans address these GMPs.

States establish regulations governing hunting and fishing activities. These regulations must be followed on Army Reserve facilities. Special regulations for these activities on facilities may be developed in cooperation with the state wildlife management agency.

State and local governments may establish laws and regulations on wetland protection; rare, threatened, or endangered species; water quality certification; state wild and scenic rivers; floodplain protection; and erosion and sediment control.

The FWCA gives implementation authority for the regulation and protection of nonmigratory resident fish and wildlife in the state.

D. DOD Regulations

- DOD Directive 4700.4, *Natural Resources--Conservation and Management*, 29 January 1989, prescribes DOD policies and establishes an integrated program for multiple-use management of the renewable natural resources on DOD lands. It directs facilities to protect, conserve, and manage the watersheds and natural landscapes, the soil, the forest and timber growth, the fish and wildlife, and endangered species as vital elements of the Army Reserve. 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.
- DOD Instruction 7310.5, *Accounting for Production and Sale of Forest Products*, 25 January 1988, provides policy on DOD forestry accounting procedures.

E. U.S. Army Regulations (ARs)

- AR 420-74, *Natural Resources--Land, Forest, and Wildlife Management*, provides Army and Army Reserve policy for managing natural resources and attaining the goal of ensuring that Army Reserve actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species.

F. Key Compliance Requirements

- Integrated Natural Resources Management Plan (INRMP) - Army installations occupying land and water are to generate a program for developing, restoring, improving, conserving, and managing those resources. Where the land and water areas are large enough to support natural woodlands, native wildlife species, or outdoor recreation, the installation will develop an INRMP to protect and preserve biodiversity. The plan will be integrated for the concurrent management of all resources. The plan will cover, as appropriate for the installation, land (soil and water), grazing and cropland, forests, game and non-game fish and wildlife, and outdoor recreation. The plan will recognize the interrelated effects, impacts, and the influences of climate soil parent material, slope, aspect, and ground as well as surface water.
- Cooperative Agreements - Facilities will maintain liaison with agencies through cooperative agreements. These agreements assist in developing and implementing well-coordinated, multiple-use natural resources programs.
- Cooperative Plans - Fish and Wildlife Management plans developed with and receiving the agreement of the state and the U.S. FWS makes these cooperative plans as defined by the *Sikes Act*.

- **Endangered and Threatened Species** - Army Reserve facilities must carry out programs to conserve and record endangered and threatened species and their critical habitat and must consult with the U.S. FWS to ensure that their actions do not jeopardize the continued existence of such species or destroy or adversely modify critical habitat.
- **Proper and Legal Use of Funds** - Funds collected from the outleasing of lands for agricultural and grazing purposes may only be used to support the agricultural outleasing program or to support other multiple use natural resources programs. Hunting and fishing fees may only be used to support fish and wildlife management on the facility on which it was collected. Receipts from the sale of forest products may only be used to offset costs directly related to the production of commercial forest products within the DOD (10 USC 2665, 2667, and 2671).
- **Natural Resources Conservation and Beautification Committee** - Facility commanders having natural resource programs should appoint this subcommittee of the Environmental Quality Control Committee (EQCC). The subcommittee objectives are to ensure continuous planning and application of the integrated natural resource program, promoting and fostering natural beauty; and natural resource enhancement, protection, and compliance both on the facility and in cooperation with local communities (AR 420-70).
- **Natural Resources Coordinator** - Facility commanders are required to appoint a natural resources coordinator, as applicable. The coordinator should be an active member of the EQCC.
- **Natural Resources Law Enforcement** - Natural resources law is required to be enforced by individuals specifically trained and qualified in the area of natural resources law enforcement. This is a specific requirement of the cooperative agreement specified in the *Sikes Act* (16 USC 670 et seq and DODI 4700.4)
- **Wetlands** - Wetlands are of critical importance to the protection and maintenance of living resources. EO 11990 requires that federal agencies minimize any significant action that contributes to the loss or degradation of wetlands and that action be initiated to enhance their natural value. It is Department of the Army (DA) policy to avoid adverse impacts to existing aquatic resources and offset those adverse impacts which are unavoidable. To meet this requirement, facilities will identify and maintain a current inventory of wetlands. Facilities should contribute to and reference the *National Wetlands Inventory*. Loss of wetland acreage shall be mitigated to the extent justified and in coordination with other resources.

G. Key Compliance Definitions

These definitions were obtained from regulations cited previously in this protocol.

- *Action* - means 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:
 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
 4. actions directly or indirectly causing modifications to the land, water, or air (50 CFR 402.02).
- *Action Area* - means 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).
- *Candidate Species* - any species being considered by the Secretary of the Interior for listing as an endangered or threatened species (50 CFR 424.02).
- *Category I* - facilities having land and water areas suitable for the conservation and management of fish and wildlife, and other natural resources (AR 420-74, para 10-4a(1)).
- *Category II* - facilities for which a decision is pending as to program suitability within the meaning of Category I (AR 420-74, para 10-3a(2)).
- *Coastal Zone* - the coastal waters (including lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder) strongly influenced by each other and in proximity to the shoreline of the several coastal states (AR 420-74, para 1-19).
- *Conservation* - the protection, improvement and use of natural resources according to principles that will provide optimum public benefit and support the military missions (AR 420-74, para 1-7).
- *Cooperative Plan Agreements* - a plan for the management of fish and wildlife on a facility which has been mutually agreed upon by the Facility Commander, Regional Director, U.S. FWS, and the State Fish and Wildlife Agency (AR 420-74, para 1-25).
- *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 consideration or protection. Specific areas outside of the currently occupied range of a threatened or endangered species may be determined by the Secretary of the Interior as areas essential for the conservation of the species (50 CFR 424.02).

- *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).
- *Endangered Species* - any species which is in danger of extinction throughout all or 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 DOI (50 CFR 81.1).
- *Forest Management* - the science, the art, and the practice of managing and using for human benefit the natural resources that occur on or in association with forest lands (AR 420-74, para 1-10).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures. In some states these are called Best Management Practices (BMPs).
- *Grounds* - all land and water acreage for which a facility commander has responsibility (including satellite areas). Grounds are grouped into the following three categories: improved grounds; semi-improved grounds; and unimproved grounds (AR 420-74, para 1-13).
- *Improved Grounds* - acreage on which intensive maintenance activities must be planned and performed annually as fixed requirements. Activities include mowing, irrigation, fertilization, cultivation, aerification, seeding, sodding, spraying, pruning, trimming, weed, dust, and erosion control, drainage, planting for landscape effect, wind and sound abatement, and other intensive practices (AR 420-74, para 1-13).
- *Jeopardize the Continued Existence of* - means 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 genetic diversity, reproduction, numbers, or distribution of that species (50 CFR 402.02).
- *Land Management* - the planning and execution of programs to improve, utilize and maintain all land and water areas for the greatest net public benefit while

supporting the military mission. Included are subordinate land uses that are mutually compatible and consistent with maintaining environmental qualities (AR 420-74, para 1-9).

- *Migratory Bird* - any bird, whatever its origin and whether or not raised in captivity, which belongs to a species listed in 50 CFR 10.13, or which is a mutation or a hybrid of any such species, including any part, nest, or egg of such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part of any such bird or any part, nest, or egg thereof (50 CFR 10.12).
- *Multiple-Use* - the integrated management of all natural resources, each with the other, to achieve the optimum use and enjoyment while maintaining the environmental qualities, ecological relationships and esthetic values in proper balance (AR 420-74, para 1-6).
- *Natural Resources* - the viable and/or renewable products of nature and their environments of soil, air, and water. Included are plants and animals occurring on grasslands, rangelands, croplands, forests, lakes, and streams (AR 420.74, para 1-6).
- *Semi-improved Grounds* - includes areas on which periodic recurring maintenance is performed but to a lesser degree than on improved grounds. Practices normally include such cyclic variables as soil sterilization, weed and brush control, drainage maintenance, and mowing for fire protection. Semi-improved grounds acreage may be combined with improved grounds acreage for reporting purposes when only two categories of grounds are used (AR 420-74, para 1-13).
- *Sustained Yield* - production of renewable natural resources a land or water area can maintain at a given intensity of management (AR 420-74, para 1-16).
- *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 DOI (50 CFR 81.21).
- *Unimproved Grounds* - acreage not classified as improved or semi-improved (AR 420-74, para 1-13).

**NATURAL RESOURCES MANAGEMENT
GUIDANCE FOR WORKSHEET USERS**

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Facilities	11-1 through 11-5	(1)(2)(5)(12)(15)
Natural Resources	11-6 through 11-12	(1)(2)(5)(12)(15)
Outdoor Recreation Resources	11-13	(1)(2)(12)(15)
Forest Management	11-14	
Wildlife Management	11-15 through 11-17	(1)(2)
Land Management	11-18 through 11-20	(2)(5)(12)(15)
Irrigation	11-21	(5)(15)
Receipts and Expenditures	11-22 and 11-23	(5)(15)
Off-Road Vehicles	11-24	(5)
Natural Resources Law Enforcement	11-25	(5)(15)
RC 1383 Natural Resources	11-26	(5)(15)

Items numbered 11-12 and 11-14 are not Army Reserve applicable and are not included in this manual.

(a) CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager
- (5) Directorate of Engineering and Housing (DEH)/DPW
- (12) Environmental Coordinator (EC)
- (15) Land Management Officer (DEH)

NATURAL RESOURCES MANAGEMENT

Plans and Maps to Review

- Facility Master Plan
- NRMP (Parts 1 through 5, as appropriate)
- Fish and Wildlife Cooperative Plan, and consultations
- Agricultural and Grazing Lease Contracts, and Land Use Plans
- Natural Resources Annual Work Plans and Approvals
- GOCO Maintenance Plan

Records to Review

- Environmental Review Documents
- FWCA
- Outdoor Recreation Plan
- Outdoor Recreation Cooperative Agreement
- Grounds Maintenance Contracts
- Budget Documents (DD 1383 report, Facilities Engineers Annual Work Plan)
- Natural Resources Report, or equivalent
- Government-owned Contractor-operated (GOCO) Contract
- Endangered Species Act documents prepared for the facility

Physical Features to Examine

- Construction sites (erosion control, runoff, sedimentation, and landscaping)
- Facilities constructed in the past 2 years (yr) (erosion and landscaping)
- Wildlife containment areas (condition and management)
- Wildlife habitat and land and water resources (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)
- Forest management areas (condition and management)
- Agricultural and grazing lease areas (condition and management)
- Storm water drainage areas and improvements (condition)
- Erosion sites (condition and erosion)

People to Interview

- MUSARC Engineer/Facility Coordinator
- Facility Manager
- Directorate of Engineering and Housing (DEH)/DPW
- Environmental Coordinator (EC)
- Land Management Officer (DEH)
- BASOPs ARCOM Environmental Managers

CHECKLIST FOR ECAS'S NATURAL RESOURCE AUDITORS

1. If the natural resource base is adequate to require natural resource management (AR 420-74), does an integrated natural resource management plan exist which: (Reviewer check 11-6)
 - a. Addresses all renewable and nonrenewable (consumable) resources and areas of critical concern from both policy and technical aspects? (Reviewer check 11-4)
 - b. Places mission support as top priority?
 - c. Has: (reviewer check 11-4)
 1. current (less than 10 yr old) inventories to support the plans?
 2. goals current and realistic in support of mission and natural resources?
 3. management methods sufficient to meet goals, and adequate to meet budget requirements?
 4. activity and annual work schedules directed to meeting goals?
 5. priorities reasonable and proper and aimed at meeting military mission goals?
 6. responsibilities of facility planners and decision makers well defined?
 7. monitoring systems in place which provide usable information?
 8. systems in place which protect resources and mission and enforce laws, regulations, and orders?
 9. land use restrictions, limitations, potentials, and capabilities addressed and reasonable?
 - d. Professional and technical manpower and financial support adequate to meet planning, management, monitoring and enforcement requirements? (11-7)
 - e. Does each plan segment (i.e., land management, forest, fish and wildlife, and outdoor recreation) recognize the needs of, and the impacts on the other segments and exhibit compatible methodologies and goals? (11-6)
 - f. Is the integrated plan and each component compatible with the facility master plan, integrated pest management plan and the Master Training Schedule? (11-6)
2. Is the tripartite fish and wildlife cooperative plan agreement required by 16 USC 670 in place and does it recognize and address the influence and impacts of forestry, land use and management, outdoor recreation, and mission in its goals? Is it reviewed annually by the cooperators and has it been revised in the past 5 yr? (11-7)
3. If the facility has any endangered or threatened plants or animals, or critical habitats for these species, a) has their presence and requirements been thoroughly surveyed, recognized, and addressed in the various components of the integrated plan?; b) in addition, do they have a specific plan which protects and manages the endangered species located on the facility?; c) are protection management and recovery plans available for review and do they adequately address the issues? (11-15)
4. Is an adequate landscape planting plan available which:
 - a. stresses the use of native plants species in landscaping?
 - b. includes specific planting and maintenance specifications, standards and plans? (11-10)

5. In preparing all plans, were the guidelines in TM 5-630, 631, 633, 635 available, used, and followed?
6. Are adequately trained professionals available on-board or at MACOM to prepare, revise, monitor, and execute the plans? (11-9)
7. Are individuals enforcing natural resources law trained in natural resources law enforcement? Can they identify illegally taken species of animals or plants? Have they attended the available U.S. FWS training courses and do they hold a commission from this training? (AR 420-74.3.3d, 3.20, & 6.1d(4)) (11-25)
8. Have the facility's jurisdictional wetlands been delineated? If not, are provisions made for their delineation? Do the facility's regulations cover current wetland regulations?
9. Do EAs and EISs for construction and mission activities adequately address natural resources including endangered species?
10. Are design, construction and performance or mission carried out so that none of the following resources will be lost, downgraded, or destroyed? (11-10, 11-13, 11-14, & 11-18)
 - soil and vegetation
 - surface and subsurface waters
 - wetlands
 - floodplains
 - archaeological and historic sites
 - wildlife resources
 - forests and woodland resources
11. Have surveys been made and measures taken to control nonpoint pollution sources, erosion and sedimentation, and other pollutants harmful to the land, air, or water or any associated resources?
12. Does the facility have documents addressing endangered species, wildlife, riparian zones, floodplains, wetlands, archaeological and historical sites, off-road vehicles, sedimentation, erosion, timber and nonpoint source pollution? (11-4)
13. Are natural resources adequately addressed in the RCS-1383 process? (AR 420-74.2-3) (11-26)
14. Are land management programs consistent with the latest professional standards, and do they adequately support mission? (11-18)
 - Does the facility keep current on land management practices and standards?
 - Are the decision makers kept abreast of the condition of the natural resources? How? Is LCTA utilized to assess these conditions? (AR 420-74.3.23)
15. Is staffing adequate for the facility resource base and mission complexity? (11-9)
16. Are professional natural resource personnel given adequate opportunities to maintain and improve their competence, through either onsite or offsite training opportunities? (11-9)
17. Are appropriated funds adequate to meet natural resource goals? (AR 420-74.1-5d(1)) (11-22 and 11-23)

18. Are reimbursable funds being properly used for natural resource management? Are nonreimbursable fenced funds properly used? (AR 420-74.3-2b) (11-22 and 11-23)
19. Are Federal, state and local agencies given priority when awarding service contracts for wildlife management and law enforcement? (AR 420-74.3-4c) (11-25)
20. Does planned land utilization avoid or minimize adverse environmental effects of proposed action? (11-18 and 11-19)
 - Are actions carried out in accordance with AR 200-1, 220-2, and 210-21?
 - Is the natural resource professional an active participant in land use planning and decision making?
21. Are all Memoranda of Understanding (MOU) related to natural resources current within the past 10 yr? (11-3 and 11-4)
22. Does the public have access to military lands and waters? (AR 420-74.2-8a) (11-13)
 - To the degree and for the purposes specified in AR 420-74.2?
 - If access is limited, is the priority in accordance with 420-74(3)(a)(1)?
23. Are environmental and natural limitations to land use identified? (11-18)
24. Are suitable and available lands used for agricultural and grazing outleases?
25. If available, has the facility instituted the Integrated Training Area Management System as a coordinated program to assure mission support while maintaining the highest quality resource base in accordance with AR 420-74.3-23?
26. If forest resources warrant a forest management program: (11-14)
 - Is the forest management plan up-to-date (newer than 20 yr) and does it have an interim revision done within the last 5 yr? Is there an up-to-date annual work plan designed to meet the long range plan's goals?
 - Does the facility have a current forest resource inventory (within the past 10 yr)?
 - Are any forest products given away or abandoned?
 - Are forest product sales receipts properly handled and accounted for in BCA 21F3875.3960 20-C s99999?
 - Are commercial forestry activities funded through activities account #AR 37-100-XX-Account Code 728012.26000?
27. If the facility is a Category I (land and water suitable for fish and wildlife program), does it: (11-7)
 - program for adequate operation and maintenance funds to support a fish and wildlife program?
 - control fish and wildlife related activities in accordance with state and Federal laws, ARs and the cooperative plan?
 - have a cooperative plan and agreement in accordance with 16 USC 670 and AR 420-74.6-4?
 - have an established natural resources law enforcement program with specially trained officers?
 - require valid state license to hunt or fish?

- require a special base permit to hunt or fish?
 - collect and deposit special base permit fees into account 21X5095 for use in fish and wildlife management?
- have a cooperative plan that addresses threatened and endangered species?
- does the fish and wildlife plan address population and habitat management?
- does the plan interface with forestry, outdoor recreation and the other components of the integrated management plan?

28. *Outdoor Recreation*

Outdoor recreation in this context covers camping, nature trails, hiking trails, compass or orienteering courses, canoeing, mountain climbing, bird watching, watchable wildlife, and similar recreation utilizing the natural resources. It does not include tennis, baseball, softball, soccer, golf, or similar organized outdoor activities. It also excludes hunting, fishing and trapping. (11-12 and 11-13)

- Has the outdoor recreation plan been revised during the past 5 yr?
- Is it part of the integrated natural resources management plan?
- Is the coordination between the DEH and DPCA Directorates spelled out?
- Are user fees collected and deposited into the reimbursable accounts to fund natural resources work?

29. *Off-Road Vehicle (ORV) Use:*

- Are areas designated for ORV use on the facility? (11-24)
- Is regulation or control of ORV use in accordance with AR 420-74.8-2a?
- Is there a written plan in accordance with AR 420-74.9?
- Are endangered species addressed in accordance with AR 420-74.11?

30. *Crop and Grazing Leases:*

If lands are suitable and available,

- Does the facility have an outlease program for crop production or grazing?
- If so, is there a long range plan and land use regulations covering the outlease?
- Are the receipts properly reported and utilized in accordance with AR 420-74.3-13? (11-22)

31. *General*

Is the natural resource program geared to accomplish the following AR 420-74 goals?

1. Support the military mission?
2. Protect environmentally sensitive areas?

3. Protect the real estate investment?
4. Protect plants and animals, especially threatened and endangered species?
5. Comply with environmental protection policies and procedures?
6. Prevent damage from fire, insects, and disease?
7. Protect and enhance natural beauty?
8. Respond to social needs for food, fibre and recreation?
9. Improve facility appearance?
10. Conserve soil, water, forests, rangelands, fish and wildlife?

32. *Environmental Quality Control Committee and the Natural Resource, Outdoor Recreation and Beautification Subcommittees*

Does the facility have an active Environmental Quality Control Committee (EQCC) that:
(1)(2)

- assures continuous planning, execution, and monitoring of the environmental and natural resources program
- identifies issues, makes recommendations, and advises the facility commander on priorities, policies, and strategies for the compliance, management, and enhancement of the integrated environmental and natural resource program
- promotes and fosters natural beauty, and, natural resource enhancement, protection, and compliance both on the facility and in cooperation with local communities
- if appropriate, has natural resource, outdoor recreation, and beautification subcommittees.

Does the EQCC include: (1)(2)

- Commander
- Facilities Engineer
- Environmental Coordinator
- Natural Resource Manager
- and personnel representing the operations, planning, housing, recreation, legal, safety, public affairs, veterinary, and medical interests of the facility?

**COMPLIANCE CATEGORY:
NATURAL RESOURCES MANAGEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ALL FACILITIES</p> <p>11-1. Determine actions or changes since previous review (GMP).</p> <p align="center">...</p> <p>11-2. Facility should maintain a current file of applicable Federal, DOD, U.S. Army, and state/local regulations for natural resources management (GMP).</p> <p align="center">...</p>	<p>Examine copy of previous review report to determine if noncompliance issues have been resolved. (5)(12)</p> <p align="center">...</p> <p>Verify that the following documents, which are applicable, are maintained and kept current at the ARCOM or Support Installation. (5)(12)(15)</p> <ul style="list-style-type: none"> - 7 CFR 360, <i>Noxious Weed Regulations.</i> - 50 CFR 21, <i>Migratory Bird Permits.</i> - 50 CFR 402, <i>Interagency Cooperation--Endangered Species Act of 1973, as amended.</i> - EO 12088, <i>Federal Compliance with Pollution Standards.</i> - EO 11988, <i>Floodplain Management.</i> - EO 11990, <i>Protection of Wetlands.</i> - DOD Instruction 4700.4, <i>Natural Resources--Conservation and Management.</i> - DOD Directive 5100.50, <i>Protection and Enhancement of Environmental Quality.</i> - DOD Directive 7310.5, <i>Accounting for Production and Sale of Forest Products.</i> - AR 200-2, <i>Environmental Effects of Army Actions.</i> - AR 215-2, <i>Management and Operations of Army Morale, Welfare, and Recreation Programs and Nonappropriated Funds Instrumentalities.</i> - AR 420-74, <i>Natural Resources - Land, Forest, and Wildlife Management.</i> - TM 5-630, <i>Ground Maintenance and Land Management.</i> - TM 5-631, <i>Natural Resources - Forest Management.</i> - TM 5-633, <i>Natural Resources - Fish and Wildlife Management.</i> - TM 5-635, <i>Natural Resources -- Outdoor Recreation and Cultural Values.</i> - TM 5-803-12, <i>Planning of Outdoor Recreation Areas.</i> - Applicable state and local regulations. <p align="center">...</p>

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**COMPLIANCE CATEGORY:
NATURAL RESOURCES MANAGEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>11-3. Facilities are required to comply with state and local requirements concerning endangered species and natural resources (EO 12088, Section 1-1 and 16 USC 1531(c)).</p> <p align="center">...</p>	<p>Verify that the facility is complying with state and local requirements. (5)(12)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (5)(12)</p> <p>(NOTE: Issues which are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - endangered and threatened species lists - hunting and trapping restrictions - erosion control - wetlands - coastal zones - floodplains - wild and scenic rivers.) <p align="center">...</p>
<p>11-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, re-occurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation, promotes good public relations and addresses systemic weakness in the overall operation of the program (GMP).</p> <p align="center">...</p>	<p>Determine what management systems are in place. (5)(12)</p> <p>Verify that the existing system addresses the issues associated with endangered species and natural resources by: (5)(12)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p>Determine if training is being conducted. (5)(12)</p> <p align="center">...</p>
<p>11-5. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p align="center">...</p>	<p>Determine if any new regulations concerning endangered species and natural resources have been issued since the finalization of the manual. (1)</p> <p>Verify that the facility is in compliance with newly issued regulations. (1)</p> <p>(NOTE: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p align="center">...</p>

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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>NATURAL RESOURCES</p> <p>11-6. Facilities meeting size and natural resource base requirements are required to have an INRMP that meets specific criteria (AR 420-74, para 8-1a, 8-2a, 8-3b, and 8-4).</p> <p align="center">...</p>	<p>Verify that the INRMP includes the following chapters according to the indicated parameters: (1)(2)(12)(15)</p> <ul style="list-style-type: none"> - Part I: General (include if the facility has 500 or more acres of improved, semi-improved and unimproved grounds combined, or 50 or more acres of improved grounds) - Part II: Land Management and Ground Maintenance (include if the facility has 500 or more acres of improved, semi-improved and unimproved grounds combined, or 50 or more acres of improved grounds) - Part III: Forest Management (include if the facility has 100 or more acres of commercial forest land) - Part IV: Fish and Wildlife Management (include if the facility has land and water areas suitable for the management of fish and wildlife resources) - Part V: Outdoor Recreation (include if the facility has an outdoor recreation program that depends on the maintenance and management of natural resources.) <p>Verify that the plan is reviewed annually and revised as necessary. (1)(2)(12)(15)</p> <p>Verify that the plan was prepared or updated within the previous 5 yr. (1)(2)(12)(15)</p> <p>Verify that all major initiatives in plan have environmental documentation consistent with NEPA and CEQ requirements. (1)(2)(12)(15)</p> <p>Verify that the plan was prepared and is kept current by qualified personnel. (1)(2)(12)(15)</p> <p align="center">...</p>

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NATURAL RESOURCES MANAGEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>11-7. All Category I facilities are required to prepare and implement Cooperative Plan Agreements for Conservation and Development of Fish and Wildlife Resources (AR 420-74, para 8-1b, 8-3c, and 5-4).</p> <p align="center">...</p> <p>11-8. Facilities with active natural resources programs or the potential for natural resources programs under the concept of AR 420-74 are required to have a Natural Resources Conservation and Beautification Committee (AR 420-74, para 2-7).</p> <p align="center">...</p>	<p>Verify that the Cooperative Plan Agreement for Conservation and Development of Fish and Wildlife Resources is prepared and amended as appropriate in coordination with state and Federal fish and wildlife conservation agencies. (1)(2)(12)(15)</p> <p>(NOTE: Category I facilities are those having land and water areas suitable for the conservation and management of fish, wildlife, and other natural resources as determined by consultation with appropriate Federal and state fish and wildlife agencies.)</p> <p>Verify that the Cooperative Plan Agreement is in agreement with the Natural Resources Management Plan. (1)(2)(12)(15)</p> <p align="center">...</p> <p>Determine if the facility has an active natural resources program or the potential for a program as described in 420-74. (1)(2)(12)(15)</p> <p>Verify that the facility has a Natural Resources and Beautification Committee that: (1)(2)(12)(15)</p> <ul style="list-style-type: none"> - assures continuous planning and balanced application of the Natural Resources Program - plans, promotes, and fosters natural beauty and environmental protection and enhancement programs both on base and in cooperation with local communities. <p>Verify that the Committee includes: (1)(2)(12)</p> <ul style="list-style-type: none"> - the facility's engineer - the natural resource management personnel - the environmental coordinator (EC) - the entomologist - the provost marshal/security officer - operations, safety, legal, medical, recreation services, and veterinarian personnel - a representative of the facility's rod and gun club. <p align="center">...</p>

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**COMPLIANCE CATEGORY:
NATURAL RESOURCES MANAGEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>11-9. Personnel are required to be designated and trained for environmental responsibilities (DOD Directive 4700.4, para E3(a), and AR 420-74, para 2-2, 2-3c).</p> <p align="center">...</p>	<p>Verify that staffing optimizes professionally trained personnel necessary for technical guidance in planning and executing the Natural Resources Program such as: (1)(2)(12)</p> <ul style="list-style-type: none"> - an agronomist - a forester - a wildlife manager - a landscape architect - a soil conservationist - an agricultural engineer - an ecologist - an horticulturist - an arborist. <p>Determine if periodic and comprehensive technical instruction concerning land preparation, soil management, fertilization, pruning, spraying, and other horticulture skills is provided for personnel engaged in the care and maintenance of lawns, trees, shrubs, and other landscape plants. (1)</p> <p align="center">...</p>
<p>11-10. Grounds are required to be maintained to meet designated use and assure harmony with natural landscape (DOD Directive 4700.4, para B1(h), AR 420-74, para 3-1, 3-2, and 3-8).</p> <p align="center">...</p>	<p>Verify that turf areas are maintained with a permanent vegetative cover of desirable plants. (2)(5)</p> <p>Verify that improved grounds are maintained in accordance with (IAW) Parts 1 and 2 of the INRMP. (2)</p> <p>Verify that landscape planting, pruning, cultivation, and other maintenance is done according to TM 5-630. (2)(5)</p> <p align="center">...</p>
<p>11-11. 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 align="center">...</p>	<p>Verify that the facility is not moving noxious weeds without a permit. (5)(15)</p> <p>(NOTE: A list of noxious weeds is in Appendix 11-1.)</p> <p align="center">...</p>
<p>11-12.</p> <p align="center">...</p>	<p>This item is not Army Reserve applicable.</p> <p align="center">...</p>

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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>OUTDOOR RECREATION RESOURCES</p> <p>11-13. Facilities are required to provide for controlled public access at DA installations and facilities with land and water areas suitable for the recreational use and enjoyment of the public (AR 420-74, para 2-8a).</p> <p align="center">...</p> <p>FOREST MANAGEMENT</p> <p>11-14.</p> <p align="center">...</p>	<p>Determine if the facility has any land and water areas suitable for recreational use and enjoyment by the public. (1)(2)(12)(15)</p> <p>Verify that access is provided within manageable quotas and without impairment of mission. (1)(2)(12)(15)</p> <p>(NOTE: When access must be withheld the reasons must be substantiated by a statement in the Cooperative Plan Agreement.)</p> <p align="center">...</p> <p>This item is not Army Reserve applicable.</p> <p align="center">...</p>

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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>WILDLIFE MANAGEMENT</p> <p>11-15. All facilities with Federally designated endangered and threatened species must carry out programs for their conservation (50 CFR 402, 402.01(a), 402.10, and 402.12).</p> <p align="center">...</p> <p>11-16. 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 align="center">...</p> <p>11-17. The facility's Fish and Wildlife Management Program must be operated according to specific parameters (AR 420-74, para 5-1, 5-2, 5-5, and 5-6).</p> <p align="center">...</p>	<p>Verify that a survey has been done for endangered and threatened species. (1)(2)</p> <p>Verify that consultations have been held with U.S. FWS and state conservation agency. (1)(2)</p> <p>Verify that measures have been initiated to maintain threatened and endangered species. (1)(2)</p> <p>Verify that if a jeopardy biological opinion has been given, action has been taken to comply with U.S. FWS requirements. (1)(2)</p> <p>Verify that when applicable, there is a plan for the protection and management of the species. (1)(2)</p> <p align="center">...</p> <p>Determine if the facility is on a migratory bird path. (1)(2)</p> <p>Verify that prior to killing birds for any reason, it is determined whether or not they are migratory birds. (1)(2)</p> <p>Verify that if actions are taken with migratory bird, the facility has a permit to do so. (1)(2)</p> <p>(NOTE: Exemptions from the permit requirement are available for the following: <ul style="list-style-type: none"> - captive-reared and properly marked mallards duck - captive-reared and properly marked migratory waterfowl.) </p> <p align="center">...</p> <p>Verify that fishing, hunting and trapping are authorized and controlled in conformance with Federal and state laws, local regulations, and approved management plans. (1)(2)</p> <p>Verify that foreign species of fish and wildlife have not been introduced to Army land without approval from FWS, the state and HQDA. (1)(2)</p> <p align="center">...</p>

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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>LAND MANAGEMENT</p> <p>11-18. Land management operations are required to be consistent with modern conservation and land use principles (AR 420-74, para 2-10 and 2-13 through 2-16).</p> <p align="center">...</p> <p>11-19. Land management at the facility should address various issues (GMP).</p> <p align="center">...</p> <p>11-20. A protective vegetative cover or other measures will be used to control dust and erosion damage to land (AR 420-74, para 2-14 and 3-1).</p> <p align="center">...</p>	<p>Verify that land management at the facility includes the following issues: (2)(12)(15)</p> <ul style="list-style-type: none"> - dust and erosion control - fire protection - weed control. <p>Examine leases, easements, and other special uses and interview natural resource manager to determine compatible uses and periodic inspections for land involved, including: (2)(12)(15)</p> <ul style="list-style-type: none"> - condition of agriculture, grazing, and timber (or other resources) sale areas leased - compliance with lease provisions, environmental recreation, and good professional practice. <p>Verify that an inventory and classification has been done of the current resources, including identification and evaluation of the condition and potential of wetland, marine, and estuarine area, fresh water, forest land, grasslands, scenic and natural areas, aesthetics, and any other significant environmental element. (2)(12)(15)</p> <p>Verify that inventories identify endangered and threatened species of flora and fauna and archeological and historic sites. (2)(12)(15)</p> <p align="center">...</p> <p>Verify that the land management program addresses the following issues: (2)(12)(15)</p> <ul style="list-style-type: none"> - land use limitations - mission requirements - fire protection - coastal zone management (where appropriate) - beach properties (where appropriate) - wetlands - Integrated Training Area Management (ITAM). <p align="center">...</p> <p>Verify that Land Management Plan addresses, in detail, erosion problems on training and maneuver areas and proposes remedial actions. (2)(5)(12)(15)</p> <p>Verify facility has been surveyed to locate areas where bare soil is exposed and current or potential erosion obvious. (5)(15)</p> <p>Verify that remedial actions have been initiated. (5)(15)</p> <p align="center">...</p>

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NATURAL RESOURCES MANAGEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>IRRIGATION</p> <p>11-21. If irrigation is practiced, facilities should have a water resources monitoring plan (GMP).</p> <p align="center">...</p> <p>RECEIPTS AND EXPENDITURES</p> <p>11-22. Receipts from natural resource management activities such as forest product sales, sales of hunting and fishing permits, sale of outdoor recreation use permits, and from agricultural and grazing leases, should be deposited in special accounts (GMP).</p> <p align="center">...</p> <p>11-23. Expenditures from special natural resources reimbursable accounts should remain fenced for specified purposes (GMP).</p> <p align="center">...</p>	<p>Verify that the facility has developed plans to preserve protect, and acquire the water supplies necessary to support all natural resources projects and programs. (5)(15)</p> <p>Verify that the facility is complying with local water conservation initiatives and restrictions. (5)(15)</p> <p align="center">...</p> <p>Verify that all proceeds from the sale of forest products are deposited into Account BCA 21F3875.3960 20-C S99999. (5)(15)</p> <p>Verify that all receipts from the sale of hunting and fishing, and trapping permits are deposited into Account 21X5095. (5)(15)</p> <p>Verify that all receipts from outleases for agricultural or grazing purposes are deposited into the Army account established for that purpose. (15)</p> <p align="center">...</p> <p>Verify that only commercial forestry activities are funded from reimbursable and refundable activities account number AR 37-100-XX, Account code 728012,26000. (5)(15)</p> <p>Verify that only fish and wildlife management activities are funded from Account 21X5095. (5)(15)</p> <p>Verify that funds received on the facility from crops and grazing fund accounts are utilized in support of: (5)(15)</p> <ul style="list-style-type: none"> - the agricultural and grazing lease costs - furthering the agricultural and grazing lease program - other multiple use natural resource management programs. <p align="center">...</p>

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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ORVs</p> <p>11-24. Facilities are required to control ORVs (GMP).</p> <p align="center">...</p> <p>NATURAL RESOURCES LAW ENFORCEMENT</p> <p>11-25. Natural resources law enforcement personnel should be specially trained and certified as natural resources law officers (GMP).</p> <p align="center">...</p> <p>RC 1383 NATURAL RESOURCES</p> <p>11-26. Natural resources should be adequately prioritized and addressed to meet all legal requirements (GMP).</p>	<p>Determine if ORVs are authorized on the facility. (5)</p> <p>Verify that if ORVs are authorized on the facility regulations are developed for their control. (5)</p> <p>Verify that ORV regulations address endangered species if there are endangered or threatened species on the facility. (5)</p> <p>Verify that the ORV regulations address all other natural resources and outdoor recreation plans as activities as well as mission needs. (5)</p> <p align="center">...</p> <p>Verify that the personnel charged with enforcing natural resources law are specifically trained and warranted in natural resources law enforcement. (5)(15)</p> <p align="center">...</p> <p>Verify that the RS 1383 process adequately prioritizes and addresses natural resources programs and needs. (5)(15)</p> <p>Verify that legal requirements are being addressed, recognized, prioritized, and funded. (5)(15)</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (15) Land Management Officer (DEH)

Appendix 11-1

Noxious Weeds (7 CFR 360.200)

1. Aquatic weeds:

<i>Azolla pinnata</i>	R. Brown	mosquito fern, water velvet
<i>Eichornia azurea</i>	(Swartz) Kunth	anchored waterhyacinth, rooted waterhyacinth
<i>Hydrilla verticillata</i>	(Linnaeus f.) Royle	hydrilla
<i>Hygrophila polysperma</i>	T. Anderson	Miramar weed
<i>Ipomoea aquatica</i>	Forsskal	water-spinach, swamp morning-glory
<i>Lagarosiphon major</i>	(Ridley) Moss	
<i>Limnophila sessiliflora</i>	(Vahl) Blume	ambulia
<i>Monochoria hastata</i>	(Linnaeus) Solms-Laubach	
<i>Monochoria vaginalis</i>	(Burman f.) C.Presl	
<i>Sagittaria sagittifolia</i>	Linnaeus	arrowhead
<i>Salvinia auriculata</i>	Aublet	giant salvinia
<i>Salvinia biloba</i>	Raddi	giant salvinia
<i>Salvinia herzogii</i>	de la Sota	giant salvinia
<i>Salvinia molesta</i>	D.S. Mitchell	giant salvinia
<i>Sparganium erectum</i>	Linnaeus	exotic burreed
<i>Stratiotes aloides</i>	Linnaeus	water-aloë

2. Parasitic weeds:

<i>Aeginetia</i>	spp.
<i>Alectra</i>	spp.
<i>Cuscuta</i>	spp. (dodders),
other than the following species:	
<i>Cuscuta americana</i>	Linnaeus
<i>Cuscuta applanata</i>	Engelmann
<i>Cuscuta approximata</i>	Babington
<i>Cuscuta attenuata</i>	Waterfall
<i>Cuscuta boldinghii</i>	Urban
<i>Cuscuta brachycalyx</i>	(Yuncker) Yuncker
<i>Cuscuta californica</i>	Hooker & Arnot
<i>Cuscuta campestris</i>	Yuncker
<i>Cuscuta cassytoides</i>	Nees ex Engelmann
<i>Cuscuta ceanothii</i>	Behr
<i>Cuscuta cephalanthii</i>	Engelmann
<i>Cuscuta compacta</i>	Jussieu
<i>Cuscuta corylii</i>	Engelmann
<i>Cuscuta cuspidata</i>	Engelmann
<i>Cuscuta decipiens</i>	Yuncker
<i>Cuscuta dentatasquamata</i>	Yuncker
<i>Cuscuta denticulata</i>	Engelmann
<i>Cuscuta epilinium</i>	Weihe

Appendix 11 - 1 (continued)

<i>Cuscata epithymum</i>	(Linnaeus) Linnaeus
<i>Cuscata erosa</i>	Yuncker
<i>Cuscata europaea</i>	Linnaeus
<i>Cuscata exalta</i>	Engelmann
<i>Cuscata fasciculata</i>	Yuncker
<i>Cuscata glabrior</i>	(Engelmann)Yuncker
<i>Cuscata globulosa</i>	Bentham
<i>Cuscata glomerata</i>	Choisy
<i>Cuscata gronovii</i>	Willdenow
<i>Cuscata harperi</i>	Small
<i>Cuscata howelliana</i>	Rubtzoff
<i>Cuscata indecora</i>	Choisy
<i>Cuscata jepsonii</i>	Yuncker
<i>Cuscata leptantha</i>	Engelmann
<i>Cuscata mitriformis</i>	Engelmann
<i>Cuscata nevadensis</i>	I.M.Johnston
<i>Cuscata obtusiflora</i>	Humbolt, Bonpland, & Kunth
<i>Cuscata occidentalis</i>	Millsbaugh ex Mill & Nuttall
<i>Cuscata odontolepis</i>	Engelmann
<i>Cuscata pentagona</i>	Engelmann
<i>Cuscata planiflora</i>	Tenore
<i>Cuscata plattensis</i>	A.Nelson
<i>Cuscata polygonorum</i>	Engelmann
<i>Cuscata rostrata</i>	Shuttleworth ex Engelmann
<i>Cuscata runyonii</i>	Yuncker
<i>Cuscata salina</i>	Engelmann
<i>Cuscata sandwichiana</i>	Choisy
<i>Cuscata squamata</i>	Engelmann
<i>Cuscata suaveolens</i>	Seringe
<i>Cuscata suksdorfii</i>	Yuncker
<i>Cuscata tuberculata</i>	Brandege
<i>Cuscata umbellata</i>	Humboldt, Bonpland, & Kunth
<i>Cuscata umbrosa</i>	Beyrich ex Hooker
<i>Cuscata vetchii</i>	Brandege
<i>Cuscata warneri</i>	Yuncker
<i>Orobanche</i>	spp. (broomrapes),
other than the following species:	
<i>Orobanche bulbosa</i>	(Gray) G.Beck
<i>Orobanche californica</i>	Schlechtendal & Chamisso
<i>Orobanche cooperi</i>	(Gray) Heller
<i>Orobanche corymbosa</i>	(Rydberg) Ferris
<i>Orobanche dugessi</i>	(S.Watson) Munz
<i>Orobanche fasciculata</i>	Nuttall
<i>Orobanche ludoviciana</i>	Nuttall
<i>Orobanche multicaulis</i>	Brandege
<i>Orobanche parishii</i>	(Jepson) Heckard
<i>Orobanche pinorum</i>	Geyer ex Hooker
<i>Orobanche uniflora</i>	Linnaeus
<i>Orobanche valida</i>	Jepson
<i>Orobanche vallicola</i>	(Jepson) Heckard
<i>Striga</i>	spp. (witchweeds)

Appendix 11 - 1 (continued)

3. Terrestrial weeds:

<i>Ageratina adenophora</i>	(Sprengel) King & Robinson	crofton weed
<i>Alternanthera sessilis</i>	(Linnaeus) R.Brown ex de Candolle	sessile joyweed
<i>Asphodelus fistulosus</i>	Linnaeus	onionweed
<i>Avena sterilis</i>	Linnaeus	
including <i>Avena ludoviciana</i>	Durieu	animated oat, wild oat
<i>Borreria alata</i>	(Aublet) de Candolle	
<i>Carthamus oxyacantha</i>	M.Bieberstein	wild safflower
<i>Chrysopogon aciculatus</i>	(Retzius) Trinius	pilipiliula
<i>Commelina benghalensis</i>	Linnaeus	Benghal dayflower
<i>Crupina vulgaris</i>	Cassini	common crupina
<i>Digitaria scalarum</i>	(Schweinfurth) Chiovenda	African couchgrass, fingergrass
<i>Digitaria velutina</i>	(Forsskal) Palisot de Beauvois	velvet fingergrass, annual conchgrass
<i>Drymaria arenarioides</i>	Humboldt & Bonpland ex Roemer & Schultes	lightning weed
<i>Emex australis</i>	Steinhell	three-cornered jack
<i>Emex spinosa</i>	(Linnaeus) Campdera	devil's thorn
<i>Euphorbia prunifolia</i>	Jacquin	painted euphorbia
<i>Galega officinalis</i>	Linnaeus	goatsrue
<i>Heracleum mantegazzianum</i>	Sommier & Levier	giant hogweed
<i>Imperata brasiliensis</i>	Trinius	Brazilian satintail
<i>Imperata cylindrica</i>	(Linnaeus) Raeuschel	cogongras
<i>Ipomoea triloba</i>	Linnaeus	little bell, aiea morning-glory
<i>Ischaemum rugosum</i>	Salisbury	murainogras
<i>Leptochloa chinensis</i>	(Linnaeus) Nees	Asian sprangletop
<i>Lycium ferocissimum</i>	Miers	African boxthorn
<i>Melastoma malabathricum</i>	Linnaeus	
<i>Mikania cordata</i>	(Burman f.) B.L.Robinson	mile-a-minute
<i>Mikania micrantha</i>	Humboldt, Bonpland, & Kunth	
<i>Mimosa invisa</i>	Martius	giant sensitive plant
<i>Mimosa pigra</i>	Linnaeus var. <i>pigra</i>	catclaw mimosa
<i>Nassella trichotoma</i>	(Nees) Hackel ex Arechavaleta	serrated tussock
<i>Opuntia aurantiaca</i>	Lindley	jointed prickly pear
<i>Oryza longistaminata</i>	A.Chevalier & Roehrich	red rice
<i>Oryza punctata</i>	Kotschy ex Steudel	red rice
<i>Oryza rufipogon</i>	Griffith	red rice
<i>Paspalum scrobiculatum</i>	Linnaeus	Kodomillet
<i>Pennisetum clandestinum</i>	Hochstetter ex Chiovenda	kikuyugras
<i>Pennisetum macrourum</i>	Trinius	African feathergrass
<i>Pennisetum pedicellatum</i>	Trinius	kyasumagrass
<i>Pennisetum polystachion</i>	(Linnaeus) Schultes	missiongrass, thin napiergrass
<i>Prosopis alptaco</i>	R.A.Philippi	
<i>Prosopis argentina</i>	Burkart	
<i>Prosopis articulata</i>	S.Watson	
<i>Prosopis burkartii</i>	Munoz	
<i>Prosopis caldenia</i>	Burkart	
<i>Prosopis calingastana</i>	Burkart	
<i>Prosopis campestris</i>	Griseback	
<i>Prosopis castellanosi</i>	Burkart	
<i>Prosopis denudans</i>	Bentham	
<i>Prosopis elata</i>	(Burkart) Burkart	

Appendix 11 - 1 (continued)

<i>Prosopis farcta</i>	(Solander ex Russel) Macbride	
<i>Prosopis ferox</i>	Grisebach	
<i>Prosopis fiebrigii</i>	Harms	
<i>Prosopis hassleri</i>	Harms	
<i>Prosopis humilis</i>	Gilles ex Hooker & Arnott	
<i>Prosopis kuntzei</i>	Harms	
<i>Prosopis pallida</i>	(Humboldt, Bonpland ex Willdenow)	
	Humboldt, Bonpland, & Kunth	
	S. Watson	
<i>Prosopis palmeri</i>	Bentham var. <i>reptans</i>	
<i>Prosopis reptans</i>	Burkart	
<i>Prosopis rojasiana</i>	Burkart	
<i>Prosopis ruizlealii</i>	Grisebach	
<i>Prosopis ruscifolia</i>	Gillies ex Hooker & Arnott	
<i>Prosopis sericantha</i>	(Lamarck) Bentham	
<i>Prosopis strombulifera</i>	(Cavanilles ex Lagasca y Segura)	
<i>Prosopis torquata</i>	de Candolle	
<i>Rottboellia exaltata</i>	Linnaeus f.	itchgrass, raoulgrass
<i>Rubus fruticosus</i>	Linnaeus (complex)	wild blackberry
<i>Rubus moluccanus</i>	Linnaeus	wild raspberry
<i>Saccharum spontaneum</i>	Linnaeus	wild sugarcane
<i>Salsola vermiculata</i>	Linnaeus	wormleaf salsola
<i>Setaria pallide-fusca</i>	(Schumacher) Stapf & Hubbard	cattail grass
<i>Solanum torvum</i>	Swartz	turkeyberry
<i>Tridax procumbens</i>	Linnaeus	coat buttons
<i>Urochloa panicoides</i>	Beauvois	liverseed grass

INSTALLATION:	COMPLIANCE CATEGORY: NATURAL RESOURCES MANAGEMENT ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (15) Land Management Officer (DEH)

Section 12

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

SECTION 12

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

A. Applicability of this Protocol

This protocol applies to all Army Reserve facilities. It contains procedures and regulations designed to protect and enhance the Nation's environmental resources by incorporating environmental analysis into Army planning and decision-making. These procedures and regulations are derived from the NEPA of 1969 and contained in the Council on Environmental Quality's (CEQ) *Regulations for Implementing the Procedural Provisions of the NEPA*, Department of Defense (DOD) Directive 6050.1 (*Environmental Effects in the United States of DOD Actions*), Army Regulation (AR) 200-1 (*Environmental Protection and Enhancement*) and AR 200-2 (*Environmental Effects of Army Actions*).

While most of the actual work on Environmental Impact Statements (EISs) and Environmental Assessments (EA) will not be done at the Reserve facility level, records do need to be maintained at that level, and the facility-level managers are responsible for ensuring that NEPA procedures are incorporated into all actions and plans for resources under their control. Many of the checklist questions actually refer to tasks that will be carried out by the Host installation's Directorate of Engineering and Housing (DEH) or Environmental Coordinator (EC). Nevertheless, it is the responsibility of personnel at the facility to ensure that necessary actions are taken in regard to NEPA compliance.

Specific state regulations are not included in this protocol.

B. Federal Legislation

- *The National Environmental Policy Act (NEPA) of 1970.* 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 would encourage productive and enjoyable harmony between man and his environment. In addition, it provides for the promotion of efforts to 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 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) No. 11514*. This EO, issued on 5 March 1970, 35 F.R. 4247, as amended by EO No. 11991, issued on 24 May 1977, 42 F.R. 26967, is a Presidential order which implements the NEPA of 1969. Under this Order, *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 (Section 1).
- EO 11991, Relating to Protection and Enhancement of Environmental Quality, of 24 May 1977 required the CEQ to create Federal regulations implementing NEPA.

C. State/Local Requirements

- None.

D. DOD Regulations

- DOD Directive 6050.1 *Environmental Effects in the United States of DOD Actions*, implements the CEQ regulations and provides policy and procedures enabling DOD officials to be informed of, and take into account environmental considerations during the decision-making stage of possible major DOD actions in the United States. Specifically, the DOD is charged with ensuring that, consistent with its mission of providing for the national defense: practical means and measures are used to protect, restore, and enhance the quality of the environment; adverse environmental consequences are avoided or minimized; the widest range of beneficial uses of the environment without degradations, risk to health and and safety, or other undesirable consequences are achieved;

important historic, cultural, and natural resources are preserved; a balance between resource use and development with the carrying capacity of the ecosystem involved is achieved; the quality of renewable resources is enhanced; and efforts are made to achieve the maximum level of recycling of depletable resources.

E. U.S. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, identifies and lists Department of the Army (DA) responsibilities, policies, and procedures to preserve, protect, and restore the quality of the environment. This document and AR 200-2, *Environmental Effects of Army Actions*, together establish Army and Army Reserve environmental policy. AR 200-1 contains several citations to NEPA. Section 6-5 outlines environmental documentation requirements and procedures mandated by NEPA and set out in NEPA and AR 200-2 to address environmental issues other than those covered by USEPA/state in the Resource Conservation and Recovery Act (RCRA) permitting process. Section 6-9(a) requires preparation of supporting environmental documents pursuant to NEPA and other laws and regulations for the plans for disposing of chemical warfare agents. Section 9-7(c) requires that all on-the-ground work to carry out the National Contingency Plan (NCP)/RCRA requirements and the Installation Restoration Program (IRP) and Formerly Used Defense Sites (FUDS) projects be conducted per NEPA. In addition, depending on the project and its potential for environmental impact, preparation of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)/Superfund Amendments and Reauthorization Acts (SARA) support documents will adhere to the environmental documentation requirements in NEPA. Section 10-1(a)(2) cites NEPA as one of the several laws to be used in the asbestos management program. Section 12-2(b) sets out matters to be discussed in the NEPA review of alternative methods.
- AR 200-2, *Environmental Effects of Army Actions*, establishes policy, procedures, and responsibilities for assessing the environmental effects of Army Reserve actions. It is codified at 32 CFR 651 and implements the following items: the CEQ's NEPA regulations, EO 12114, *Environmental Effects Abroad of Major Federal Actions* and DOD Directive 6050.1. The NEPA process is described in this regulation. AR 200-2 states that for the NEPA process to be effective, it must be integrated with other Army Reserve project planning at the earliest possible time. This will ensure that Army Reserve planning and decision-making reflects environmental values; the goals of safeguarding the environment and minimizing adverse environmental effects are achieved; and delays and potential conflicts later in the decision-making and implementing processes are avoided. The regulation contains information concerning actions that require environmental evaluation; environmental review categories;

determining appropriate environmental documentation; integrating environmental reviews concurrently with other Army Reserve planning and decisionmaking actions; identifying mitigation measures and monitoring systems; proper use of listed categorical exclusions and procedures for amending the list; describes the EA and EIS procedures; and describes the method of obtaining public involvement in the environmental decision-making process.

F. Key Compliance Requirements

- AR 200-2 applies to all facilities and organizations that have proposed actions. It requires facilities to perform various environmental surveys and assessments whenever an action is contemplated that could have an effect on the environment. Actions may not be taking place on the facility being assessed, but if the proponent is there it should be a review item.
- 40 CFR 1500 through 1508 provides guidance to Federal Agencies on the implementation of the NEPA process. It specifies procedures for compliance with NEPA; defines NEPA documents; requires agencies to list actions normally requiring EISs or EAs; and specifies how agencies may define and use categorical.

G. Key Compliance Definitions

These definitions were obtained from Army, DOD, and compliance regulations cited previously.

- *Affecting* - will or may have an effect (40 CFR 1508.3).
- *Categorical Exclusions (CXs)* - those actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a Federal Agency and for which, therefore, neither an EA nor an EIS is required (40 CFR 1508.4).
- *Cumulative Impact* - the impact on the environment which results from the incremental impact of the action, when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions (40 CFR 1508.7).
- *Effects* - effects are either direct or indirect. Direct effects are those which are caused by the action and occur at the same time and place. Indirect effects are those which are caused by the action and are altered in time or farther removed in distance, but are still reasonably foreseeable (40 CFR 1508.8).

- ***Environmental Assessment (EA)*** - refers to 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)
 - aid an agency's compliance with the Act when no EIS is necessary
 - facilitate preparation of a statement when one is necessary.

The EA shall include brief discussions of the need for the proposal, or alternatives, and of the environmental effects of the proposed actions and alternatives, and a listing of the agencies and persons consulted (40 CFR 1508.9).

- ***Environmental Impact Statement (EIS)*** - a detailed written statement required by Section 102(2) of the Act (40 CFR 1508.11).
- ***Environmental Monitoring Report (Optional)*** - an optional but recommended report prepared at one or more point after program or action execution. Its purpose is to determine the accuracy of impact predictions, and it can serve as the basis for adjustments in mitigation programs and to adjust impact predictions in future projects (AR 200-2, para 3-2c).
- ***Environmental Planning Guide (Optional)*** - a document prepared before or at the outset of a major program concept exploration. Its use is optional but encouraged. A concise document intended for use by the program planners and designers, it provides guidelines and supporting rationale by which planners and designers could prevent, avoid, or minimize adverse environmental effect through environmentally sensitive design and planning. It can be made to be a requirement of contractors (AR 200-2, para 3-2a).
- ***Environmental Planning Record (Optional)*** - this is an optional but recommended document that records the progress and a process of environmental considerations throughout a given program's development. It may be a journal with periodic entries, a file of memoranda, trip reports, and so forth. It is designed to be a visible track record of how environmental factors have actually been considered and incorporated throughout the planning process. It can be made a requirement of contractors (AR 200-2, para 3-2b).
- ***Final Environmental Impact Statement (FEIS)*** - this document is the result of the analysis of comments concerning the Preliminary Draft Environmental Impact Statement (PDEIS). Comments are to be received from: designated Federal, state, and local agencies; any agency that has requested copies of impact statements; and the public (including interested or affected persons and organizations) (AR 200-2, para 6-5g).

- *Finding of No Significant Impact (FNSI)* - a document that briefly presents the reasons why an action, not otherwise excluded, does not need an EIS (40 CFR 1508.13).
- *Life Cycle Environmental Document (LCED)* - a programmatic assessment addressing the known and reasonably foreseeable environmental impacts of a proposed item/system during all phases of development, production, use, and disposal. It may be in the form of an EA or an EIS, and must be supplemented to address additional significant environmental impacts as conditions change. It is most frequently used within the materiel research, development, and acquisition community (AR 200-2, para 3-1f).
- *Mitigation* - this includes: avoiding the impact altogether by not taking a certain action or parts of an action; minimizing the impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitation, or restoring the affected environment; reducing or eliminating the impact over time for preservation and maintenance operations during the life of the action; compensating for the impact by replacing or providing substitute resources or environments (40 CFR 1508.20).
- *Notice Of Intent (NOI)* - a notice that an EIS will be prepared and considered. It should contain:
 - a description of the proposed action and possible alternatives
 - the proposed scoping process and schedule
 - the name and address of the person who can give more information (40 CFR 1508.22).
- *Preliminary Draft Environmental Impact Statement (PDEIS)* - a document containing information obtained and decisions made during the scoping process (AR 200-2, para 6-5d(1)).
- *Record of Environmental Consideration (REC)* - a document that describes the proposed action and anticipated timeframe, identifies the proponent, and explains why further environmental analysis and documentation is not required. It is a signed statement to be submitted with project documentation. Furthermore, it is used when the proposed action is exempt from the requirements of NEPA, or has been adequately assessed in existing documents and determined not to be environmentally significant. It is also used to document the use of those CXs that require such records (AR 200-2, para 3-1a).
- *Records of Decision (ROD)* - this document is required after completion of an EIS. Generally, it is to: state what the decision was; identify all alternatives considered and specify which alternative was environmentally preferable; state whether all practicable means to avoid or minimize environmental harm from the selected alternative have been adopted and if not, why not. In addition, it

states the monitoring and mitigation program adopted (if needed). It may also discuss preferences among alternatives based on nonenvironmental factors (economic and technological). The ROD is not considered an environmental document since the decision considers these other, nonenvironmental factors in addition to environmental factors (AR 200-2, para 6-5i).

- *Scoping* - this process occurs when the planning for an Army project or action indicates a need for the preparation of an EIS. Scoping determines the scope of issues to be addressed in the EIS and identifies the significant issues related to the proposed action. The parties identify the range of actions, alternatives, and impacts to consider in the EIS (AR 200-2, para 2-6d).

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Facilities	12-1 through 12-7	(2)(5)(12)(22)
Documentation	12-8 through 12-10	(2)(12)(21)(22)
CXs	12-11	(2)(12)(22)
EAs	12-12 through 12-22	(2)(5)(12)(21)(22)
EISs	12-23 through 12-36	(2)(5)(12)(21)(22)
Mitigation Measures	12-37 and 12-38	(2)(12)(22)
LCED	12-39	(2)(12)(22)
Construction Sites	12-40	(2)(22)

(a) CONTACT/LOCATION CODE:

- (2) Facility Manager
- (5) Directorate of Engineering and Housing (DEH)/DPW
- (12) Environmental Coordinator (EC)
- (21) Public Affairs Office (PAO)
- (22) ARCOM

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

Plans and Maps to Review

- Scoping plans and conclusions

Records to Review

- REC
- ROD
- EBS or PAS
- EA
- FNSI
- NOI
- Environmental Impact Statement (EIS) (including PDIS, EIS, DEIS, FEIS)
- Environmental agreements
- 1383 report
- News releases
- Troop Construction Projects
- Offpost Actions (i.e., training, leases, maneuvers)

People to Interview

- Facility Manager
- Directorate of Engineering and Housing (DEH)
- Environmental Coordinator (EC)
- Public Affairs Office (PAO)
- BASOPs ARCOM Environmental Managers

**COMPLIANCE CATEGORY:
NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ALL FACILITIES</p> <p>12-1. Determine actions or changes since previous review (GMP). ...</p> <p>12-2. The facility should have copies of all relevant Federal, DOD, Army, and state/local regulations concerning the NEPA (GMP). ...</p> <p>12-3. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, re-occurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation, promotes good public relations and addresses systemic weakness in the overall operation of the program (GMP). ...</p> <p>12-4. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding). ...</p>	<p>(NOTE: Findings under checklist items with CFR and/or AR citations will be Class I Findings in the section.)</p> <p>Examine copy of previous review report to determine if noncompliance issues have been resolved. (2)(5)(12)(22) ...</p> <p>Determine whether copies of the following regulations and publications, which are applicable, are maintained and kept current at the ARCOM or Support Installation: (2)(5)(22)</p> <ul style="list-style-type: none"> - 40 CFR 1500 through 1508, <i>Regulations for the Implementation of the NEPA.</i> - AR 200-2, <i>Environmental Effects of Army Actions</i> (32 CFR 651). <p>...</p> <p>Determine what management systems are in place. (2)(5)(22)</p> <p>Verify that the existing system addresses the issues associated with NEPA by: (2)(5)(22)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p>Determine if training is being conducted. (2)(5)(22) ...</p> <p>Determine if any new regulations concerning NEPA have been issued since the finalization of the manual. (2)(22)</p> <p>Verify that the facility is in compliance with newly issued regulations. (2)(22)</p> <p>(NOTE: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p>...</p>

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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>12-5. The facility must perform a number of activities in the implementation of NEPA (AR 200-2 para 1-4k).</p> <p align="center">...</p>	<p>Verify that the facility: (5)(12)(22)</p> <ul style="list-style-type: none"> - monitors proposed actions and programs within its command - tasks the appropriate component with environmental review and preparation of EAs and EISs where appropriate, and development of public involvement activities - assures that appropriate environmental documentation is prepared and forwarded to the appropriate proponent - initiates the preparation of necessary environmental documentation and assesses the environmental consequences of proposed programs and projects - coordinates appropriate environmental documents and public affairs initiatives with Major Army Command (MACOM), HQDA agencies, the environmental coordinator (EC), and ODEPAs required - assists in the review of environmental documents prepared by DOD and other Army or Federal agencies, as requested. <p align="center">...</p>
<p>12-6. The EC should have access to facility and tenant planning processes via attendance at Master Planning Board meetings, Range Control schedules, or other means suitable to the particular facility and its mission (GMP).</p> <p align="center">...</p>	<p>Verify that the EC has the listed access and information. (2)(5)(22)</p> <p align="center">...</p>
<p>12-7. The EC should have data available to support determinations associated with appropriate level of NEPA determination (GMP).</p> <p align="center">...</p>	<p>Verify that the EC is notified or otherwise has timely project/proposal information to determine appropriate environmental documentation level based on project type. (2)(5)(22)</p> <p>Verify that the EC has the environmental data or information needed to determine the following, or means to obtain the data in a timely manner to make such determination: (2)(5)(22)</p> <ul style="list-style-type: none"> - CXs - EAs - EISs. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>DOCUMENTATION</p> <p>12-8. All potentially affected parties, including the public, will be involved, when practicable, in the development of environmental documentation (AR 200-2, para 7-1).</p> <p align="center">...</p> <p>12-9. The NEPA process must be integrated into planning for projects at the facility as early as possible in order to prevent delays in project implementation (40 CFR 1501.1 and 1501.2).</p> <p align="center">...</p>	<p>Determine if the need for public involvement is being met in the following manner: (2)(12)(21)(22)</p> <ul style="list-style-type: none"> - the development of a plan to include all affected parties (see AR 360-5) - public involvement as a part of the scoping process when an EIS is being prepared - public involvement when appropriate in the development of EAs. <p>Verify that when necessary, the following persons and agencies are contacted: (2)(12)(21)(22)</p> <ul style="list-style-type: none"> - municipal, township, and county elected and appointed officials - state, county and local government officials and administrative personnel whose official responsibilities include responsibility for activities or components of the affected environment related to the proposed action - local and regional administrators of other Federal agencies or commissions that may control resources potentially affected by the proposed action - members of identifiable population segments within the potentially affected environment - members and officials of those identifiable interest groups of local or national scope that may have interest in the environmental effects of the proposed action or activity - any person or group that has specifically requested involvement. <p align="center">...</p> <p>Verify that the NEPA process is routinely reviewed as a part of new project development and potentially significant issues identified. (2)(12)(22)</p> <p>Verify that early cooperative consultation among agencies is also a part of new project development. (2)(12)(22)</p> <p>Verify that the facility identifies environmental effects and values in adequate detail so they can be compared to economic and technical analysis. (2)(12)(22)</p> <p>Verify that the facility develops and describes appropriate alternatives to recommended actions in any proposal which involve unresolved conflicts concerning alternative uses of available resources. (2)(12)(22)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>12-10. Army Reserve units are required to integrate environmental review concurrently with other planning and decisionmaking actions (AR 200-2, para 2-6a).</p> <p align="center">...</p>	<p>Verify that facility organizations have developed some method to ensure they consult with EC to determine environmental review and documentation requirements for actions they plan or perform. (2)(12)(22)</p> <p>Verify that action proponents have documented compliance with environmental review requirements for actions they plan or perform. (2)(22)</p> <p>Verify that training plans/documents reflect that environmental impacts have been considered. (2)(22)</p> <p align="center">...</p>
<p>CXs</p> <p>12-11. Categorical Exclusions (CXs) may apply to proposed actions, exempting them from further environmental assessment under specific circumstances (AR 200-2, para 4-1 through para 4-4, and Appendix A).</p> <p align="center">...</p>	<p>Verify that prior to using a CX the following actions were taken: (2)(12)(22)</p> <ul style="list-style-type: none"> - it was determined that the actions appropriately fit one of the CXs listed in Section V of Appendix A, AR 200-2 - it was determined whether or not there were any extraordinary circumstances that might result in the proposed action having an impact on the human environment that would require an EA or EIS including: <ul style="list-style-type: none"> - greater scope or size than normally experienced for a particular category of action - potential for degradation of already existing poor environmental conditions - employment of unproven technology - presence of threatened or endangered species and their habitats, archeological materials, historical places, or other protected resources - use of hazardous or toxic substances that may come in contact with the surrounding natural environment - proposed actions affecting areas of critical environmental concern - it was determined that the answer to all the screening questions in Section II of of Appendix 200-2 was "yes." <p>Verify that record copies of RECs are available for any projects in which a CX was used. A REC is required according to the listing in Appendix A of AR 200-2. (2)(12)(22)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>EAs</p> <p>12-12. An EA must be produced, under certain circumstances, to determine if an EIS is necessary (40 CFR 1501.3 and 1508.9).</p> <p align="center">...</p> <p>12-13. Certain actions require the preparation of an EA (AR 200-2, para 5-2 and 5-3).</p>	<p>Determine if an EA has been completed and submitted to the USEPA Director for review before any contract for action is entered into or action is begun unless: (2)(12)(22)</p> <ul style="list-style-type: none"> - the action normally requires an EIS - normally does not require either an EIS or an EA (a CX). <p>Verify that the assessment was prepared according to agency policies. (2)(12)(22)</p> <p>(NOTE: Title 40 CFR 1501.3 states that Agencies will adopt procedures to indicate when an EA is required to be done.)</p> <p align="center">...</p> <p>Verify that an EA is prepared for the following actions: (2)(5)(12)(22)</p> <ul style="list-style-type: none"> - special training or test activity not included in the annual facility training cycle - military construction, including offpost construction - facility pesticide, fungicide, herbicide, insecticide, and rodenticide use programs - changes to established facility land use that may cause environmental impacts - proposed changes in doctrine or policy that may have a potential environmental impact - repair or alteration projects affecting historically significant structures, archaeological sites, or places on, or meeting the criteria for nomination to, the National Register of Historic Places - acquisition, or alteration of a laboratory that will use hazardous chemicals, drugs, or biological or radioactive materials - actions that could potentially cause soil erosion, affect prime or unique farmland, wetlands, floodplains, coastal zones, wilderness areas, aquifers, or other water supplies, or wild and scenic rivers - new weapon systems development and acquisition, in all phases - development of the facility master plan - development of natural resource management plans - proposals that may lead to the excessing of Army real property - actions that take place in, or adversely affect, wildlife refuges - proposals for energy conservation through forest harvest - field activities on land not controlled by the military (includes firing over navigable waters, firing 215 meters (m) above ground, and joint air attack training greater than 250 knots and below 3000 feet (ft) above ground level) - any action with local or regional effects on energy availability - an activity that affects species on or proposed for the U.S. Fish and Wildlife Service (FWS) list of Threatened or Endangered Species, or state equivalents - production of hazardous or toxic materials

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>12-13. (continued)</p> <p align="center">...</p>	<ul style="list-style-type: none"> - facility restoration projects - operations and maintenance/Army National Guard (ARNG) projects (to include Army Reserve activities) that will affect environmental quality - site specific deployment of life cycle systems meeting the threshold criteria for requiring an EA - special field training exercises or test activities off Army or DOD property that extend into national airspace (45 m above ground level) - changes to established airspace use that affects the environment or socioeconomic systems, or creates a hazard to nonparticipants - any other action with the potential for cumulative impact on environmental quality when combining effects of other actions or when the action is of a lengthy duration, a violation of pollution abatement standards, or harmful to culturally or ecologically sensitive areas. <p>(NOTE: An EA is not required if the facility has already decided to prepare an EIS.)</p> <p>Verify that facility proponents have received notice of the types of actions they plan or perform which may be likely to require EAs, and that they may be required to perform or fund mitigations committed to in such EAs. (2)(5)(12)(22)</p> <p>Verify that offices responsible for performing mitigation to which the facility has committed in an EA/FNSI, but that did not participate in EA/FNSI development, have received notice of such commitments and are performing or have performed the mitigations. (2)(22)</p> <p align="center">...</p>
<p>12-14. EAs are required to contain specific information (AR 200-2, para 5-4a).</p> <p align="center">...</p>	<p>Verify that EAs contain the following information: (2)(12)(22)</p> <ul style="list-style-type: none"> - purpose and need for the proposed action - description of the proposed action - the alternatives considered, including "no action" - affected environment (baseline conditions) - environmental consequences of the proposed action, and the alternatives - listing of agencies and persons consulted - the conclusion, or finding, on whether the environmental impacts are significant. <p align="center">...</p>
<p>12-15. All EAs must prompt either the preparation of an FNSI, or a NOI to file an EIS (AR 200-2, para 5-5).</p> <p align="center">...</p>	<p>Determine whether all EAs for projects (that have not been cancelled or delayed) are accompanied by a FNSI or have been followed by a NOI. (2)(12)(22)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>12-16. Existing EAs are required to be reviewed periodically as the action continues (AR 200-2, para 5-8).</p> <p align="center">...</p> <p>12-17. If, due to the results of an EA, an EIS is not going to be prepared, a FNSI must be prepared according to specific parameters (40 CFR 1501.4(e), 1506.66, and 1508.13).</p> <p align="center">...</p> <p>12-18. The EA, the FNSI, and all other appropriate planning documents will be provided to the appropriate decisionmaker for review and consideration. The signature page for the EA and the FNSI package will be signed by the appropriate decisionmaker to indicate his or her review and approval (AR 200-2, para 5-4b).</p> <p align="center">...</p>	<p>Verify that existing EAs covering action still in progress are reviewed to verify that the setting, actions, and effects described remain substantially accurate. (2)(12)(22)</p> <p align="center">...</p> <p>Verify that FNSIs include the following information: (2)(12)(21)(22)</p> <ul style="list-style-type: none"> - the name of the action - a brief description of the action (including any alternatives considered) - a short discussion of anticipated environmental effects - the conclusions that have led to the FNSI. <p>Verify that in general the FNSI is made available for public review. (2)(12)(21)(22)</p> <p>Verify that the FNSI is made available for public review for 30 days prior to making a final determination whether to prepare an EIS and before the action begins when: (2)(12)(21)(22)</p> <ul style="list-style-type: none"> - the proposed action is, or is closely similar to, one which normally requires the preparation of an EIS by the Reserves - the nature of the proposed action is without precedence. <p align="center">...</p> <p>Verify that the decisionmaker(s) for the proposed action has (have) signed and approved both the EA and the FNSI, or a complete package including the EA plus FNSI. (2)(12)(22)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>12-19. FNSIs with national interest will be made available to the public prior to initiation of the proposed action, unless excluded on a security basis, according to specific parameters (AR 200-2, para 2-6b and 5-5c).</p> <p align="center">...</p>	<p>Verify that FNSIs that have national interest are submitted with the proposed press release through command channels to Deputy Assistant Secretary of the Army for Environmental, Safety, and Occupational Health (DASA ESOH) for approval and subsequent publication in the Federal Register. (2)(12)(22)</p> <p>Verify that FNSIs with national interest are coordinated with the Office of the Chief of Public Affairs (OCPA). (2)(22)</p> <p>Verify that local publication of the FNSI does not precede publication in the Federal Register. (2)(22)</p> <p align="center">...</p>
<p>12-20. For actions of local or regional interest, the FNSI will be publicized according to specific parameters (AR 200-2 para 2-6b and 5-5d).</p> <p align="center">...</p>	<p>Verify that the following are notified of FNSIs: (2)(22)</p> <ul style="list-style-type: none"> - state and areawide clearinghouses - Indian tribes when effects may occur on reservations - local newspapers - other local media - potentially interested community organizations including small business associations - newsletters that may be expected to reach potentially interested persons - owners and occupants of nearby housing (by direct mail). <p align="center">...</p>
<p>12-21. EAs and FNSIs are required to be made available for review and comment according to specific time schedules (AR 200-2 para 2-6b(2) and 5-5d).</p> <p align="center">...</p>	<p>Verify that if the proposed action is one of national concern, is unprecedented, or normally requires an EIS, the EA or FNSI is made available for public review 30 or more days prior to the final decision. (2)(12)(21)(22)</p> <p>Verify that if the proposed action is one of national concern, is unprecedented, or normally requires an EIS, there is a 30 day public comment period between the time that the FNSI is publicized and the time the proposed action begins. (2)(21)(22)</p> <p>(NOTE: The public comment period may be shortened with MACOM approval.)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>12-22. Facilities are required to implement mitigation and/or other considerations established in the EA or FNSI (AR 2002, para. 2-7a and 2-7d).</p> <p align="center">...</p>	<p>Verify that mitigations and other conditions established in the EA or FNSI or during their review and commitment as a part of the record of decision are implemented. (1)(2)(22)</p> <p align="center">...</p>
<p>EISs</p> <p>12-23. A facility must produce an EIS if certain conditions exist due to a proposed action (40 CFR 1501.4(a), 1501.4(c), and 1502.4).</p> <p align="center">...</p>	<p>Verify that the facility produces an EIS for any activity which normally requires an EIS including: (2)(12)(22)</p> <ul style="list-style-type: none"> - the adoption of new Army Reserve programs or regulations - technological developments - broad actions - if the EA indicates it is necessary. <p>(NOTE: Federal Agencies are required to develop policies indicating what types of actions require an EIS.)</p> <p align="center">...</p>
<p>12-24. When two or more Agencies propose or are involved in the same action or are involved in a group of actions directly related to each other because of their functional interdependences or geographical proximity, a lead agency will supervise the preparation of the EIS (40 CFR 1501.5 and 1501.6).</p> <p align="center">...</p>	<p>Determine if the facility is involved in producing an EIS for actions which includes Agencies other than their own. (2)(12)(22)</p> <p>Determine who the lead agency is. (2)(12)(22)</p> <p>(NOTE: Federal, state, of local agencies, including at least one Federal agency may act as joint lead agencies to prepare an EIS.)</p> <p>Verify that there is a letter or memorandum indicating which Agency is the lead agency and which are the cooperating agencies. (2)(12)(22)</p> <p>Verify that if the facility is a lead agency it: (2)(12)(22)</p> <ul style="list-style-type: none"> - requests the participation of each cooperating agency in the NEPA process at the earliest possible time - use the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent possible consistent with its responsibility as lead agency - meets with a cooperating agency at the cooperating agency's request. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>12-25. A proponent of an action must produce an EIS if certain conditions exist due to a proposed action (AR 200-2, para 6-2 and 6-3).</p>	<p>Verify that the facility has prepared EISs for proposed actions that have the potential to: (2)(12)(22)</p> <ul style="list-style-type: none"> - significantly affect environmental quality or public health or safety - significantly affect historic or archeological resources, public parks and recreation areas, wildlife refuges or wilderness areas, wild and scenic rivers, or aquifers - have significant adverse effect on properties listed or meeting the criteria for listing in the National Register of Historic Places, or the National Registry of Natural Landmarks - cause a significant impact to prime and unique farm lands, wetlands, floodplains, coastal zones, or ecologically or culturally important areas or other areas of unique or critical environmental concern - result in potentially significant and uncertain environmental effects or unique or unknown environmental risks - significantly affect a species or habitat listed or proposed for listing on the Federal list of endangered or threatened species - either establish a precedent for future action or represent a decision in principle about a future consideration with significant environmental effects - adversely interact with other activities with individually insignificant effects so that cumulatively significant environmental effects result - involves the production, storage, transportation, use, treatment, and disposal of hazardous or toxic materials that may have significant environmental impact. <p>Verify that an EIS has been prepared for the following actions which normally require an EIS: (2)(12)(22)</p> <ul style="list-style-type: none"> - significant expansion of a military facility, such as a depot, munition plant, or major training facilities - construction of facilities that have a significant effect on wetlands, coastal zones, or other areas of critical environmental concern - the disposal of nuclear materials, munitions, explosives, industrial and military chemicals, and other hazardous or toxic substances that have the potential to cause significant environmental impact - the life cycle development of new materials such as weapons systems that require the construction and operation of new fixed facilities or the significant commitment of natural resources

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>12-25. (continued)</p> <p align="center">...</p> <p>12-26. 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>	<ul style="list-style-type: none"> - land acquisition, leasing or other actions that may lead to significant changes in land use - Continental United States (CONUS) realignment or stationing of a brigade or larger table of organization and equipment unit during peacetime - training exercises conducted outside the boundaries of an existing military reservation where significant environmental damage might occur - major changes in mission of facilities potential either affecting areas or critical environmental concern or causing significant environmental impact. <p align="center">...</p> <p>Determine if a 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. (2)(12)(22)</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. (2)(12)(22)</p> <p>Verify that for projects directly undertaken by the Army Reserves, the EIS is prepared at the feasibility analysis stage. (2)(12)(22)</p> <p>Verify that a preliminary draft is prepared based on the "scoping" decisions with the following format: (2)(12)(22)</p> <ul style="list-style-type: none"> - 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 - summary: must adequately summarize the statement, stressing major conclusions, areas of controversy, and issues to be resolved - table of contents - purpose of and need for action: briefly specifying the underlying purpose and need to which the facility is responding in proposing the alternatives including the proposed action - alternatives including the proposed action: explore and objectively evaluate all reasonable alternatives, identify preferred alternative and explain reasoning

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>12-26. (continued)</p> <p align="center">...</p>	<ul style="list-style-type: none"> - affected environment: description of the area(s) to be affected or created by the alternatives under considerations - 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 - list of preparers: names and qualifications of persons primarily responsible for preparing the EIS or background papers - list of agencies, organizations, and persons to whom copies of the statement are sent - index - appendix: material prepared in coordination with the EIS, normally analytic and relevant to discussions being made. <p>Verify that the EIS is prepared using an interdisciplinary approach. (2)(12)(22)</p> <p align="center">...</p>
<p>12-27. As a part of the EIS process, scoping must be done according to specific requirements (40 CFR 1501.7(a)).</p> <p align="center">...</p>	<p>Verify that in the scoping process the lead agency: (5)(12)(21)(22)</p> <ul style="list-style-type: none"> - invites 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 Army Reserve regulations - determines the scope and the significance issues to be analyzed in depth in the EIS - identifies and eliminates from detailed study the issues which are not significant or which have been covered by prior environmental review - allocates assignments for preparation of the EIS among the lead and cooperating agencies with the lead agency retaining responsibility for the statement - indicates any public EAs and other EISs which are being or will be prepared that are related but are not part of the scope of the EIS under consideration - identifies other environmental review and consultation requirements so that other analyses and studies may be prepared concurrently with, and integrated with the EIS - indicates the relationship between the timing of the preparation of environmental analyses and the agency's tentative planning and decision making schedules. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>12-28. Public interaction in the EIS process through scoping must be done according to specific procedures (AR 200-2, para 7-2 through 7-5).</p> <p>...</p>	<p>Verify that in the preliminary phase of scoping the following actions are done: (2)(12)(21)(22)</p> <ul style="list-style-type: none"> - the significant issues to be analyzed are incorporated in the NOI - the office or person responsible for matters related to the scoping process is identified in the NOI - the method by which the facility will invite participation of affected parties is identified and a tentative list created - the proposed method of accomplishing scoping is identified - a relationship is initiated between the timing of the preparation of the environmental analysis and the tentative planning and decisionmaking schedule - any exemptions are identified in the NOI. <p>Verify that in the public interaction phase of scoping the following actions are taken: (2)(12)(22)</p> <ul style="list-style-type: none"> - comments are solicited from all affected parties and respondents to the NOI - comments are solicited from technical representatives at the facility - comments are solicited from one or more representatives from any Army-contracted consulting firm if one has been retained to participate in writing the EIS or providing reports - comments are solicited from experts in various environmental disciplines. <p>Verify that all scoping participants are provided with the information developed during the preliminary phase and as much of the following as may be available: (2)(22)</p> <ul style="list-style-type: none"> - a brief description of the environment at the affected location - a description of the proposed alternatives - a tentative identification of any public EAs and other EISs that are being or will be prepared that are related but are not a part of the scope of impact - any additional scoping issues or limitation on the EIS - the lead and cooperating agencies are identified. <p>...</p>

(2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO) (22) ARCOM

**COMPLIANCE CATEGORY:
NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>12-29. Public involvement is a required part of the EIS process (40 CFR 1506.6).</p> <p align="center">...</p>	<p>Verify that the Army Reserves made a diligent effort to involve the public including: (2)(12)(21)(22)</p> <ul style="list-style-type: none"> - providing public notice of NEPA-related hearings, public meetings, and the availability of environmental documentation such as: <ul style="list-style-type: none"> - mailing of notices to those who have requested it on an individual action - notice in the Federal Register and mailings to national organizations reasonably expected to be interested if the action is of national concern - notice to the state, local Indian tribes, local newspapers and other local media if the action is of local concern - holding or sponsoring public meetings in response to: <ul style="list-style-type: none"> - substantial environmental controversy or substantial interest in holding the meeting - a request for a hearing by another agency with jurisdiction over the action supported by reasons the hearing would be helpful - soliciting appropriate information from the public - explanations of where individuals can get information or status reports. <p align="center">...</p>
<p>12-30. After the preparation of the draft EIS, the facility is required to obtain and request comments from specific individuals (40 CFR 1502.19 and 1503.1).</p> <p align="center">...</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. (2)(12)(22)</p> <p>Verify that prior to preparing the final EIS, comments were requested from the following: (2)(12)(22)</p> <ul style="list-style-type: none"> - appropriate state and local agencies which are authorized to develop and enforce environmental standards - Indian tribes, when the effects may be on a reservation - any agency which has requested that it receive statements on actions of the kind proposed. <p>Verify that comments were requested from the applicant, if any. (2)(12)(22)</p> <p>Verify that comments were requested from the public. (2)(12)(22)</p> <p align="center">...</p>

(2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO) (22) ARCOM

**COMPLIANCE CATEGORY:
NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>12-31. When preparing the final EIS specific actions are required (40 CFR 1503.4).</p> <p align="center">...</p>	<p>Verify that when preparing the final EIS, all comments are assessed and considered and responded to in one of the following ways: (2)(12)(22)</p> <ul style="list-style-type: none"> - the alternatives are modified, including the proposed action - alternatives not previously given serious consideration by the agency are developed and evaluated - the analysis is supplemented, improved, or modified - an explanation is provided as to why the comments do not warrant further agency response. <p>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. (2)(12)(22)</p> <p align="center">...</p>
<p>12-32. 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 align="center">...</p>	<p>Verify that a supplement is prepared if one of the following occurs: (2)(12)(22)</p> <ul style="list-style-type: none"> - the agency makes substantial changes in the proposed action that are relevant to environmental concern - there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. <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 CEQ. (2)(12)(22)</p> <p align="center">...</p>
<p>12-33. At the time of a decision, Agencies are required to prepare a concise ROD (40 CFR 1505.2).</p> <p align="center">...</p>	<p>Verify that the record states what the decision was and: (2)(12)(22)</p> <ul style="list-style-type: none"> - identifies all alternatives considered in reaching the decision, specifying the alternative or alternatives considered to be environmentally preferable - 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. <p align="center">...</p>
<p>12-34. A copy of the signed ROD must be forwarded to the Office, Director of Environmental Programs (AR 200-2, para 3-1g).</p> <p align="center">...</p>	<p>Verify that a copy of the signed ROD has been forwarded to the Office, Director of Environmental Programs. (2)(12)(22)</p> <p align="center">...</p>

(2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO) (22) ARCOM

**COMPLIANCE CATEGORY:
NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>12-35. When implementing the decision, the Army Reserves must meet specific requirements (40 CFR 1505.3).</p> <p align="center">...</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. (2)(12)(22)</p> <p>Verify that appropriate conditions are included in grants, permits, or other approvals. (2)(12)(22)</p> <p>Verify that funding is based on actions of mitigation. (2)(12)(22)</p> <p>Verify that results of relevant monitoring are made available upon request. (2)(12)(22)</p> <p align="center">...</p>
<p>12-36. Specific records must be maintained in certain circumstances (AR 200-2, para 3-1).</p> <p align="center">...</p>	<p>Verify that the following records are maintained: (2)(12)(22)</p> <ul style="list-style-type: none"> - REC - EA - FNSI - NOI - EIS - LCED - ROD. <p>Verify that LCEDs prepared elsewhere are included as part of EA/EIS packages for items or systems being developed, tested, produced, or fielded at the facility. (2)(12)(22)</p> <p>Verify that mitigation/monitoring records are maintained and kept current. (2)(12)(22)</p> <p align="center">...</p>
<p>MITIGATION MEASURES</p> <p>12-37. The proponent, or other appropriate agency, will implement mitigation and other conditions established in the EA or EIS or during its review, and committed as part of the FNSI or the ROD (AR 200-2, para 2-7a through 2-7c, para 2-7d(3), para 6-5l, and para 6-5m).</p> <p align="center">...</p>	<p>Verify the following: (2)(22)</p> <ul style="list-style-type: none"> - funds have been committed to perform commitments made in FNSI or ROD and mitigations adopted in EAs/EISs are actually being performed, or, if not, that EAs/EISs are revised and reissued for public comment to reflect the difference - if necessary, pending or ongoing actions are delayed to accommodate decisionmaker, EC, and legal review and renotification of the public - a monitoring and enforcement program is adopted and summarized in the ROD if appropriate or applicable. <p align="center">...</p>

(2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO) (22) ARCOM

**COMPLIANCE CATEGORY:
NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>12-38. Legal documents implementing the action (contracts, permits, grants, etc.), will specify mitigation measures to be performed (AR 200-2, para 2-7d(2)).</p> <p align="center">...</p>	<p>Review legal documents supporting the action and verify that mitigations are included as appropriate, including contractor penalties in suitable circumstances. (2)(12)(22)</p> <p align="center">...</p>
<p>LCED</p> <p>12-39. The LCED must address known and reasonable foreseeable environmental impacts of proposed programs/ systems during all phases (AR 200-2, para 3-1(f)).</p> <p align="center">...</p>	<p>Review environmental documentation for known and foreseeable environmental impacts during all phases of proposed programs/systems to include development, production, use, and ultimate disposal. (2)(12)(22)</p> <p align="center">...</p>
<p>CONSTRUCTION SITES</p> <p>12-40. Potential construction sites should undergo environmental evaluation for contamination (GMP).</p>	<p>Verify that environmental evaluations for contamination start during the preparation of master plans and subsequent updates. (2)(22)</p> <p>Verify that "Interim Guidance for Construction Sites Clearance at U.S. Army Installation" is used when making environmental evaluation. (2)(22)</p>

(2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO) (22) ARCOM

INSTALLATION:	COMPLIANCE CATEGORY: NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO) (22) ARCOM

Section 13

ASBESTOS MANAGEMENT PROGRAM

SECTION 13

ASBESTOS MANAGEMENT PROGRAM

A. Applicability of this Protocol

This protocol applies to all Army Reserve facilities. Currently this section contains protocols for asbestos. Asbestos is regulated on the Federal level by the United States Environmental Protection Agency (USEPA), though in some cases states have also promulgated regulations. The Asbestos Management protocol is written in response to the Federal regulations applicable to the conduct of activities involving asbestos management.

Specific state regulations are not included in this protocol. However, an outline of the typical contents of such regulations is provided.

The Asbestos Management Program protocol is used to determine the compliance status of the management activities associated with asbestos on the facility, and its removal from buildings and ultimate disposal.

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 purpose of the Act regarding asbestos hazard is:
 - to 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
 - to mandate safe and complete periodic reinspection of school buildings following response actions, where appropriate
 - 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 (15 USC 2641(b)).

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). 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)).

- *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
 - to provide for the establishment of Federal regulations which require inspection for ACM and implementation of appropriate response actions with respect to ACM in the nation's schools in a safe and complete manner
 - to mandate safe and complete periodic reinspection of school buildings following response actions, where appropriate
 - 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 (15 USC 2641(b)).

- Executive Order (EO) 12088, *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 each agency to ensure that sufficient funds for environmental compliance are included in the agency's budget.

C. State/Local Requirements

Many state and local governments have enacted standards more stringent than the Federal requirements. If the facility engages in asbestos removal or disposal, contact the appropriate state and local agencies.

D. DOD Regulations

- None.

E. U.S. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, Chapter 10, *Asbestos Management Program*, prescribes policy and procedures for managing asbestos and ACM and wastes. It requires compliance with all applicable Federal, state, and local regulations relative to asbestos management.

F. Key Compliance Requirements

- National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations apply to existing and new stationary sources. The regulations are based on health effects and a strong reliance on technological capabilities. Army Reserve facilities involved in the demolition or renovation of buildings that contain asbestos are likely to be affected by these regulations. The USEPA and the state must be given prior notification if renovation or demolition is planned. Facilities involved in these activities must regulate the emissions that are caused by the removal of friable asbestos. Once the asbestos has been removed, it must be disposed of in accordance with the *Clean Air Act (CAA)* and the *Hazardous Materials Transportation Act*. The asbestos waste products must be disposed of in leakproof containers with proper hazard labeling. Facilities that operate primary and secondary schools must test friable materials for asbestos content and document these results.

G. Key Compliance Definitions

These definitions were obtained from Army, DOD, and compliance regulations cited previously.

- *Active Waste Disposal Site* - any disposal site other than an inactive site (40 Code of Federal Regulations (CFR) 61.141).
- *Adequately Wetted* - sufficiently mixed or penetrated with liquid to prevent the release of particulates (40 CFR 61.141).
- *Asbestos* - substances comprised of or derived from actinolite, amosite, anthophyllite, chrysotile, crocidolite, or tremolite (40 CFR 61.141).

- *Asbestos-Containing Waste Materials* - any waste that contains commercial asbestos and is generated by a source subject to the provisions of 40 CFR 61.141. This term also includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. As applied to demolition and renovation operations, this term also 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).
- *Category I Nonfriable ACM* - asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos (40 CFR 61.141).
- *Category II Nonfriable ACM* - any material, excluding Category I Nonfriable ACM, containing more than 1 percent asbestos (40 CFR 61.141).
- *Commercial Asbestos* - any material containing asbestos that is extracted from ore and has value because of its asbestos content (40 CFR 61.141).
- *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 any facility (40 CFR 61.141).
- *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).
- *Facility Component* - any part of a facility, including equipment (40 CFR 61.141).
- *Friable Asbestos Material* - any material that contains more than 1 percent asbestos by weight that, when dry, can be crumbled, pulverized, or reduced to powder 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 handling of ACM (40 CFR 61.141).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *In Poor Condition* - the binding of the material 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 has not been deposited within the past year (40 CFR 61.141).
- *Nonscheduled 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 (40 CFR 61.141).
- *Particulate Asbestos Material* - finely divided particles of asbestos or material containing asbestos (40 CFR 61.141).
- *Planned Renovation Operations* - a renovation operation, or a number of such operations, in which some Regulated Asbestos-Containing Material (RACM) will be removed or stripped within a given period of time and that 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).
- *Regulated Asbestos-Containing Material (RACM)* -includes friable asbestos material; Category I Nonfriable asbestos containing material that has become friable; Category I Nonfriable asbestos containing material that will be or has been subjected to sanding, grinding, cutting, or abrading; and Category II Nonfriable asbestos containing material that has a high probability of becoming crumbled, crushed, or pulverized (40 CFR 61.141).
- *Remove* - to take out RACM from any facility (40 CFR 60.141).

- *Renovation* - altering a facility or one or more facility components in any way, including the stripping or removal of RACM from a facility component. Operations in which load-supporting structural members are wrecked or taken out are demolition (40 CFR 61.141).
- *Strip* - to take off RACM from any part of a facility (40 CFR 61.141).
- *Structural Member* - any load-supporting member of a facility, 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 materials, or from any asbestos milling, manufacturing, or fabricating operations. This does not include condensed water vapor (40 CFR 61.141).

ASBESTOS MANAGEMENT PROGRAM
GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All facilities	13-1 through 13-10	(1)(2)(5)(12)
Personnel safety	13-11 through 13-13	(1)(2)(5)(12)
Renovation and Demolition Notification	13-14 and 13-15	(1)(2)(12)
Renovation and Demolition	13-16 through 13-22	(1)(2)(5)(12)
Disposal	13-23 through 13-27	(1)(2)(5)(12)
Asbestos in Schools	13-28 through 13-37	

Items numbered 13-25 and 13-28 through 13-37 are not Army Reserve applicable and are not included in this manual.

(a)CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager
- (5) Directorate of Engineering and Housing (DEH)/DPW
- (12) Environmental Coordinator (EC)

ASBESTOS MANAGEMENT PROGRAM

Plans and Maps to Review

- Installation asbestos management plan and operating plan
- List of buildings insulated with asbestos or housing

Records to Review

- 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
- ROD on renovation projects completed in the past 5 years (yr) that involve friable asbestos
- Decision documents / records of decision
- Administrative Record

Physical Features to Examine

- Pipe, spray-on, duct, and troweled cementitious insulation and boiler lagging
- Ceiling and floor tiles
- Asbestos insulation in equipment (exhaust systems, generators, vehicles, aircraft, etc.)
- Maintenance shops (brake shoes, clutch plates)

People to Interview

- Directorate of Engineering and Housing (DEH)/DPW
- Environmental Coordinator (EC)
- MUSARC Engineer/Facility Coordinator
- Facility Manager
- BASOPs ARCOM Environmental Managers

**COMPLIANCE CATEGORY:
ASBESTOS MANAGEMENT PROGRAM
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

ALL FACILITIES

13-1. Determine actions or changes since previous review of asbestos management (GMP).

Examine copy of previous review report to determine if noncompliance issues have been resolved. (1)(2)

...

...

13-2. Copies of all relevant Federal, DOD, U.S. Army, and state/local regulations on asbestos management should be maintained at the facility (GMP).

Determine whether copies of the following regulations, which are applicable, are maintained and kept current at the ARCOM or Support Installation: (1)(2)

- 40 CFR 61, *USEPA National Emission Standards for Asbestos.*
- 40 CFR 763, *Asbestos-Containing Materials in Schools.*
- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards.*
- AR 200-1, *Environmental Protection and Enhancement.*
- AR 385-10, *The Army Safety Program.*
- TB MED 502, *Occupational and Environmental Health: Respiratory Protection Program.*
- TB MED 513, *Occupational and Environmental Health Guidelines for the Evaluation and Control of Asbestos Exposure.*
- Applicable state and local regulations.

(NOTE: OSHA regulations designed to protect workers handling asbestos (29 CFR 1910) are not in this protocol.)

...

...

13-3. Facilities are required to comply with state and local requirements (EO 12088, Section 1-1).

Verify that the facility is complying with state and local requirements. (1)

Verify that the facility is operating according to permits issued by the state or local agencies. (1)(2)

(NOTE: Issues that are typically regulated by state and local agencies include:

- certification of individuals sampling and/or working with asbestos
- renovation and demolition procedures
- handling and disposal procedures.)

...

...

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC)

**COMPLIANCE CATEGORY:
ASBESTOS MANAGEMENT PROGRAM
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>13-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, re-occurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation, promotes good public relations and addresses systemic weakness in the overall operation of the program (GMP).</p> <p align="center">...</p> <p>13-5. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p align="center">...</p>	<p>Determine what management systems are in place. (1)</p> <p>Verify that the existing system addresses the issues associated with asbestos management by: (1)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p>Determine if training is being conducted.</p> <p align="center">...</p> <p>Determine if any new regulations concerning asbestos have been issued since the finalization of the manual. (1)</p> <p>Verify that the facility is in compliance with newly issued regulations. (1)</p> <p>(NOTE: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC)

**COMPLIANCE CATEGORY:
ASBESTOS MANAGEMENT PROGRAM
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>13-6. Army Reserve facilities must complete a survey of all structures by 23 May 1991 (AR 200-1, para 10-2j and 10-3b(1-3)).</p> <p align="center">...</p>	<p>Verify that survey was completed by 23 May 1991. (1)(2)(5)(12)</p> <p>Verify that the survey(s) was completed by accredited personnel who meet the inspector training requirements of AHERA, and applicable Federal, state, and local requirements. (1)(2)(12)</p> <p>Verify that personnel were supervised by a qualified industrial hygienist or other qualified environmental professional who meets the requirements of "competent person" as specified in 29 CFR 1926.58(b). (1)(2)(12)</p> <p>Determine if the survey is prioritized as follows: (1)(2)(12)</p> <ul style="list-style-type: none"> - buildings in aging or deteriorated condition that present significant exposure potential - structures that are occupied or likely to be occupied - structures to be repaired, altered, or demolished - Department of the Army (DA) -controlled schools or child development centers - hospitals - residential housing. <p>Verify that annual followup inspections are being done by accredited personnel to identify and report damage and deterioration of asbestos. (1)(2)(5)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC)

**COMPLIANCE CATEGORY:
ASBESTOS MANAGEMENT PROGRAM
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>13-7. Army Reserve facilities are required to prepare, coordinate, and execute an Installation Asbestos Management Plan (AR 200-1, para 10-3).</p> <p align="center">...</p>	<p>Verify that an Installation Asbestos Management Plan has been prepared. (1)(2)(5)(12)</p> <p>Verify that the plan contains the following information: (1)(2)</p> <ul style="list-style-type: none"> - a complete list of operations and maintenance schedules, design plans, and specifications that identify structures scheduled for repair, alteration, and demolition - an facility-wide survey of all structures to determine the location, extent, and condition of all asbestos - documentation of the presence, extent, and condition of asbestos and assessment criteria - an assessment for each occurrence of asbestos of the potential for environmental release and risks to human health and the environment that was done by personnel meeting the management planner training requirements of AHERA and other applicable Federal, state, and local requirements - preparation, coordination, and immediate implementation of abatement plans to minimize potential for asbestos exposure for each area where it exists - preparation, coordination and immediate implementation of a special Operations and Maintenance (O&M) plan for each occurrence of asbestos to monitor the condition of asbestos and minimize releases and human exposure - provision for worker education/training programs - an environmental impact analysis of the Installation Asbestos Management Plan (as required by AR 200-2). <p>(NOTE: Asbestos Management Plans may be incorporated into existing environmental management documents.)</p> <p align="center">...</p>
<p>13-8. Asbestos-related actions that have potential to generate fugitive asbestos emissions must be environmentally assessed as specified in AR 200-2 (AR 200-1, para 10-4d).</p> <p align="center">...</p>	<p>Verify that the facility's asbestos management plans and asbestos-related actions that could produce fugitive asbestos emissions are environmentally assessed. (1)(2)(5)(12)</p> <p>Verify that if the EA results in a finding of no significant impact (FNSI), such a finding is published throughout the affected geographic area. (1)(2)(5)</p> <p align="center">...</p>
<p>13-9. Army Reserve facilities are required to identify in detail and validate the existence, extent, and condition of all asbestos, friable and nonfriable, in all structures prior to renovation, demolition, or excessing (AR 200-1, para 10-2k).</p>	<p>Verify that the facility has identified and verified the existence of both friable and nonfriable asbestos on all DA controlled structures prior to renovation, demolition, or excessing. (1)(2)(5)</p> <p>Verify that employees, visitors, and contractors are notified of any asbestos-related health hazard. (1)(2)(5)</p>

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**COMPLIANCE CATEGORY:
ASBESTOS MANAGEMENT PROGRAM
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>13-10. Friable materials with the potential to be contaminated with asbestos should be tested (GMP).</p> <p align="center">...</p> <p>PERSONNEL SAFETY</p> <p>13-11. Army Reserve facilities are required to provide personnel working with asbestos with proper education and training and to provide the necessary protective equipment (AR 200-1, para 10-2f, 10-2i, and 10-2q).</p> <p align="center">...</p> <p>13-12. Employees working with asbestos are required to have physical examinations (TB MED 513).</p> <p align="center">...</p> <p>13-13. When air cleaning is used as a method for 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 61.152).</p> <p align="center">...</p>	<p>Examine the facility for friable insulation, roofing, and flooring. (2)(5)</p> <p>Verify that friable materials with the potential for asbestos contamination that are located in areas of worker exposure are tested. (2)(5)</p> <p align="center">...</p> <p>Verify that workers are provided with appropriate training and personal protective equipment as specified in AR 385-10, TB MED 502, 29 CFR 1910.1001, and 29 CFR 1926.59. (1)(2)(5)</p> <p>Verify that a procedure exists to notify individuals occupationally exposed to asbestos. (1)(2)(5)</p> <p align="center">...</p> <p>Verify that all employees working with asbestos are given physical examinations as required by TB MED 513: (2)(5)</p> <ul style="list-style-type: none"> - before beginning work with asbestos - annually while employed - at termination of employment. <p align="center">...</p> <p>Verify that fabric filter collection systems meet the following requirements: (1)(2)(5)(12)</p> <ul style="list-style-type: none"> - the device is operated at a pressure drop of no more than .995 kilopascals (kPa) (4 inches (in.) water gage), as measured across the filter fabric - airflow permeability does not exceed 9 cubic meters per minute/square meter (m³/min/m²) (30 cu ft/min/sq ft) for woven fabrics or 11 m³/min/m² (35 cu ft/min/sq ft) for felted fabrics - the felted fabric weighs at least 475 grams (g) per m² (14 ounces (oz)/square yard (sq yd)) and is at least 1.6 millimeters (mm) (1/16 in.) thick throughout - the use of synthetic fabrics containing fill yarn other than that which is spun is avoided. <p align="center">...</p>

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**COMPLIANCE CATEGORY:
ASBESTOS MANAGEMENT PROGRAM
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>RENOVATION AND DEMOLITION NOTIFICATION</p> <p>13-14. Facilities that demolish facilities containing at least 80 linear meters (260 linear ft) of RACM on pipes, or at least 15 m² (160 sq ft) of RACM on other facility components or at least 1 m³ on off facility components, and facilities renovating structures and stripping or removing at least 80 linear meters (260 linear ft) of RACM on pipes, or at least 15 m² (160 sq ft) of friable asbestos on other facility components and at least 1 m³ on off facility components must meet certain notification requirements (40 CFR 61.145(a)(1), 61.145(a) (3), and 61.145(b)).</p> <p align="center">...</p> <p>13-15. Facilities demolishing a facility with RACM of less than 80 linear meters on pipes and less than 15 m² on other facility components and less than 1 m³ on off facility components shall submit notification of demolition (40 CFR 61.145(a)(2) and 61.145 (b)).</p> <p align="center">...</p>	<p>Determine whether USEPA and/or the appropriate state agency 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)(2)</p> <p>Examine written notice for the following information: (1)(2)</p> <ul style="list-style-type: none"> - name and address of facility - description of facility being renovated or demolished (size, age, prior use) - estimates of approximate amount (linear ft or surface area) of asbestos present in the facility - location of the facility - scheduled start and completion dates of renovation or demolition - nature of planned demolition or renovation methods to be used - procedures for asbestos emissions control - name and location of waste disposal site where asbestos will be disposed) - whether or not it is a revised notification - after 20 November 1991, certification that at least one trained person will supervise. <p>(NOTE: Facilities 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 align="center">...</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)(2)(12)</p> <ul style="list-style-type: none"> - the name and address of owner and operator - description of the facility being demolished including the size, age, and prior use - estimate of the approximate amount of friable asbestos present - location of the facility - schedule - procedures to be used. <p align="center">...</p>

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**COMPLIANCE CATEGORY:
ASBESTOS MANAGEMENT PROGRAM
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>RENOVATION AND DEMOLITION</p> <p>13-16. Facilities that demolish facilities which contain at least 80 linear meters (260 linear ft) of RACM on pipes, or at least 15 m² (160 sq ft) of RACM on other facility components, or at least 1 m³ on off facility components, and facilities renovating structures and stripping or removing at least 80 linear meters (260 linear ft) of friable asbestos on pipes, or at least 15 m² (160 sq ft) of friable asbestos on other facility components or 1 m³ or more on off facility components must meet certain emission control requirements (40 CFR 61.145(a)(1), 61.145(a)(3), 61.145(a)(4), and 61.145(c)(1) through 61.145(c)(3)).</p> <p align="center">...</p>	<p>Verify that all RACM is removed from facilities being demolished or renovated before any wrecking or dismantling unless: (1)(2)(5)(12)</p> <ul style="list-style-type: none"> - it is a Category I nonfriable ACM that is not in poor condition and is not friable - the RACM is on a facility component that is encased in concrete or other similar material and is adequately wetted whenever exposed during demolition - 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 - it is Category II nonfriable ACM and the probability is low that the materials will become crumbled, pulverized, or reduced to powder, during demolition <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)(2)(5)</p> <ul style="list-style-type: none"> - they are adequately wetted when RACM are exposed during cutting and disjointsing operations, and - the units or sections are carefully lowered to ground level. <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 that the facility: (1)(5)</p> <ul style="list-style-type: none"> - request a determination from the Administrator as to whether unavoidable damage would occur and supply Administrator with the information needed to make the decision, and - uses one of the following emission control methods <ul style="list-style-type: none"> - a local exhaust ventilation and collection system - a glove bag system - leaktight wrapping to contain all RACM. <p align="center">...</p>

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**COMPLIANCE CATEGORY:
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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>13-17. 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 ft) of RACM on pipes, or at least 15 m² (160 sq ft) of RACM on other facility components or at least 1 m³ on off facility component must be controlled (40 CFR 61.145(c)(4) and 61.145(c)(5)).</p> <p align="center">...</p>	<p>Verify that facility components are either stripped or contained in leak-tight wrappings. (1)(2)(5)(12)</p> <p>Verify that when facility components are removed from facility as units or in sections for stripping: (1)(2)(5)</p> <ul style="list-style-type: none"> - the RACM is adequately wetted during stripping operations - a local exhaust ventilation and collection system designed and operated to capture emissions is in use - the exhaust system exhibits no visible emissions to outside air. <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)(2)(5)</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"> - the component is removed, transported, stored, disposed of, or reused without disturbing the RACM - the component is encased in leaktight wrapping and labelled.) <p align="center">...</p>
<p>13-18. 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 ft) of RACM on pipes, or at least 15 m² (160 sq ft) of RACM on other facility components or 1 m³ or greater of facility components must be controlled (40 CFR 61.145 (c)(6)).</p> <p align="center">...</p>	<p>Verify that asbestos materials that have been removed or stripped: (1)(2)(5)(12)</p> <ul style="list-style-type: none"> - are adequately wet, and remain wet until collected for disposal - are carefully lowered to the ground or lower floor (not dropped or thrown) - are 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 aboveground level. <p align="center">...</p>

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**COMPLIANCE CATEGORY:
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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>13-19. When the temperature at the point of wetting is below 0 degrees Celsius (^oC) and facilities are being demolished under state or local orders or facilities with at least 80 linear meters (260 linear ft) of RACM on pipes, or at least 15 m² (160 sq ft) of RACM other facility components or at least 1 m³ of facility components are being demolished or renovated specific exemptions and requirements apply (40 CFR 61.145(c)(7)).</p> <p align="center">...</p>	<p>Verify that facility components coated or covered with RACM are removed in units or sections to the maximum extent possible. (1)(2)(5)</p> <p>(NOTE: Wetting is not required at this temperature.)</p> <p>Verify that when wetting operations are 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)(2)(5)</p> <p>Verify that the temperature records are kept for 2 yr. (1)(2)(5)</p> <p align="center">...</p>
<p>13-20. 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 align="center">...</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)(2)(5)(12)</p> <p align="center">...</p>
<p>13-21. When a facility is demolished by intentional burning, all RACM, including Category I and II nonfriable ACM, must be removed (40 CFR 61.145(c)(10)).</p> <p align="center">...</p>	<p>Verify that complete removal is done before burning. (1)(5)</p> <p align="center">...</p>
<p>13-22. 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>Verify that trained person is present. (1)(5)</p> <p>Verify that the individual receives refresher training every 2 yr. (1)(5)</p>

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**COMPLIANCE CATEGORY:
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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>DISPOSAL</p> <p>13-23. Asbestos-containing waste materials are required to be disposed of properly (40 CFR 61.150(a) and 61.150(b)).</p> <p align="center">...</p> <p>13-24. Asbestos-containing waste must be properly transported (40 CFR 61.150(c) and 61.150(e)).</p> <p align="center">...</p> <p>13-25.</p> <p align="center">...</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: (1)(2)(5)(12)</p> <ul style="list-style-type: none"> - the asbestos containing waste is adequately wetted - the asbestos containing waste is processed into nonfriable forms - an alternative method approved by the USEPA. <p>Verify that if the waste is wetted: (1)(5)</p> <ul style="list-style-type: none"> - asbestos waste from control devices is mixed with water to form a slurry and the other materials are adequately wetted - no visible emissions are discharged or air cleaning is used to control the emissions - the wetted materials are sealed in leaktight 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 Occupational Safety and Health Administration (OSHA) - materials that don't fit in containers are put into leaktight wrapping. <p>Verify that the waste generator deposits all ACM as soon as practicable at one of the following: (1)(2)</p> <ul style="list-style-type: none"> - a properly operated waste disposal site - a USEPA approved site that converts RACM and asbestos-containing waste material into asbestos-free material. <p>(NOTE: These requirements do not apply to Categories I or II nonfriable ACM that did not become crumbled, pulverized, or reduced to powder.)</p> <p align="center">...</p> <p>Verify that vehicles used to transport asbestos-containing waste material are marked indicating an asbestos dust hazard. (1)(5)(12)</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. (1)(5)</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)(5)</p> <p align="center">...</p> <p>This item is not Army Reserve applicable.</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>13-26. Inactive waste disposal sites are required to meet specific standards (40 CFR 61.151 and 40 CFR 61.154(f) through 61.154(h)).</p> <p align="center">...</p> <p>13-27. Real property that contains ACM must be disposed of according to specific parameters (AR 200-1, para 10-2n and 10-2o).</p> <p align="center">...</p>	<p>Verify that inactive waste disposal sites meet one of the following: (1)(5)</p> <ul style="list-style-type: none"> - no visible emissions are discharged - 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. (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.) - the asbestos-containing waste material is covered with at least 60 cm (2 ft) of non-ACM and the cover is maintained to prevent exposure. <p>Verify that unless a natural barrier exists, warning signs and a fence are installed to deter public access. (1)(2)(5)</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)(2)(5)</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)(5)</p> <p align="center">...</p> <p>Verify that all excess real property containing asbestos is disposed of in accordance with AR 405-90. (1)(2)(5)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
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ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ASBESTOS IN SCHOOLS</p> <p>13-28.</p> <p>13-29.</p> <p>13-30.</p> <p>13-31.</p> <p>13-32.</p> <p>13-33.</p> <p>13-34.</p> <p>13-35.</p> <p>13-36.</p> <p>13-37.</p>	<p>This item is not Army Reserve applicable.</p>

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INSTALLATION:	COMPLIANCE CATEGORY: ASBESTOS MANAGEMENT PROGRAM ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC)

Section 14

NOISE ABATEMENT

Section 14

NOISE ABATEMENT

A. Applicability of this Protocol

This protocol applies to all U.S. Army Reserve facilities that have aircraft operations (including airfields), ranges, military operating areas (MOAs), military training routes (MTRs), or other aircraft and small arms training noise generating activities that could affect the environment. This protocol presents review action items that correspond to mechanisms for planning operations with consideration for noise. Noise effects are addressed by Installation Comprehensive Planning (ICP), the Installation Compatible Use Zone Program (ICUZ), and state and local noise zoning and land-use controls. This protocol only addresses environmental noise, not occupational noise.

B. Federal Legislation

Federal legislation on noise control governs primarily the civilian sector (civilian industries, manufacturers of products in commerce, and so forth). As a general policy, however, each department, agency or instrumentality of the executive, legislative, and judicial branches of the Federal Government, is required to abide by Federal, state, interstate, and local laws regarding control and abatement of environmental noise to the extent that any person is subject to such laws (42 U.S. Code (USC) 4903). Therefore, the armed forces are mandated to comply with the noise control legislation where applicable.

- The *Noise Control Act of 1972* (Public Law (PL) 92-574, 42 USC 4901-4918) as amended:
 - establishes a means for effective coordination of Federal research and activities in noise control
 - authorizes the establishment of Federal noise emission standards for products distributed in commerce
 - provides information to the public concerning the noise emission and noise reduction characteristics of such products.

The following categories of products which produce noise are covered by this Act:

- construction equipment
- transportation equipment (including recreational vehicles and related equipment)

- any motor or engine (including any equipment of which an engine or motor is an integral part)
- electrical or electronic equipment.

The following articles are not covered by the Act (42 USC 4902 (3)):

- any aircraft, aircraft engine, propeller, or appliance
- any military weapons or equipment designed for combat use
- any rockets or equipment designed for research, experimental, or developmental work to be performed by the National Aeronautics and Space Administration (NASA)
- 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)).

- *The Aviation Safety and Noise Abatement Act of 1979* (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 have noise control and land use regulations that have the potential to affect the mission capability of Army Reserve facilities, especially when they provide controls in areas producing and/or affected by Army noise. As a general rule, states tend to treat environmental noise as a source-specific pollutant whose emissions will be controlled by the locally affected community.

Individual state and local governments may regulate the following activities:

- Airfields
- Weapon, rocket, missile firing ranges
- Small-arms training
- Vehicles
- Power-generating equipment
- Demolition and explosive-disposal sites
- Industrial activities.

D. Department of Defense (DOD) Regulations

- DOD Instruction 4165.57, *Air Installation Compatible Use Zones*, sets forth policy on achieving compatible use of public and private lands in the vicinity of military airfields. DOD air installations are required to develop, implement, and maintain an Air Installation Compatible Use Zones (AICUZ) program with desirable restrictions on land use to assure compatibility with the installation's mission.

E. U.S. Army Regulations (ARs)

- AR 200-1, Chapter 7, *Environmental Noise Abatement Program*, outlines the requirements for compliance with Federal laws and regulations on the control and abatement of environmental noise. These requirements include assessment of the impact of noise produced by proposed Army actions and maintenance of an active ICUZ program.
- Department of the Army (DA) Memorandum from Director of the Army Staff, 14 July 1987, Subject: ICUZ Program Implementation.

F. Key Compliance Requirements

- ICUZ Noise Contour Maps - Up-to-date noise zone maps for the facility's current and long range peacetime capabilities are completed.
- ICUZ Study - Initial and follow-up ICUZ studies have been conducted.
- ICUZ Coordination - Explained and provided technical assistance to local, regional, and state planning agencies.
- Noise Mitigation - Identify noise sources that create impact and mitigate when possible.

- **ICUZ Committee** -Established an ICUZ committee.
- **Operational Data** - Maintain a log of range and aircraft operational data.
- **ICUZ Point of Contact** - Designated a facility single point of contact for noise complaints.

G. Key Compliance Definitions

These definitions were obtained from DOD, Federal, and U.S. ARs cited previously.

- ***A-Weighted Sound Level*** - the A-weighted sound level is a quantity, in decibels, read from a sound level meter with A-weighting circuitry. The A-scale weighted discriminates against the lower frequencies according to a relationship approximating the auditory sensitivity of the human ear (AR 200-1, Section II).
- ***DBA*** - Sound level in decibels, measured using the A-weighting network of a sound level meter (AR 200-1, Section II).
- ***Decibel (dB)*** - A unit of measurement of sound pressure level (AR 200-1, Section II).
- ***Environmental Noise*** - The outdoor noise environment consisting of the noise, including ambient noise, from all sources that extends beyond the workplace. The noise environment of the workplace is not considered environmental noise (AR 200-1, Section II).
- ***Installation Compatible Use Zone (ICUZ)*** - a land use planning procedure employed to control environmental noise (AR 200-1, Section II).

**NOISE ABATEMENT
GUIDANCE FOR WORKSHEET USERS**

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All facilities	14-1 through 14-5	(1)(5)(12)
ICUZ	14-6 and 14-7	(5)(12)
Land use	14-8	(5)
Helicopter noise ranges	14-9	(5)
Onsite monitoring	14-10 through 14-13	(1)(2)(5)(12)

Items numbered 14-7 and 14-11 are not Army Reserve applicable and are not included in this manual.

(a) CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager
- (5) Directorate of Engineering and Housing (DEH)/DPW
- (12) Environmental Coordinator (EC)

NOISE ABATEMENT

Plans and Maps to Review

- Facility Master Plan Document
- Contour maps (if applicable)

Records to Review

- Complaint log from local community and followup documentation
- ICUZ Committee Charter
- ICUZ reports and studies
- ICUZ Committee Meeting Minutes
- ICUZ Committee Membership List

Physical Features to Examine

- Power generating equipment
- Emergency generators
- Test tracks
- Industrial facilities
- Ranges
- Airfields/Heliports/Helipads
- Areas of noise/land use conflict
- Vehicle motor parks
- Rock quarries

People to Interview

- MUSARC Engineer/Facility Coordinator
- Facility Manager
- Directorate of Engineering and Housing (DEH)/DPW
- Environmental Coordinator (EC)
- BASOPs ARCOM Environmental Managers

**COMPLIANCE CATEGORY:
NOISE ABATEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ALL FACILITIES</p> <p>14-1. Determine actions or changes since previous review (GMP).</p> <p align="center">...</p> <p>14-2. Copies of all relevant Federal regulations, DOD and U.S. Army directives and guidance documents on noise management should be maintained at the facility (GMP).</p> <p align="center">...</p> <p>14-3. Facilities are required to comply with state and local requirements (EO 12088, Section 1-1).</p> <p align="center">...</p>	<p>Examine copy of previous review report to determine if noncompliance issues have been resolved. (5)</p> <p align="center">...</p> <p>Determine whether copies of following documents, which are applicable, are maintained and kept current at the ARCOM or Support Facility: (5)</p> <ul style="list-style-type: none"> - EO 12088, <i>Federal Compliance with Pollution Standards.</i> - DOD Instruction 4165.57, <i>Air Installation Compatible Use Zones.</i> - DOD Instruction 5100.5, <i>Protection and Enhancement of Environmental Quality.</i> - AR 95-1, <i>Army Aviation: Flight Regulations.</i> - AR 200-1, <i>Environmental Protection and Enhancement.</i> - AR 200-2, <i>Environmental Effects of Army Actions.</i> - AR 210-70, <i>Intergovernmental Coordination of DOD Federal Development Program and Activities.</i> - DA memorandum from Director of Army Staff, <i>Installation Compatible Use Noise Zone Program Implementation</i>, 20 January 1983. - DA memorandum from Director of Army Staff, <i>Installation Compatible Use Noise Zone Program Implementation</i>, 14 July 1987. - TM 5-803-2, <i>Planning in the Noise Environment.</i> - Applicable state and local regulations. <p align="center">...</p> <p>Verify that the facility is complying with state and local requirements. (5)(12)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (5)(12)</p> <p>(NOTE: Issues which are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - motor vehicle noise - construction noise - community impact.) <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC)

**COMPLIANCE CATEGORY:
NOISE ABATEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>14-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, reoccurrence of noncompliance and that precludes NOV's, letters of citation, promotes good public relations and addresses systemic weakness in the overall operation of the program (GMP).</p> <p align="center">...</p> <p>14-5. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p align="center">...</p>	<p>Determine what management systems are in place. (1)</p> <p>Verify that the existing system addresses the issues associated with noise abatement by: (1)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p>Determine if training is being conducted. (1)</p> <p align="center">...</p> <p>Determine if any new regulations concerning environmental noise have been issued since the finalization of the manual. (1)</p> <p>Verify that the facility is in compliance with newly issued regulations. (1)</p> <p>(NOTE: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
NOISE ABATEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ICUZ</p> <p>14-6. Facilities are required to conduct an ICUZ study as a part of the ICUZ Program to identify and control noise (AR 200-1, para 7-2c, 7-2d and para 7-5a).</p> <p>...</p> <p>14-7.</p> <p>...</p>	<p>Determine if an initial ICUZ study was completed. (5)(12)</p> <p>Verify the facility's ICUZ study to confirm that it includes the following minimum components: (5)(12)</p> <ul style="list-style-type: none"> - current noise zone maps of the facility's existing and future noise environment - A-weighted day-night sound levels for transportation related noise - C-weighted day-night sound levels for large amplitude impulsive noise - at a minimum, the zones I, II, and III are shown - analysis of land use compatibility problems and solutions to include: <ul style="list-style-type: none"> - identification of existing incompatible land uses within zones II and III - identification of possible incompatible land uses within zones II and III - identification of desirable land uses within zones II and III - ICUZ public involvement plan - review of facility master plans to ensure that existing and future facility siting is consistent with the noise environment - identification of noise sources that create impact; investigation of possible mitigations; programming of resources to reduce noise impacts. <p>Verify that, where impacts exist offpost: (5)(12)</p> <ul style="list-style-type: none"> - land use documents of surrounding jurisdictions acknowledge and incorporate military noise assessments - military noise contours have been formally recorded and/or published in appropriate newspapers or other communications media. <p>Verify that the ICUZ study is being updated at least every 5 years (yr), or whenever significant noise producing operations change. (5)</p> <p>Verify that ICUZ regulations are integrated with AR planning regulations under AR 200-2. (5)</p> <p>(NOTE: Facilities without significant noise sources, such as ranges, airfields, or industrial operations, are exempt from this requirement and must prepare a single page ICUZ statement of negligible impact (AR 200-1, para 7-5g and i(3)).)</p> <p>(NOTE: Refer to Appendices 14-1 and 14-2 for further information.)</p> <p>...</p> <p>This item is not Army Reserve applicable.</p> <p>...</p>

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**COMPLIANCE CATEGORY:
NOISE ABATEMENT
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

LAND USE

14-8. Facilities should adequately address existing and potential land use conflicts (GMP).

...

**HELICOPTER NOISE
RANGES**

14-9. Assessment of helicopter noise must include a distance factor and specific factor to account for the special character of helicopter noise (AR 200-1, para 7-5c(2)).

...

Tour areas adjacent to facility boundaries and verify land use compatibility. (5)

Determine if there is a potential for a change in existing compatible land uses (i.e., installation of infrastructure). (5)

(NCTE: A recommendation for further study will usually be appropriate since noise measurements usually will not be available to the evaluator.)

...

Verify that the following dB factors are included in the assessment of helicopter noise at the facility: (5)

Slant distance(m)	Factor(dB)
0-200	7
200-300	5
300-400	3
400-500	1
500 +	0

Verify that if helicopters or other impulse noise sources that have frequency energy sufficient to rattle windows or other building elements are present at the facility, that two sets of noise zone maps are developed, one with and one without the penalty factors listed above that will illustrate areas where rattle-proofing techniques should be used as a mitigative technique in existing facilities and new construction. (5)

...

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**COMPLIANCE CATEGORY:
NOISE ABATEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ONSITE MONITORING</p> <p>14-10. Facilities are required to attempt to minimize environmental noise (AR 200-1, para 7-2e).</p> <p align="center">...</p> <p>14-11.</p> <p align="center">...</p>	<p>Determine whether or not noise levels are being reduced using: (5)</p> <ul style="list-style-type: none"> - noise reduction engineering - administrative and operational controls - appropriate siting and design of facilities and ranges - development and procurement of weapons systems and other military combat equipment that produces less noise - procurement of commercially manufactured products that produce less noise - appropriate land use controls including: <ul style="list-style-type: none"> - assisting in the development of protective off-post land use planning - assisting in the development of protective off-post structural requirements to mitigate noise impacts - controlling land use through easements - developing protective onpost land use planning - developing protective onpost structural requirements to mitigate noise impacts. <p align="center">...</p> <p>This item is not Army Reserve applicable.</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
NOISE ABATEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>14-12. Facilities are required to maintain operational data on noise producing activities (AR 200-1, para 7-5f).</p> <p align="center">...</p>	<p>Verify that noise operational data required to develop noise contour maps are being maintained including: (5)</p> <ul style="list-style-type: none"> - for impulsive noise (25 millimeter (mm) or greater) <ul style="list-style-type: none"> - location of firing points - location of target areas - number of rounds fired at each firing point by type and time of day - propellant change to each target - for aircraft noise <ul style="list-style-type: none"> - flight track location - altitude of aircraft along flight track - number of operations along each flight track by type of aircraft and time of day - for small arms noise <ul style="list-style-type: none"> - location of range - location of firing points - direction of firing - type of small arm/weapon fired. <p>Verify that operational data covers 1 yr. (5)</p> <p align="center">...</p>
<p>14-13. Facilities must institute a noise complaint procedure (AR 200-1, para 7-3).</p>	<p>Verify that a noise complaint procedure has been instituted that ensures the following: (1)(2)(5)(12)</p> <ul style="list-style-type: none"> - a log is maintained of all noise complaints - complaints are investigated without delay - copies of complaints are routed to the office responsible for the type of activity that resulted in the noise complaint - PAO responds to the complaint. <p>Verify that noise-generating activity responds to PAO concerning all complaints and does a follow-up by identifying the cause of the noise and any action taken to correct the deficiency. (1)(2)(5)(12)</p> <p>Verify that ICUZ committee is provided with a copy of the complaint and follow-up. (1)(2)(5)(12)</p>

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Appendix 14-1

Noise Zones in Noise Zone Maps

ICUZ Zone	Percent Population Highly Annoyed	A-weighted Day-Night Sound Level ADNL (dB)	C-weighted Day-Night Sound Level CDNL (dB)
I	< 15	< 65	< 62
II	15 - 39	65 - 75	62 - 70
III	> 39	> 75	> 70

Appendix 14-2

Calculation of dB Factor to be Added to Helicopter Sound Exposure Levels

Slant Distance (m)	Factor (dB)
0-200	7
200-300	5
300-400	3
400-500	1
500 and longer	0

INSTALLATION:	COMPLIANCE CATEGORY: NOISE ABATEMENT ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC)

Section 15

RADON PROGRAM

SECTION 15

RADON PROGRAM

A. Applicability of this Protocol

This protocol applies to all Army Reserve facilities. Currently this section contains protocols for radon gas. Radon Program protocols are written in response to the Federal regulations that are applicable to the conduct of activities involving these programs.

Specific state regulations are not included in this protocol. However, an outline of the typical contents of such regulations is provided.

The Radon Program protocol is used to determine the compliance status of the management activities associated with the Army Radon Reduction Program (ARRP).

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 national long-term goal of the United States with respect to radon levels in buildings 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 a 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 U.S. Environmental Protection Agency (USEPA).

Such study must be completed and reported by the head of each Federal department or agency to the USEPA no later than 1 June 1990 (15 USC 2669(a)(c)(e)).

- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*, of 13 October 1978, requires Federally-owned and operated facilities to comply

with applicable pollution control standards. It makes the head of each executive agency responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to Federal facilities and activities. In addition, the EO requires the head of each agency to ensure that sufficient funds for compliance with the applicable environmental standards are requested in the agency budget.

C. State/Local Requirements

State and local governments may enact radon control standards.

D. Department of Defense (DOD) Regulations

- None.

E. U.S. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, Chapter 11, *Army Radon Reduction Program (ARRP)*, describes policy and procedures for assessing indoor levels of radon and mitigating radon in structures where the levels are elevated. The program is decentralized; that is, each facility is responsible for funding, executing, documenting, and managing the radon monitoring and mitigation efforts based on ARRP.

F. Key Compliance Requirements

ARRP applies to all major Army Reserve facilities. The program is designed to assess radon levels on a priority basis using the following priority list in family housing, administrative buildings (offices), dormitories, child care facilities, temporary lodging facilities, etc. Detailed assessments will be accomplished at the facilities where initial screening results identify a radon problem. Following mitigation, post mitigation assessments are conducted to ensure the effectiveness of the mitigation actions. Mitigation actions are prioritized using the table below:

- Priority 1: Day care centers, hospitals, schools, and living areas (that is, quarters, unaccompanied personnel housing, and billets).
- Priority 2: Areas having 24 hour (h) operations, such as operations centers and training and research, development, test, and evaluating (RDTE) facilities.
- Priority 3: All other routinely occupied structures.

MITIGATION TIME FRAME
(AR 200-1, Chapter 11-3, Table 11-1)

Radon Level picoCuries per liter (pCi/L)	Mitigate:
Greater than 200 ¹	1 month (mo) or move the occupants
200-20 ¹	6 mo
20-8 ²	1-4 years (yr) ³
8-4 ²	5 y
4 or less ¹	No action required

¹Determine by 90-day screen or a 1 yr measurement in the case of Priority 2 and 3 structures.

²Annual average determined by 1 yr measurement. Screening measurements in this range will not be used as the basis for initiating mitigation actions.

³Depending on the level of the measurement.

G. Key Compliance Definitions

These definitions were obtained from Army, DOD, and compliance regulations cited previously in this protocol.

- *Army Radon Reduction Program (ARRP)* - a program whose objectives include the identification of structures owned and leased by the Army (Continental United States (CONUS) and Outside the Continental United States (OCONUS)) that have indoor radon levels greater than 4 pCi/L of air and the modifications of those buildings found with excess levels of radon (AR 200-1, Chapter 11).
- *Facility* - buildings, structures, public works, equipment, aircraft, vessels, and other vehicles and property under control of, or constructed or manufactured for leasing to the Army (AR 200-1, Glossary, Section 2).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Industrial Installation* - an installation that has the primary mission of producing, maintaining, or rehabilitating military material (AR 200-1, Glossary, Section 2).
- *Lowest Living Area (LLA)* - is defined as follows:
 1. for structures without subsurface areas, the LLA is the ground floor
 2. for structures with subsurface areas, the LLA is defined as the lowest area in that structure that has a finished, hard surface floor (for example, concrete or tiled) that is or could be used. A dirt breezeway is not an LLA, but an unfinished basement with a concrete floor is, regardless of what the current occupants are using the area for (AR 200-1, para 11-5a).
- *Radon-222* - a naturally occurring, inert, radioactive gas that is formed from the radioactive decay of uranium (AR 200-1, para 11-3).

RADON PROGRAM
GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All facilities	15-1 through 15-16	(1)(2)(5)(12)

(a)CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager
- (5) Directorate of Engineering and Housing (DEH)/DPW
- (12) Environmental Coordinator (EC)

RADON PROGRAM

Plans and Maps to Review

- None.

Records to Review

- Annual reports
- Inventory sheets for detector placement

People to Interview

- MUSARC Engineer/Facility Coordinator
- Facility Manager
- Directorate of Engineering and Housing (DEH)/DPW
- Environmental Coordinator (EC)
- BASOPs ARCOM Environmental Managers

**COMPLIANCE CATEGORY:
RADON PROGRAM
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

ALL FACILITIES

15-1. Determine actions or changes since previous review (GMP).

Examine copy of previous review report to determine if noncompliance issues have been resolved. (1)(2)(5)

Determine facility changes relative to radon gas monitoring that have occurred since previous review and would affect the scope of the current review. Examples of changes are: (1)(2)(5)

- new construction
- additions to existing buildings
- changes in building use.

...

...

15-2. The facility should maintain and keep current regulations regarding radon gas management (GMP).

Determine if copies of the following regulations, which are applicable, are available at the ARCOM or Support Installation: (1)(2)

- EO 12088, *Federal Compliance with Pollution Standards.*
- AR 200-1, Chapter 11, *Army Radon Reduction Program.*
- Applicable state and local regulations.

...

...

15-3. Facilities are required to comply with applicable state and local requirements (EO 12088, Section 1-1).

Verify that the facility is complying with applicable state and local requirements. (2)(12)

Verify that the facility is operating according to permits issued by the state or local agencies. (2)(12)

...

...

15-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, reoccurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation, promotes good public relations and addresses systemic weakness in the overall operation of the program (GMP).

Determine what management systems are in place. (2)(12)

Verify that the existing system addresses the issues associated with radon by: (2)(12)

- interviewing personnel
- reviewing paperwork
- observing the operation or activity.

Determine if training is being conducted. (2)(12)

...

...

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC)

**COMPLIANCE CATEGORY:
RADON PROGRAM
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>15-5. Army Reserve Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p align="center">...</p>	<p>Determine if any new regulations concerning radon have been issued since the finalization of the manual. (2)(12)</p> <p>Verify that the facility is in compliance with newly issued regulations. (2)(12)</p> <p>(NOTE: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p align="center">...</p>
<p>15-6. All Army Reserve facilities are required to perform radon measurement according to a prescribed prioritized schedule in order to identify Army Reserve structures with radon levels above 4 pCi/L with emphasis on identifying Priority 1 structures with levels greater than 20 pCi/L (AR 200-1, para 11-2a(3), 11-4).</p> <p align="center">...</p>	<p>Verify that the scheduled radon measurement has been performed as follows: (1)(2)(5)(12)</p> <ul style="list-style-type: none"> - Priority 1: day care centers, hospitals, schools, and living areas - Priority 2: areas having 24 h operations, such as operations centers, and training and RDTE facilities - Priority 3: all other routinely occupied structures. <p>(NOTE: Priority 2 and 3 structures will be measured for radon depending on the results of the initial phase measurements for Priority 1 structures.)</p> <p>(NOTE: Leased buildings will be measured for radon, although remedial action is the responsibility of the owner.)</p> <p>Verify that all initial radon measurement has been completed by the 4th quarter of fiscal year 1991 (FY91). (1)(2)(5)(12)</p> <p>Verify that records are prepared and maintained of all radon measurement results. (1)(2)(5)(12)</p> <p align="center">...</p>
<p>15-7. Initial phase measurement of Priority 1 structures is required to be done according to specific standards (AR 200-1, para 11-5a).</p> <p align="center">...</p>	<p>Determine if all Priority 1 buildings at the facility have had an initial screening that met the following requirements: (1)(2)</p> <ul style="list-style-type: none"> - radon detectors were in place for 90 days - detectors were placed in the lowest living area - radon detection was performed when buildings were closed (usually during winter or summer when windows and doors are shut due to heating or cooling). <p align="center">...</p>

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**COMPLIANCE CATEGORY:
RADON PROGRAM
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>15-8. Long-term measurements for radon are required to be done according to specific methodology (AR 200-1, para 11-5b(1)).</p> <p align="center">...</p>	<p>Verify that long term measurement uses alpha track-type radon detectors for a 1 yr period under normal living conditions to establish an annual radon concentration. (1)(2)(5)</p> <p align="center">...</p>
<p>15-9. LTM for radon is required for Priority 2 and 3 structures if the results of the initial phase measurements of Priority 1 structures indicated radon concentrations greater than 4 pCi/L (AR 200-1, para 11-5b(2)).</p> <p align="center">...</p>	<p>Determine if any Priority 1 structures on the facility had a radon level of greater than 4 pCi/L. (1)(2)(5)</p> <p>Verify that if any Priority 1 structures on the facility had radon measurements of greater than 4 pCi/L, long term measurement for radon is performed on all Priority 2 and 3 structures. (1)(2)(5)</p> <p align="center">...</p>
<p>15-10. When Priority 1 structures have radon levels of less than 4 pCi/L, but the conditions suggest that some Priority 2 and 3 structures may have higher levels, long term measurements for radon levels are required (AR 200-1, para 11-5b(2)).</p> <p align="center">...</p>	<p>Verify that if all Priority 1 structures have less than or equal to 4 pCi/L, but the conditions suggest that some Priority 2 and 3 structures may have levels higher than 4 pCi/L radon, long term measurements for radon is done in Priority 2 and 3 structures. (1)(2)</p> <p align="center">...</p>
<p>15-11. Long-term measurement of Priority 1 structures where the initial radon level measurement was above 4 and less than 20 pCi/L must be done according to specific procedures (AR 200-1, para 11-5b(3), and 11-6a).</p> <p align="center">...</p>	<p>Determine whether Priority 1 buildings with an initial level of indoor radon of greater than or equal to 4 pCi/L but less than or equal to 20 pCi/L have undergone long term measurement as follows prior to mitigation: (1)(2)</p> <ul style="list-style-type: none"> - single family structures: one detector in the LLA; if LLA is a basement, a second detector on the first floor - multiple family structures: one detector in LLA; if LLA is common open area, one detector for every 2000 sq ft of area in LLA and one per apartment in floor above basement - office buildings and warehouses: one detector for every 2000 sq ft in the LLA. <p align="center">...</p>

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COMPLIANCE CATEGORY: RADON PROGRAM ECAAR	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>15-12. Facilities are required to perform mitigation of structures required by measured results (AR 200-1, Table 11-1).</p> <p style="text-align: center;">...</p> <p>15-13. Facilities are required to perform post-mitigation measurement to confirm and document effectiveness of mitigation (AR 200-1, para 11-5c).</p> <p style="text-align: center;">...</p>	<p>Verify that the schedule for mitigation is complied with as follows (see Appendix 15-1): (1)(2)(5)</p> <ul style="list-style-type: none"> - buildings with indoor radon level of greater than or equal to 4 pCi/L but less than or equal to 20 pCi/L have been mitigated according to the following schedule, based on the 12 month (mo) long term measurement results for the buildings: <ul style="list-style-type: none"> - 4 pCi/L or less - no action taken - 4 - 8 pCi/L - mitigation completed within 5 yr - 8 - 20 pCi/L - mitigation completed within 1-4 yr, depending on the level of the measurement - buildings with initial or long term radon measurement levels that are greater than 20 pCi/L have been mitigated according to the following schedule: <ul style="list-style-type: none"> - 20 - 200 pCi/L - remedial action completed within 6 mo - greater than 200 pCi/L - remedial action completed within 30 days. If remedial action cannot reduce radon levels within 30 days, occupants must be relocated. <p style="text-align: center;">...</p> <p>Verify that the following procedures are followed for structures with greater than or equal to 20 pCi/L radon: (1)(2)(5)(12)</p> <ul style="list-style-type: none"> - charcoal canister-type detectors are used to provide rapid results (within days) - measurement are made under closed-house/worst-case conditions to initially verify mitigation effectiveness. <p>Verify mitigation efficacy using long-term (1 yr) measurement with Alpha track-type detectors, once levels are below established standards using rapid monitoring techniques. (1)(2)(5)(12)</p> <p>(NOTE: For structures greater than 20 pCi/L before mitigation, occupants may be returned to quarters based on acceptable levels from rapid monitoring.)</p> <p>Verify that the following postmitigation procedures are followed for structures with less than 20 but greater than or equal to 8 pCi/L: (1)(2)(5)(12)</p> <ul style="list-style-type: none"> - detectors that provide results within 90 days or sooner for worst-case, closed-house conditions are used - once radon levels are below established standards using the above method, verification of mitigation will be assessed using long term (1 yr) measurements. <p>(NOTE: Structures with less than 8 but greater than 4 pCi/L may use detectors that provide results in 90 - 180 days under worst-case, closed-house conditions for verification.)</p> <p style="text-align: center;">...</p>

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**COMPLIANCE CATEGORY:
RADON PROGRAM
ECAAR**

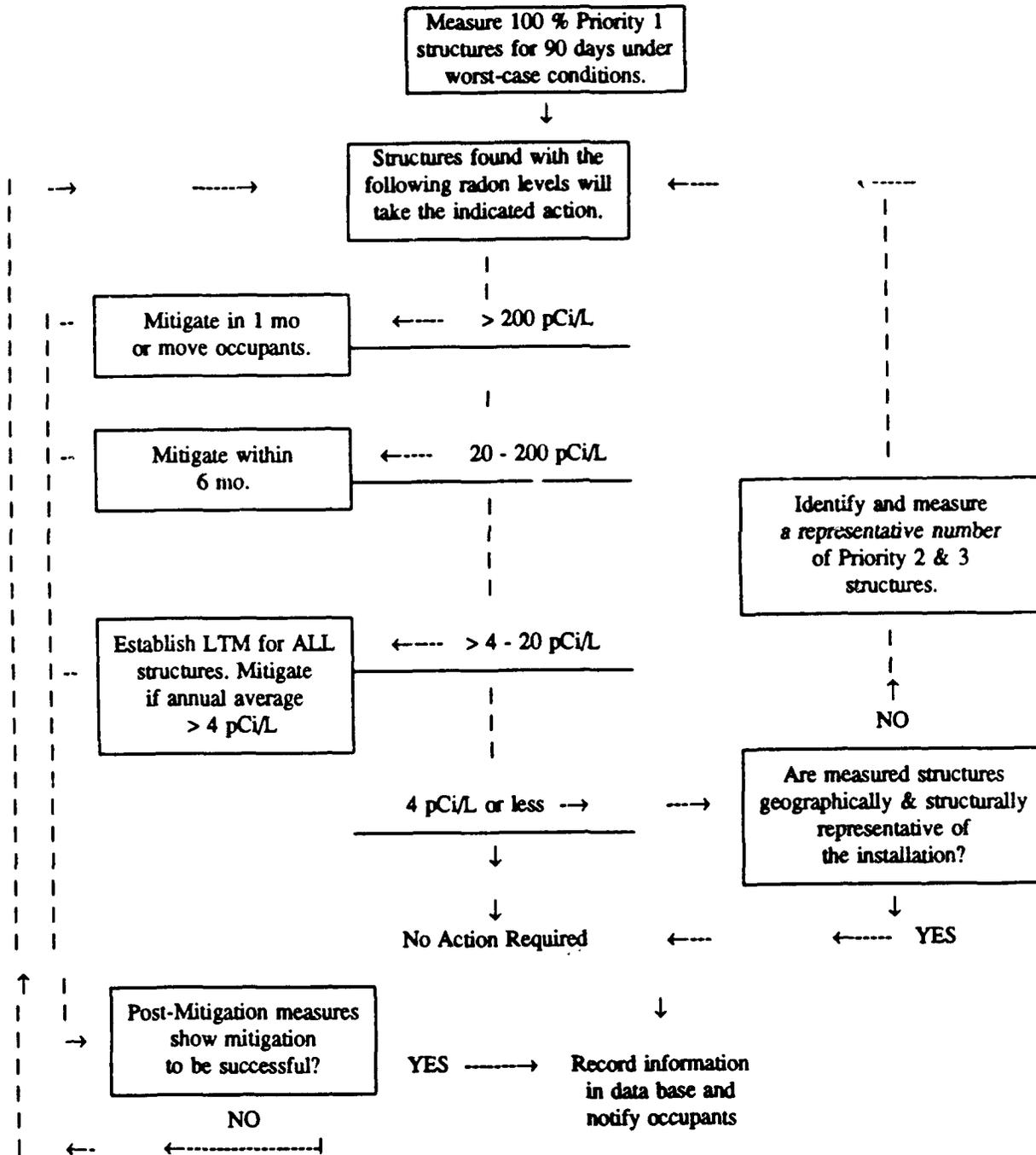
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>15-14. Facilities are required to take steps to keep radon levels at or below 4 pCi/L (AR 200-1, para 11-1b(2)).</p> <p align="center">...</p> <p>15-15. Annual reports must be prepared and submitted (AR 200-1, para 1-22j(2) and 11-6d(2)).</p> <p align="center">...</p> <p>15-16. Facilities are required to maintain or have access to a database that will permanently capture all the information derived from the assessment and mitigation of radon (AR 200-1, para 11-2b(1)(g) and 11-6d(1)).</p>	<p>Determine whether the facility has modified owned structures so that levels are kept at or below 4 pCi/L. (1)(2)(5)</p> <p>Verify that in new construction: (1)(2)(5)(12)</p> <ul style="list-style-type: none"> - preventive measures have been incorporated to reduce radon migration - radon level is being measured. <p align="center">...</p> <p>Obtain a copy of the annual report and review it for the following: (1)(2)(5)(12)</p> <ul style="list-style-type: none"> - number of structures at the facility - number of structures measured for radon - number of buildings with radon measurements <ul style="list-style-type: none"> - greater than 200 pCi/L - 20 - 200 pCi/L - 8 - 20 pCi/L - 4 - 8 pCi/L - equal to or less than 4 pCi/L - number of buildings mitigated - highest level of radon recorded at facility. <p>Verify that at the end of each fiscal year the annual report is submitted to Major Army Command (MACOM). (1)(2)(5)(12)</p> <p align="center">...</p> <p>Verify that facility maintains or has access to a database. (1)(2)(5)(12)</p> <p>Verify that all radon information is contained in a database. (1)(2)(5)</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC)

Appendix 15-1

Schematic Flow Chart of the Actions Required

By the Army Radon Reduction Program



INSTALLATION:	COMPLIANCE CATEGORY: RADON PROGRAM ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC)

Section 16

ENVIRONMENTAL PROGRAM MANAGEMENT

SECTION 16

ENVIRONMENTAL PROGRAM MANAGEMENT (EPM)

A. Applicability of this Protocol

This protocol applies to all Army Reserve facilities. Currently, this section contains protocols for EPM activities, including the A-106 Pollution Abatement Plan. (This document is more widely known as the RCS 1383 Report.) The EPM protocol is written in response to the Federal, Department of Defense (DOD), and Army regulations (ARs) applicable to the conduct of activities involving these programs. This section is designed to evaluate and examine the interaction within the Environmental Office, and the Directorate of Engineering and Housing (DEH), and interface with other Directorates/Installation Activities and applicable Major Army Commands (MACOMs).

Specific state regulations are not included in this protocol.

B. Federal Legislation

This section contains policy for management of the environmental programs described in previous sections. The controlling legislation for the various management activities is referenced in the appropriate sections. Only the A-106 Pollution Abatement Plan is included here.

- A-106 Pollution Abatement Plan/RCS 1383 Report

Office of Management and Budget (OMB) Circular A-106 implements the requirement in Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*, for assuring that Federal agencies, facilities, programs, and activities meet Federal, state, and local environmental requirements or to correct situations that are not in compliance with such regulations.

- EO 12088, *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 and 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.

- RCS 1485, *Report/Army Compliance Tracking System*. Section 352 of the 1990 *Defense Authorization Act* (Public Law (PL) 101-189) became the ECS 1485 Report in the Army. Originally known as the Defense Environmental Status Report (DESR), it was renamed the Defense Environmental System (DEMIS) Report in August 1990. The Army DEMIS submission is compiled at HQ DA based on installation entries in the Army Compliance Tracking Systems (ACTS), instituted in 1991. ACTS and DEMIS indicate regulatory agency activities at the installation level, particularly Notices of Violation (NOVs) and other issuances requiring formal responses.

C. State/Local Requirements

- A-106 Pollution Abatement Plan/RCS 1383 Report
- There are no state- or local-specific requirements.

D. DOD Regulations

- None.

E. U.S. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, and AR 200-2, *Environmental Effects of Army Actions*, together establish Army environmental policy. AR 200-1, includes requirements for environmental compliance, auditing, reports, the establishment of Environmental Quality Control Councils (EQCCs) and Technical Review Committees (TRCs), making environmental agreements, and regulations on property transactions and construction sites.
- AR 200-2, *Environmental Effects of Army Actions*, incorporates the requirements of the National Environmental Policy Act (NEPA) (40 CFR 1500-1508), and DOD Directive 6050.1, *Environmental Effects in the United States of DOD Actions*. Provisions for NEPA compliance are included in Section 12 of this manual.
- AR 200-1, *Environmental Protection and Enhancement*, briefly outlines the A-106 procedure. The United States Army Environmental Center (USAEC), in

coordination with the Army Environmental Office, sends detailed technical guidance to the MACOMs for the collection and processing of information required for the report. This includes a listing of pollutant categories, for which A-106/RCS 1383 reports should be filed. Facility commanders are responsible for ensuring that their A-106/ RCS 1383 reports are prepared jointly by the facility's engineering and environmental staffs and resource managers, in consultation with United States Environmental Protection Agency (USEPA). AR 200-1 also briefly discusses the RCS 1485 Report. Facilities submit input via ACTS for HQDA rollup into the DEMIS Report.

F. Key Compliance Requirements

- A-106 Pollution Abatement Program/RCS 1383 Report

The A-106/RCS 1383 report is required for all Army installations.

- RCS 1485, *Report/Army Compliance Tracking System (ACTS)*.

RCS 1485 input is required for all installations via ACTS input submissions.

G. Key Compliance Definitions

These definitions were obtained from Army, DOD, and compliance regulations cited previously or provided by USAEC.

- *Class I* - includes projects required to meet the provisions of assigned compliance agreement or consent order; projects required to correct deficiencies found on an USEPA or state inspection; other projects needed to come into compliance when statutory/regulatory deadlines have passed.
- *Class II* - includes those projects needed to meet future compliance deadlines for which planning must have already started.
- *Class III* - includes all other projects which while important are not related to imminent compliance requirements.
- *Compliance Status* - a four letter code identifying the current compliance status of the pollution source for which a project is being funded:
 - CMPA, Compliance Agreement: Required to meet conditions of a signed Federal Facility Compliance Agreement, Consent Order or equivalent state or local enforcement action. Project Assessment value: HIGH.

- INOV, Inspection/Notice of Violation: Required to meet deficiencies found on inspection by regulatory authority or cited in a Notices of Violation (NOV) or equivalent. Project Assessment value: HIGH.
 - ESDP, Established Standard, Deadline Passed: Does not meet established standard and compliance deadline has passed. Project Assessment value: HIGH.
 - ESDF, Established Standard, Deadline Future: Does not meet established standard and compliance deadline is in the future.
 - PSDF, Pending Standard, Deadline Future: Does not meet pending standard and compliance deadline is in the future.
 - ESRO, Established Standard, Replacement for Obsolescence: Meets established standard but needs replacement due to need for obsolescence.
 - ESRE, Established Standard, Replacement of Expansion: Meets established standard but needs replacement due to need for expansion.
 - ESDL, Established Standard, Demonstrates Leadership: Meets established standard but needs to demonstrate leadership.
 - OTHR: Other. Projects which do not fit any of the above categories.
- *Cost* - the amount of funds required to put in place the necessary environmental protection measures, irrespective of the appropriation chargeable.
 - *Environmental Agreement* - includes, but is not limited to, consent orders, consent agreements, compliance agreements, memorandum of agreement, memorandum of understanding, Interagency Agreements (LAGs), Federal Facility Compliance Agreements (FFCAs) (AR 200-1, para 12-6b).
 - *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures or successful compliance
 - *Practicable* - capable of being used in accordance with applicable specifications, available at a reasonable price and within a reasonable time-frame, and with the maintenance of a satisfactory level of competition.
 - *Preliminary Assessment Screening* - a compressed preliminary assessment used when certain real estate transactions are proposed.
 - *Procuring Agency* - all Federal agencies, or any state agency, or agency of a political subdivision of a state, that is using appropriated Federal funds for such procurement, or any person contracting with any such agency with respect to work performed under such a contract.

ENVIRONMENTAL PROGRAM MANAGEMENT (EPM)
GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
Documentation	16-1 through 16-4	(1)(5)(12)
All facilities	16-5 through 16-12	(5)(12)(21)
Procurement of Goods	16-13	(5)(12)
Environmental Agreements	16-14	(5)(12)
A-106 Pollution Abatement Plan RCS 1383 Reports, and ACTS	16-15 through 16-20	(5)(12)(21)
Construction	16-21	(5)(12)
Real Property Transactions	16-22 and 16-23	(5)(12)
Support Requirements	16-24	(5)(12)
Reserve Specific	16-25 and 16-26	(1)(5)(12)

Item number 16-7 is not Army Reserve applicable and is not included in this manual.

(a) CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (5) Directorate of Engineering and Housing (DEH)/DPW
- (12) Environmental Coordinator (EC)
- (21) Public Affairs Office (PAO)

ENVIRONMENTAL PROGRAM MANAGEMENT (EPM)

Plans and Maps to Review

- A-106 pollution abatement plan/RCS 1383 reports
- Annual Work Plan (Environmental)

Records to Review

- Record of previous environmental compliance assessments
- Environmental agreements
- Preliminary Assessment Screening (PAS)
- NOV's submitted
- Command Operating Budget (COB)
- Unfinanced Requirements Report (UFR)
- 1485/DEMIS Report/ACTS
- Spill logs/reports

People to Interview

- MUSARC Engineer/Facility Coordinator
- Directorate of Engineering and Housing (DEH)/DPW
- Environmental Coordinator (EC)
- Public Affairs Office (PAO)
- BASOPs ARCOM Environmental Managers

**COMPLIANCE CATEGORY:
ENVIRONMENTAL PROGRAM MANAGEMENT (EPM)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>DOCUMENTATION</p> <p>16-1. Determine actions or changes since previous review (GMP).</p> <p style="text-align: center;">...</p> <p>16-2. Copies of all relevant Federal, DOD, Army, and state/local regulations should be maintained at the facility (GMP).</p> <p style="text-align: center;">...</p> <p>16-3. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, reoccurrence of noncompliance and that precludes NOV's, letters of citation, promotes good public relations and addresses systemic weakness in the overall operation is the program (GMP).</p> <p style="text-align: center;">...</p> <p>16-4. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p style="text-align: center;">...</p>	<p>Examine copy of previous review report to determine whether noncompliance issues have been resolved. (5)(12)</p> <p style="text-align: center;">...</p> <p>Verify that copies of the following regulations are maintained on the facility: (5)(12)</p> <ul style="list-style-type: none"> - EO 12088, <i>Federal Compliance with Pollution Standards.</i> - AR 200-1, <i>Environmental Protection and Enhancement.</i> - AR 200-2, <i>Environmental Effects of Army Actions.</i> - Applicable state and local regulations. <p style="text-align: center;">...</p> <p>Verify that the facility managers maintain the following: (5)(12)</p> <ul style="list-style-type: none"> - AR 200-1 - AR 200-2 - Commanders Guide to Environmental Management. <p>Determine what management systems are in place. (5)(12)</p> <p>Verify that the existing system addresses the issues associated with environmental program management by: (5)(12)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p style="text-align: center;">...</p> <p>Determine if any new regulations concerning environmental program management have been issued since the finalization of the manual. (1)</p> <p>Verify that the facility is in compliance with newly issued regulations or will be by the compliance deadline. (1)</p> <p>(NOTE: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p style="text-align: center;">...</p>

(1) MUSARC Engineer/Facility Coordinator (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO)

**COMPLIANCE CATEGORY:
ENVIRONMENTAL PROGRAM MANAGEMENT (EPM)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ALL FACILITIES</p> <p>16-5. Facilities are required to comply with applicable state and local regulations (AR 200-1, para 1-39a(3)).</p> <p align="center">...</p> <p>16-6. Each facility is required to request sufficient funding and staffing to perform the required environmental compliance activities (AR 200-1).</p> <p align="center">...</p> <p>16-7.</p> <p align="center">...</p> <p>16-8. Facility personnel involved in environmental affairs should receive the necessary environmental training (GMP).</p>	<p>Verify that the facility is complying with state and local requirements as appropriate. (5)(12)</p> <p>(NOTE: Issues which are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - procurement of goods (recycled material content) - NOVs - environmental agreements - Federal Facilities Compliance Agreements (FFCA.) <p align="center">...</p> <p>Verify that adequate/current Schedule Xs are prepared and submitted to DRM/DPTMSEC (Force Development) to obtain necessary staffing to support environmental program requirements. (5)(12)</p> <p>Verify that adequate/current job descriptions and grade classifications are prepared and submitted to CPO for classification and recruitment to obtain required personnel staffing and supporting grades. (5)(12)</p> <p>Examine the number of environmental staff versus the number of environmental subprograms the office must manage. If the ratio of personnel to programs exceeds 1:3, potential exists for staffing deficiencies. (5)(12)</p> <p>Verify that adequate projects and programs are described in RCS 1383 Reports to justify funding submissions. (5)</p> <p>Verify that installation budget requests contain VENC and DERA identified submissions supported by NCS 1383 identified entries. (5)</p> <p align="center">...</p> <p>This item is not Army Reserve applicable.</p> <p align="center">...</p> <p>Check with Environmental Coordinator (EC) to determine what training is being conducted. Types of personnel who should receive training, and kinds of training include: (12)</p> <ul style="list-style-type: none"> - environmental staff members (program management plus specialized training as required) - command staff (environmental awareness) - troops (garrison units, AT - USAR/ARNG) (environmental awareness plus specialized training as required) - installation managers (environmental awareness plus specialized training as required) - civilians (specialized training as required). <p>Verify that troop units incorporate environmental training in the routine training plans (active garrison units and those at USARCs). (12)</p>

(1) MUSARC Engineer/Facility Coordinator (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO)

**COMPLIANCE CATEGORY:
ENVIRONMENTAL PROGRAM MANAGEMENT (EPM)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>16-9. Environmental compliance information should be incorporated into the DEMIS via ACTS (GMP).</p> <p align="center">...</p>	<p>Verify that DEMIS is regularly updated. (12)</p> <p>Verify that semi-annual submission suspenses are being met. (12)</p> <p align="center">...</p>
<p>16-10. Environmental compliance assessments will be undertaken in accordance with ARs (AR 200-1, para 12-8).</p> <p align="center">...</p>	<p>Verify that the facility authorizes an external assessment not less frequently than once every 4 years (yr). (5)(12)</p> <p>Verify that the facility develops a corrective action management plan to correct the deficiencies identified in the external assessment, and that the plan is updated annually (see Appendix 16-1). (5)(12)</p> <p>Verify that the facility performs an internal assessment at the mid-point between external reviews. Internal assessments will be conducted per this manual. (5)(12)</p> <p>(NOTE: Internal assessments may be conducted by in-house staff or contracted.)</p> <p align="center">...</p>
<p>16-11. Noncompliance and violations must be reported to proper offices within established time-lines (AR 200-1, para 12-7a and 12(b) through 12(d)).</p> <p align="center">...</p>	<p>Verify that the commander of any facility, activity, or unit who receives notice of noncompliance or violation, or is, or will be unable to comply with applicable regulations, notifies their MACOM immediately, by telephone. (5)(21)</p> <p align="center">...</p>
<p>16-12. The Inspector General (IG), and the Internal Control Section of DRM should be proactively involved in environmental affairs (GMP).</p> <p align="center">...</p>	<p>Verify that EC is familiar with IG and Internal Control Section environmental activities. (12)</p> <p>Determine whether or not the IG (during routine visits) is assisting the EC with elevating the environmental awareness, by following up on actions other facility activities may have, to correct noncompliance issues and subsequently provides timely written notice and forwards copies of the written notice, report, or corrective action plan as required. (12)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (5) Directorate of Engineering and Housing (DEH/DPW) (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO)

**COMPLIANCE CATEGORY:
ENVIRONMENTAL PROGRAM MANAGEMENT (EPM)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>PROCUREMENT OF GOODS</p> <p>16-13. Certain procured products must be made from recovered solid waste (RCRA Section 6002, 40 CFR 248 through 253).</p> <p align="center">...</p> <p>ENVIRONMENTAL AGREEMENTS</p> <p>16-14. Environmental agreements will be prepared according to regulation (AR 200-1, para 12-6c through 12-6e).</p> <p align="center">...</p>	<p>Verify that procurement officer is aware of USEPA guidelines, and maintains a current set of the guidelines. (5)(12)</p> <p>Verify that purchases of an item (or of functionally equivalent items) that exceed \$10,000 within a fiscal year, and for which USEPA has issued guidelines, are made in accordance with those guidelines. (5)(12)</p> <p>(NOTE: Alternate guidelines may be developed to ensure compliance, but some guidelines must be established and followed for the items USEPA covers under this Act.)</p> <p align="center">...</p> <p>Verify that draft environmental agreements contain: (12)</p> <ul style="list-style-type: none"> - procedures for schedule modification and dispute resolution - provisions for reimbursement to governments for oversight expenditures in relation to the Army activity subject to the agreement - language prescribed by the Department of the Army (DA) for agreements relating to CERCLA, and prepared for facilities included on or proposed for inclusion on the NPL under CERCLA. <p>Verify that draft agreements are forwarded through MACOM to Headquarters, Department of the Army (HQDA) (DAJA-EL) WASH DC 20310-2210, for review and coordination. It must be accompanied by: (5)(12)</p> <ul style="list-style-type: none"> - a brief description of the problem, the proposed action, and the parties to the agreement - a map delineating the location of each site addressed in the agreement - a funding plan that would ensure that the compliance schedule could be met. <p>Verify that public review and comment is provided for according to the requirements of NEPA, CERCLA, or other relevant Federal/state laws, where applicable. (5)(12)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO)

**COMPLIANCE CATEGORY:
ENVIRONMENTAL PROGRAM MANAGEMENT (EPM)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

**A-106 POLLUTION
ABATEMENT PLAN,
RCS 1383
REPORT, AND ACTS**

16-15. Determine actions or changes since previous review of the A-106 Pollution Abatement Plan/RCS 1383 Report and ACTS submissions (GMP).

Obtain copies of previous ACTS and 1383 report and determine if non-compliance issues have been resolved and whether issues requiring funding solutions for CMPA and INOV entries (at minimum) have been addressed in 1383 submissions. (5)(12)

...

...

16-16. The facility should have copies of all relevant Federal, DOD, and Army regulations on the A-106 Pollution Abatement Plan/RCS 1383 Report (GMP).

Determine whether copies of the following regulations and publications are maintained and kept current at the facility: (5)(12)

- RCS 1383 Report Policy and Guidance
- AR 200-1, *Environmental Protection and Enhancement*
- Army Compliance Tracking System (ACTS) Guidance.

...

...

16-17. ACTS submissions must be in accordance with DOD and HQDA guidance to support RCS 1485/DEMIS Reports (AR 200-1, para 22-11a(4)).

Obtain copy of the previous year's ACTS entries (at least 3 quarters). (5)

Verify that ACTS submissions are in accordance with DOD HQDA requirements and deadlines (quarterly). (5)

Verify that members of the installation have received training on the use of ACTS Software. (5)

...

...

16-18. The A-106/RCS 1383 report and ACTS submission process must be incorporated into the Army planning, programming, and budgeting system (AR 200-1, para 12-11b).

Obtain a copy of the previous year's two A-106/RCS 1383 reports. (5)(12)(21)

Ensure that 1383 exhibits are properly classified in accordance with 1383 guidance. (5)(12)(21)

(NOTE: See Appendix 16-2 for pollutant categories.)

(NOTE: The RCS 1383 is done by the ARCOM.)

Compare the Spring 1383 report with the environmental requirements in the facility budget request. (5)(21)

...

...

(1) MUSARC Engineer/Facility Coordinator (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO)

**COMPLIANCE CATEGORY:
ENVIRONMENTAL PROGRAM MANAGEMENT (EPM)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>16-19. The A-106/RCS 1383 report and ACTS submissions must be completed in an accurate manner (AR 200-1, para 12-11b).</p> <p style="text-align: center;">...</p> <p>16-20. Semiannual 1383 reports must be prepared at the ARCOM or activity level (AR 200-1, para 12-11b(2)(c) and 12-11b(2)(d)).</p> <p style="text-align: center;">...</p>	<p>Determine if the facility has available a copy of the current HQDA Policy and Guidance for completion of the RCS 1383 report. (12)</p> <p>Verify that members of the facility have received training on the DB1383 software. (12)</p> <p>Verify that the facility uses appropriate sources and resources for establishing project cost estimates, pollution categories, and Law/Regulation codes, i.e., COE field offices, MACOM, relevant regulations. (12)</p> <p>Verify that ACTS entries for noncompliance are reflected in 1383 CMPA and INOV entries if funding is required to effect compliance. (12)</p> <p>Compare 1383 submissions with installation budget submissions (VENC or DERA entries) identifying. Identify/obtain explanations of discrepancies. (12)</p> <p style="text-align: center;">...</p> <p>Verify that the ARCOM submits the 1383 report in accordance with MACOM guidelines. (5)</p> <p style="text-align: center;">...</p>

(1) MUSARC Engineer/Facility Coordinator (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO)

**COMPLIANCE CATEGORY:
ENVIRONMENTAL PROGRAM MANAGEMENT (EPM)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>CONSTRUCTION</p> <p>16-21. Environmental surveys will be conducted before the selection of construction sites (AR 200-1, para 12-14).</p> <p align="center">...</p> <p>REAL PROPERTY TRANSACTIONS</p> <p>16-22. A comprehensive inventory and evaluation of existing environmental conditions will be conducted on all real property before any transaction (AR 200-1, para 12-5).</p> <p align="center">...</p>	<p>Verify that surveys are conducted in accordance with AR 415-15 before site selection. (5)</p> <p>Verify that the Environmental Office is part of the project review process for new construction and renovation (plans/specifications) to ensure environmental compliance (i.e., work orders, in-house, A/E designs, and MCA, MCAR and MCARNG projects). (5)(12)</p> <p align="center">...</p> <p>Verify that a Preliminary Assessment Screening (PAS) is prepared for all Federal real property transfers and other transactions. The PAS will consider: (5)(12)</p> <ul style="list-style-type: none"> - areas of cultural, historical, or archeological significance - threatened or endangered species - environmentally sensitive areas - DOD, DA, Federal, regional, state, and local environmental regulatory compliance - any permit, permit discontinuance or closure requirements - properties or structures with known or potential environmental contamination (asbestos, radon, unexploded ordnance, hazardous or toxic materials/substances/wastes) - existing land use plans, IRP reports, and other environmental documentation. <p>Verify that the PAS is reviewed for adequacy by the Army office that reviews associated Records of Environmental Consideration (REC), EA, or EIS. (5)(12)</p> <p>Verify that if the PAS discloses a release, or suspected release of contaminants, U.S. Army Environmental Center (USAEC) is notified for consideration under the NCP. (5)(12)</p> <p>(NOTE: Non-Army parties will be requested to perform the PAS for transactions that they have initiated.)</p> <p>(NOTE: If the transaction qualifies for a categorical exclusion (CX), a separate PAS will be prepared before the record of environmental consideration, and will be included in the REC for review.)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO)

**COMPLIANCE CATEGORY:
ENVIRONMENTAL PROGRAM MANAGEMENT (EPM)
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>16-23. Proper notification of the contract of sale and associated covenants is the responsibility of the Army proponent (AR 200-1, para 12-5).</p> <p align="center">...</p>	<p>Verify that the proponent provides notice to the disposal agency, or other Federal agency if the transaction is subject to a transfer agreement, of the contract of sale and covenants as required by AR 200-1. (5)</p> <p align="center">...</p>
<p>SUPPORT REQUIREMENTS</p> <p>16-24. The EC should maintain good rapport with the supporting Host installation Environmental Office, and provide environmental support to Weekend Training Sites (WETs) (GMP).</p> <p align="center">...</p>	<p>Determine the nature of the working relationship between the EC and the Host installation EC: (5)(12)</p> <ul style="list-style-type: none"> - The EC should consult with the Host installation EC on such matters as: <ul style="list-style-type: none"> - spill reporting - NOV reporting - information updates - funding requirements. - the host installation EC in turn should provide necessary environmental support, guidance and resources to the facility. <p>Verify that the EC at the facility provides the necessary environmental support to the satellite facilities (i.e., WET sites) on: (5)(12)</p> <ul style="list-style-type: none"> - training - permits - UST program - used oil collection - used solvent collection - hazardous waste/hazardous material support - DRMO contract support - spill support/notification - environmental project programming. <p align="center">...</p>
<p>RESERVE SPECIFIC</p> <p>16-25. ARCOMs and Support Installations should share pertinent portions of environmental surveys, inventories, and management plans with their facility managers (GMP).</p> <p align="center">...</p>	<p>Verify that relevant portions of documents such as: radon surveys, asbestos surveys, historic preservation inventories, spill plans, hazardous waste management plans, etc., which are prepared for all ARCOM or Support Installation facilities, are in fact, provided to Reserve facility managers. (12)</p> <p align="center">...</p>

(1) MUSAEC Engineer/Facility Coordinator (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO)

**COMPLIANCE CATEGORY:
ENVIRONMENTAL PROGRAM MANAGEMENT (EPM)
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

16-26. DERA-eligible projects are require to be submitted as DERA-funded in the RCS 1383 Report (GMP).

Verify that all DERA-eligible projects are submitted as DERA-funded in the RCS 1383 Report. (1)(5)(12)

(1) MUSARC Engineer/Facility Coordinator (5) Directorate of Engineering and Housing (DEH)/DPW (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO)

Appendix 16-1

Definitions of USEPA Class and Compliance Status of Projects

CLASS I

Project Assessment = HIGH
Compliance Status: CMPA, INOV, ESDP
USEPA Class Number 1

Projects required to meet the provisions of assigned compliance agreement or consent order; project required to correct deficiencies found on an USEPA or state inspection; other projects needed to come into compliance when statutory/regulatory deadlines have passed.

CLASS II

Compliance Status: ESDF, PSDF
USEPA Class Number 2

Project needed to meet future compliance deadlines for which planning must have already started.

CLASS III

Compliance Status: ESRO, ESRE, ESDL, OTHR
USEPA Class Number 3

All other projects which, while important, are not related to imminent compliance requirements.

Appendix 16-2

Pollutant Categories for the A-106 Pollution Abatement Plan/RCS 1383 Report

Media	Law/Regulation	Pollutant Category	Code
1	CAA	Permits (fees and applications preparations and modification costs) National Ambient Air Quality Standards - Point Source Control - State Implementation Plan Requirements Pollution Prevention Waste Minimization National Emission Standards for Hazardous Pollutants Control of Toxic Air Pollutants Control of Volatile Organic Compounds (VOCs) Asbestos Radon Training	PRMT NAQP SIPS POLP WMIN NEHP CTAP CVOC ASBS RADN TRNG
2	CWA	Point Source Control (Sec 402) Permits (fees and applications preparations and modification costs) Marine Sanitation Devices Waste Minimization Pollution Prevention Pre-Treatment Toxic Water Pollutants (Sec 304) Estuaries Waste Water Treatment Spill Prevention, Control and Countermeasures Plan Storm Water Point Source Wetlands (Sec 404) Non-Point Source Training	PSCS PRMT MSDV WMIN POLP PTRQ TWPS ESTU WWTR SPCC SWPS WLND NPTS TRNG
3	SDWA	Primary Drinking Water Standards Permits (fees and applications preparation: and modification costs) Waste Minimization Underground Injection Control Pollution Prevention Secondary Drinking Water Standards Lead in Drinking Water Sole Source Aquifer Wellhead Protection Training	PDWS PRMT WMIN UNIC POLP SDWS PBDW SSAQ WLHP TRNG

Appendix 16-2 (continued)

Media	Law/Regulation	Pollutant Category	Code
4	RCRA-C	Hazardous Waste Storage and Disposal Hazardous Waste Disposal Costs Permits (fees and applications preparations and modification costs) Waste Minimization Pollution Prevention Generator Requirements Transporter Requirements Closure Plans (Sec 6008) Corrective Action (Sec 3004 u & v) Training	HAZD DISP PRMT WMIN POLP GENR TRAN CPLN CORA TRNG
5	RCRA-D	Permits (fees and applications preparations and modification costs) Groundwater Monitoring Installation Landfills Pollution Prevention Solid Waste Management Plans Recycling Programs Training	PRMT GWMI SUBD POLP SWMP RCYP TRNG
6	RCRA-I	Groundwater Monitoring Installation Underground Storage Tanks Pollution Prevention Corrective Action (Sec 3004 u & v) Training	GWMI USTS POLP CORA TRNG
7	Superfund (SFND)/ (CERCLA/SARA)	Removal Action Waste Minimization Toxic (Pretreatment) Operating Units and Long-Term Monitoring Hazardous Waste Storage and Disposal Groundwater Pollution Prevention Preliminary Assessment/Site Investigation Listing Site Investigation Remedial Investigation and Feasibility Study Remedial Investigation Feasibility Study Remedial Design Remedial Action Training	RMVA WMIN PRET OPLM HAZD GWAT POLP PASI LISI RIFS RINV FEAS REMD REMA TRNG
8	TSCA	Storage and Disposal of PCBs Waste Minimization Pollution Prevention Training	PCBS WMIN POLP TRNG
9	FIFRA	Pesticide Storage, Application and Disposal Waste Minimization Pollution Prevention Training	PSAD WMIN POLP TRNG

Appendix 16-2 (continued)

Media	Law/Regulation	Pollutant Category	Code
10	National Historic Preservation Act (NHPA)	Archeological Surveys Historic Preservation Surveys Mitigation Measures Training	ARCH HIST MITM TRNG
11	Natural Resources Management	Endangered Species Surveys Mitigation Measures Forest Management Land Management Training	ENDG MITM FSTM LNDM TRNG
12	NEPA	Preparation of EIS/EA on Specific Projects Mitigation Measures Required Through Record of Decision Training	EAIS MITM TRNG
13	Asbestos Management Program	Asbestos Training	ASBS TRNG
14	Noise Control Act (NCA)	Noise Control Planning Pollution Prevention Construction Training	NPLN POLP NCON TRNG
15	Radon Program	Radon Training	RADN TRNG
16	Environmental Program Management		
17	Hazardous Materials Management		

INSTALLATION:	COMPLIANCE CATEGORY: ENVIRONMENTAL PROGRAM MANAGEMENT (EPM) ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

- (1) MUSARC Engineer/Facility Coordinator (5) Directorate of Engineering and Housing (DEH)/DPW
- (12) Environmental Coordinator (EC) (21) Public Affairs Office (PAO)

Section 17

HAZARDOUS MATERIALS MANAGEMENT

SECTION 17

HAZARDOUS MATERIALS MANAGEMENT

A. Applicability of this Protocol

This protocol applies to implementing requirements associated with the management of hazardous materials. Most Army Reserve facilities handle many chemicals and substances that may be considered hazardous if not handled, stored, or used properly. A complete list of chemicals used at Army Reserve facilities is too lengthy to include in this protocol. Chemicals that have hazardous properties, i.e., toxic chemicals, flammable substances, reactive substances, and corrosive materials are routinely used at Army Reserve facilities.

This protocol primarily addresses management and planning related to hazardous materials. Oil, pesticides, and asbestos are hazardous materials that require special management practices at Army Reserve facilities, and are addressed in separate protocols. Radioactive substances and the general category of hazardous wastes also are not included in this protocol. As directed by Army Environmental Center (AEC), this protocol does not focus on handling, storage, or transportation requirements for hazardous materials as outlined in Title 29 and Title 49 of the Code of Federal Regulations (CFR).

B. Federal Legislation

- *The Occupational Safety and Health Act 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 which must include a prohibition against giving advance notice of any inspection and sanctions for any individual violating this prohibition, and providing for appropriate reporting procedures with respect to occupational safety and health which 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).

- *The Federal Water Pollution Control Act*, commonly known as the *Clean Water Act* (CWA), as amended 4 February 1987, 33 USC 1251-1387, Public Law (PL) 100-4, governs the control of water pollution in the nation. The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the nation's waters. To achieve this objective, the following must be done:
 - the discharge of pollutants into the navigable waters be eliminated by 1985
 - wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by 1 July 1983
 - the discharge of toxic pollutants in toxic amounts be prohibited
 - Federal financial assistance be provided to construct publicly owned waste treatment works
 - areawide waste treatment management planning processes be developed and implemented to assure adequate control of sources of pollutants in each state
 - a major research and demonstration effort be made to develop technology necessary to eliminate the discharge of pollutants into the navigable waters, waters of the contiguous zone, and the oceans;
 - programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of this Act to be met through the control of both point and nonpoint sources of pollution (33 USC 1251).

- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*, of 13 October 1978, requires Federally-owned and operated facilities to comply with applicable Federal, state, and local environmental requirements. 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

Hazardous materials are not usually regulated on the state level. However, local agencies (county/ city fire departments) will normally 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

- DOD Directive 6050.8. *Storage and Disposal of Non-DOD-Owned Hazardous or Toxic Materials on DOD Installations*. This directive prohibits the storage of non-DOD hazardous materials on DOD installations.

E. U.S. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, Chapter 5, *Hazardous Material Management Program*, implements the Army program to minimize hazards to public health and damage to the environment. It provides guidance for the management of hazardous materials including storage and disposal.

F. Key Compliance Requirements

- Hazardous Substance Release Reporting - Army Reserve facilities are required to notify United States Environmental Protection Agency (USEPA) and appropriate state agencies when a release of a reportable quantity of a hazardous substance occurs. *Release* includes any discharge, spill, or leak to air, water, or land, as stipulated in 40 CFR 302. This is outlined in Section 7, Comprehensive Environmental Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act (CERCLA/SARA).
- Hazardous Materials Training - Personnel who handle hazardous materials are required to be trained in the safe handling and management of the materials they work with routinely.
- Storage and Handling of Hazardous Materials - Facilities that store or handle hazardous materials, such as flammable/combustible materials, acids, caustics, compressed gases, oxidizers, etc., are required to comply with facility storage found in 29 CFR 1910.

G. Key Compliance Definitions

- *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)).
- *Approved* - listed or approved by Underwriter's Laboratories, Inc., Factory Mutual Engineering Corporation, The Bureau of Mines, National Institute of Occupational Safety and Health, The American National Standards Institute, The National Fire Protection Association, 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)).
- *Boiling Point* - the temperature at which a liquid starts to boil when at atmospheric pressure (14.7 pounds per square inch absolute (psia), 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)).
- *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^o F (37.8^o 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^o F (37.8^o C), and below 140^o F (60^o C) except any mixture having components with flashpoints of 200^o F (93.3^o 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 (93.4 °C) except any mixture having components with flashpoints of 200° F or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.
 3. Class III B liquids are those having flashpoints at or above 200° F (93.4 °C).
- **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 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 1 liquids, and are further subdivided as follows (29 CFR 1910.106(a)(19)):
 1. Class 1A are those that have a flashpoint below 73 °F (22.8 °C) and boiling point below 100 °F (37.8 °C).
 2. Class 1B are those that have flashpoints below 73 °F (22.8 °C) and boiling points at or above 100 °F (37.8 °C).
 3. Class 1C 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)).
 - **Good Management Practice (GMP)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
 - **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)).
 - **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:
 - chemical manipulations are carried out on a laboratory scale
 - multiple chemical procedures or chemicals are used
 - the procedures involved are not part of a production process, nor in any way simulate a production process
 - protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals (29 CFR 1910.1450(b)).
- **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)).
- **Low Pressure Tank** - a storage tank which has been designed to operate at pressures above 0.5 psig but not more than 25 psig (29 CFR 1910.106(a)(21)).
- **Material Safety Data Sheet (MSDS)** - written or printed material which contains information on hazardous chemicals such as common name, physical hazards, health hazards (29 CFR 1200(c)).
- **Office Occupancy** - the occupancy or 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)).
- **Portable Tank** - a closed container having a liquid capacity over 60 gallons 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)).

- *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)).
- *Select Carcinogens* - any substance which meets one of the following criteria:
 - it is regulated by OSHA as a carcinogen
 - it is listed under the category "known to be carcinogens" and the Annual Report on Carcinogens published by the National Toxicology Program (NTP)
 - it is listed under Group 1 (carcinogenic to humans) by the International Agency for Research on Cancer Monographs (IARC)
 - 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 (29 CFR 1910.1450(b)).
- *Vapor Pressure* - the pressure, measured in pounds per square inch (absolute) exerted by a volatile liquid (29 CFR 1910.106(a)(30))>

HAZARDOUS MATERIALS MANAGEMENT

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Facilities	17-1 through 17-5	(1)(2)(6)
Handling and Storage of Hazardous Materials	17-6 through 17-11	(1)(2)(6)(20)
Documentation	17-12 and 17-13	(1)(2)(4)(5)(6)(12)(18)
Personnel Training	17-14 and 17-15	(1)(2)(4)(5)(6)(12)(18)
Flammable/Combustible Liquid Storage		
General	17-16 through 17-24	(1)(2)(4)(5)(6)(12)(18)
Industrial Areas	17-25 through 17-27	(1)(2)(4)(5)(6)(12)(18)
Tanks	17-28 through 17-32	(1)(2)(4)(5)(6)(12)(18)
Compressed Gas Storage	17-33 and 17-34	(1)(2)(4)(5)(6)(12)(18)
Acid Storage	17-35	(1)(2)(4)(5)(6)(12)(18)
Transportation	17-36	(1)(2)(4)(5)(6)(12)(18)

(a) CONTACT/LOCATION CODE:

- (1) MUSARC Engineer/Facility Coordinator
- (2) Facility Manager
- (4) Accumulation Point Manager
- (5) Directorate of Engineering and Housing (DEH)/DPW
- (6) Director of Logistics (DOL)
- (12) Environmental Coordinator (EC)
- (17) Preventive Medicine Officer/Health Physician
- (18) Safety Officer
- (20) Fire Department

HAZARDOUS MATERIALS MANAGEMENT

Plans and Maps to Review

- Spill Control and Contingency Plan (SPCC)

Records to Review

- Spill Reports
- Hazardous Material Inventory

Physical Features to Examine

- Hazardous Material Storage Areas (DOL - Supply, Shops)
- Shop Activities
- Flammable Storage Cabinets
- Shipping and Receiving Areas
- Supply and Storage Shops (DEH,DOL)
- Self Service Supply Centers
- Military Unit Supply/Storage Areas
- Print/Reproduction Shops

People to Interview

- MUSARC Engineer/Facility Coordinator
- Facility Manager
- Accumulation Point Manager
- Directorate of Engineering and Housing (DEH)/DPW
- Director of Logistics (DOL)
- Environmental Coordinator (EC)
- Safety Officer
- Preventive Medicine Officer/Health Physician
- Fire Department
- BASOPs ARCOM Environmental Managers

**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>ALL FACILITIES</p> <p>17-1. Determine actions or changes since previous review of hazardous materials management (GMP).</p> <p align="center">...</p> <p>17-2. All relevant regulations, directives, and guidance documents on hazardous materials should be maintained at the ARCOM or Support Installation (GMP).</p> <p align="center">...</p> <p>17-3. Facilities are required to comply with applicable state and local hazardous materials requirements (EO 12088, Section 1-1).</p> <p align="center">...</p> <p>17-4. Management of paperwork, materials and personnel should be done in a manner that prevents noncompliance, re-occurrence of noncompliance and that precludes Notices of Violation (NOVs), letters of citation, promotes good public relations and addresses systems weakness in the overall operation of the program (GMP).</p>	<p>Examine copy of previous review report to determine if noncompliance issues have been resolved. (1)</p> <p align="center">...</p> <p>Verify that the following documents, which are applicable, are maintained and kept current at the ARCOM or Support Installation. (1)(6)</p> <ul style="list-style-type: none"> - 29 CFR 1910, <i>Occupational Safety and Health Standards.</i> - 40 CFR 112, <i>Oil Pollution Prevention.</i> - EO 12088, <i>Federal Compliance with Pollution Standards.</i> - DOD Directive 6050.8, <i>Storage and Disposal of non-DOD owned Hazardous or Toxic Materials in DOD installations.</i> - AR 200-1, <i>Environmental Protection and Enhancement.</i> - NFPA, <i>Fire Protection Guide of Hazardous Materials.</i> - Applicable state and local regulations. <p align="center">...</p> <p>Verify that the facility is complying with applicable state and local hazardous materials requirements. (1)(2)</p> <p>Verify that the facility is operating according to all applicable permits issued by the state or local agencies. (1)(2)</p> <p>(NOTE: Issues which are typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - transportation of hazardous materials - storage of hazardous materials - release reporting requirements.) <p align="center">...</p> <p>Determine what management systems are in place. (1)(2)</p> <p>Verify that the existing system addresses the issues associated with hazardous materials by: (1)(2)</p> <ul style="list-style-type: none"> - interviewing personnel - reviewing paperwork - observing the operation or activity. <p>Determine if training is being conducted. (1)(2)</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (4) Accumulation Point Manager (5) Directorate of Engineering and Housing (DEH)/DPW (6) Director of Logistics (DOL) (12) Environmental Coordinator (EC) (18) Safety Officer (20) Fire Department

**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>17-5. Facilities are required to comply with applicable regulatory requirements issued since the finalization of the manual and those not currently included in the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p align="center">...</p>	<p>Determine if any new regulations concerning hazardous materials have been issued since the finalization of the manual. (1)</p> <p>Verify that the facility is in compliance with newly issued regulations. (1)</p> <p>(NOTE: For findings under this item, the Regulatory Requirement and the Basis of Finding should be provided to SFIM-AEC-BCE for future inclusion in the manual.)</p> <p align="center">...</p>
<p>HANDLING AND STORAGE OF HAZARDOUS MATERIALS</p>	
<p>17-6. A master listing of all hazardous substances at handling, storage, and transfer facilities is required as a part of the SPCC Plan (AR 200-1, para 8-4b(4)).</p> <p align="center">...</p>	<p>Obtain a copy of the hazardous substances list. (1)(2)(9)</p> <p>Verify that personnel have knowledge of the location of all hazardous materials storage areas on the facility. (1)(6)</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 item in <i>Resource Conservation and Recovery Act Subtitle C (RCRA-C)</i>.)</p> <p align="center">...</p>
<p>17-7. Personnel who manage, use, store, and/or ultimately dispose of hazardous materials must be trained in spill response actions (40 CFR 112.7e(10)).</p> <p align="center">...</p>	<p>Verify that personnel who manage, use, store, and/or ultimately dispose of hazardous materials are trained in spill response and related handling issues. (1)(2)</p> <p align="center">...</p>
<p>17-8. Hazardous material management is to be considered an integral part of the Army Hazardous Waste Minimization Program (AR 200-1, para 6-6b).</p> <p align="center">...</p>	<p>Verify that the facility has an Army Hazardous Waste Minimization Program in existence and that it addresses hazardous material management through the use of: (1)(2)</p> <ul style="list-style-type: none"> - process substitution - material recovery - recycling - reuse. <p align="center">...</p>

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**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>17-9. The facility should coordinate with the fire department concerning the types of hazardous chemicals used at the facility, the areas where they are used, what they are used for, and the quantities used in a given operation (GMP).</p> <p align="center">...</p>	<p>Verify that the fire department is aware of the hazardous chemicals used at the facility. (20)</p> <p>Verify that the fire department is aware of areas that are at high risk for chemical incidents. (20)</p> <p align="center">...</p>
<p>17-10. Facilities may not allow the storage of non-DOD-owned toxic or hazardous materials on site (DOD Directive 6050.8, para D, AR 200-1, para 5-4).</p> <p align="center">...</p>	<p>Verify that the facility does not allow the storage of non-DOD-owned toxic or hazardous materials on site. (1)(6)</p> <p>(NOTE: This does not apply to:</p> <ul style="list-style-type: none"> - agreements with General Services Administration for the storage of strategic and critical materials in the National Stockpile Program - agreements between DOD Components and other Federal agencies for temporary storage or disposal of explosives - emergency lifesaving assistance to civil authorities involving the temporary storage or disposal of explosives - excess explosive generated under a DOD contract - arrangements with the Department of Energy for the temporary storage of nuclear materials or non-nuclear classified materials - military resources used during peacetime civil emergencies - assistance and refuge for commercial carriers carrying material of other Federal agencies during transportation emergencies.) <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (4) Accumulation Point Manager (5) Directorate of Engineering and Housing (DEH)/DPW (6) Director of Logistics (DOL) (12) Environmental Coordinator (EC) (18) Safety Officer (20) Fire Department

**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>17-11. Facilities must have a written Oil and Hazardous Substance Contingency Plan (OHSCP) for spill events (AR 200-1, para 8-1d(7)).</p> <p align="center">...</p>	<p>Verify that the OHSCP contains the following items while interviewing personnel from Facility Supply, Fire Department, Safety Department, and the DEH: (1)(6)</p> <ul style="list-style-type: none"> - all hazardous substances storage areas are included in the plan - one individual or department is designated to initiate spill response - plan is written, reviewed, and made available to other departments on the facility - plan is rehearsed through periodic drills and demonstrations - materials and equipment needed to manage a spill are specified in the plan readily available including: <ul style="list-style-type: none"> - respiratory protection - absorbents - ear/eye protection - spill kits - protective clothing - neutralizers - response materials and protective clothing are readily available - emergency medical procedures and first aid materials are specified in the plan - hazard control materials are listed in plan including: <ul style="list-style-type: none"> - hazard signs and labels - rope, wire, tape - monitors, survey meters - plan specifies phone numbers of Federal, state and local agencies that must be notified when a spill occurs - plan includes contacts for agencies that provide emergency advice and assistance (CHEMTREC) - plan specifies personnel decontamination procedures that must be followed after spill has been cleaned up. <p>(NOTE: The OHSCP is often combined with the ISCP.)</p> <p align="center">...</p>

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (4) Accumulation Point Manager (5) Directorate of Engineering and Housing (DEH)/DPW (6) Director of Logistics (DOL) (12) Environmental Coordinator (EC) (18) Safety Officer (20) Fire Department

**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>DOCUMENTATION</p> <p>17-12. Facilities are required to have on file a Material Safety Data Sheet (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 style="text-align: center;">...</p> <p>17-13. 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), 1910.1200(f)(5) through 1910.1200(f)(7)).</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)(4)(5)(6)(12)(18)</p> <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> - hazardous waste - tobacco or tobacco products - wood or wood products - articles - food, drugs, cosmetics intended for personal consumption by employees while in the workplace - 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.) <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 style="text-align: center;">...</p> <p>Verify that all containers of hazardous chemicals in the workplace are labeled with the following information: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - identity of the hazardous chemical - appropriate hazard warnings. <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> <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> - any pesticide as such term is defined in <i>FIFRA</i>, when subject to the labeling requirements of that Act and regulations issued under that Act - any food, food additive, color additive, drug, cosmetic, or medical or veterinary device as defined in the <i>Federal Food, Drug, and Cosmetic Act</i> - any consumer product or hazardous substance as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i> when subject to a consumer product safety standard or labeling requirement under those Acts.

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**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>17-13. (continued)</p> <p align="center">...</p> <p>PERSONNEL TRAINING</p> <p>17-14. Facilities are required to provide all employees with information about the hazardous chemicals to which they are exposed (29 CFR 1910.1200(b)(6), 1910.1200(e)(1)).</p> <p align="center">...</p>	<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 align="center">...</p> <p>Verify that there is a written hazard communication program that contains the following: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - a list of the hazardous chemicals known to be present (can be done for the entire workplace or individual work areas) - 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 - the methods the facility will use to ensure that each container of hazardous chemicals in the workplace is labeled, tagged, or marked with the following: <ul style="list-style-type: none"> - identity of the hazardous chemicals contained - appropriate hazard warning - details of employee training <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> - hazardous waste - tobacco or tobacco products - wood or wood products - articles - food, drugs, cosmetics intended for personal consumption by employees while in the workplace - 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.) <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>17-15. Personnel working with hazardous materials are required to be trained in their use and hazards (29 CFR 1910.1200(b)(3)(iii), 1910.1200(b)(4)(iii), 1910.1200(b)(6), 1910.1200(h)).</p> <p>...</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)(2)(4)(5)(6)(12)(18)</p> <p>Verify that employees are informed of the following: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - any operations in their work areas where hazardous chemicals are present - the location and availability of the written hazard communication program, including the required lists of hazardous chemicals, and material safety data sheets. <p>Verify that training includes: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - methods and observations to use to detect a release - the physical and health hazards of the chemicals in the work areas - protective measures and procedures to use - an explanation of the labeling system, material safety data sheets, and how employees can obtain and use the appropriate hazard information. <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> - hazardous waste - tobacco or tobacco products - wood or wood products - articles - food, drugs, cosmetics intended for personal consumption by employees while in the workplace - 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.) <p>(NOTE: These requirements also apply to laboratories. They also apply, as necessary for protection in event of a spill or leak, to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use.)</p> <p>...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>FLAMMABLE/ COMBUSTIBLE LIQUIDS STORAGE</p> <p>General</p> <p>17-16. Specific good management practices should be considered when storing and handling flammable/ combustible materials (GMP).</p> <p align="center">...</p>	<p>(NOTE: The requirements pertaining to the handling, storage and use of flammable/combustible liquids with a flashpoint below 200 °F outlined through 29 CFR 1910.106 (checklist items 17-16 through 17-32) do not apply to the following:</p> <ul style="list-style-type: none"> - bulk transportation of flammable/combustible liquids - storage, handling, and use of fuel oil tanks and containers connected with oil burning equipment - storage of flammable and combustible liquids on farms - liquids without a flashpoint that may be flammable under some conditions, such as halogenated hydrocarbons and mixtures containing halogenated hydrocarbons - mists, sprays, or foams, except in flammable aerosols - the following facilities when they meet National Fire Protection Association Standards: <ul style="list-style-type: none"> - drycleaning plants - manufacture of organic coatings - solvent extraction plants - stationary combustion engines and gas turbines (29 CFR 1910.106(j)). <p>Verify that the following good management practices are followed: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - there are no positive sources of ignition (open flames, welding, radial heat, mechanical sparks) in the immediate area - items are not stored against pipes or coils producing heat - paint drums that are stored horizontally are rolled a half turn every 90 days - containers of paint are palletized prior to storage - aerosol containers are stored in well-ventilated areas. <p>Verify that containers are stored and handled such that: (1)(2)(4)(5)(6)</p> <ul style="list-style-type: none"> - open flame devices are not in use in the storage area - combustible materials, other than wood pallets used in the storage of flammable/combustibles, are not stored in the storage facility - handling is done so as to avoid damaging the label - materials received without a date of manufacture label are marked with the shipping document date - leaking containers are removed from the storage are immediately - 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 - there are no open containers. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>17-17. Drums and other containers of less than 60 gal individual capacity and portable tanks less than 660 gal 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 align="center">...</p>	<p>Verify that flammable and combustible liquid containers meet the constraints outlined in Appendix 17-1 except that glass or plastic containers of no more than 1 gallon capacity may be used for a Class IA or IB flammable liquid if: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - the liquid would be rendered unfit for its intended use by contact with metal or would excessively corrode a metal container - the user's process either would require more than 1 pint of a Class IA liquid or more than 1 qt 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 Appendix 17-1 for the class of liquid. <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)(2)(4)(5)(6)(12)(18)</p> <p>(NOTE: These standards do not apply to</p> <ul style="list-style-type: none"> - 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 - 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.) <p align="center">...</p>
<p>17-18. 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 align="center">...</p>	<p>Verify that exits or common traffic routes are not blocked. (1)(2)(4)(5)(6)(12)(18)</p> <p>(NOTE: These standards do not apply to</p> <ul style="list-style-type: none"> - 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 - 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.) <p align="center">...</p>
<p>17-19. Storage cabinets used for the storage of flammable/ combustible liquids must meet specific requirements (29 CFR 1910.106(d)(3)).</p> <p align="center">...</p>	<p>Verify that storage cabinets meet the following: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - no more than 60 gal of Class I or Class II liquids nor any more than 120 gal of Class III liquids are stored in the cabinet - the cabinets are fire-resistant - cabinets are constantly closed and are conspicuously labeled FLAMMABLE--Keep Fire Away. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>17-20. Storage cabinets used for the storage of flammable/ combustible liquids should meet specific requirements (GMP).</p> <p align="center">...</p>	<p>Verify that storage cabinets meet the following: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - materials within the cabinet are segregated - there are no open containers within the cabinet - all containers in the cabinet are labeled. <p align="center">...</p>
<p>17-21. Inside flammable/ combustible storage rooms must meet certain specifications (29 CFR 1910.106(d)(4)).</p> <p align="center">...</p>	<p>Verify that the facility's flammable/ combustible storage facility meet the following: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - the walls meet fire resistance test NFPA 251-1969 - a 4-in. raised sill or ramp is provided to adjacent rooms or buildings, or the floor of the storage area is 4 in. lower than the surrounding floors - an open grated trench that drains to a safe area is in the building if a sill or ramp is not present - liquid tight wall/ floor joints exist - self-closing fire doors exist (NFPA 80) - the electrical wiring and equipment meet NFPA 70 requirements - the storage in the rooms meet the requirements in Appendix 17-2 - there is either gravity or mechanical exhaust ventilation system - the exhaust system provides for six changes of air in the room per hour - mechanical exhaust systems are controlled by a switch outside the door and have exhaust outlets on exterior walls - for gravity ventilation, the fresh air intake is on exterior walls - there is one clear aisle at least 3 ft wide - containers over 30 gal capacity are not stacked one upon the other - dispensing is done by an approved pump or self-closing faucet. <p align="center">...</p>
<p>17-22. 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)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - if the storage facility is located 50 ft 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 - any quantity of liquids may be stored as long as the storage arrangements outlined in Appendix 17-3 are met - containers are separated by pallets or dunnage when necessary to provide stability and prevent excess stress on container walls - portable tanks which are stored over one tier high are designed to nest securely - no pile is closer than 3 ft to the nearest beam, chord, girder, or other obstruction - piles are 3 ft below sprinkler deflectors or discharge points of water spray - all wood shelving is at least 1 in. thick - aisles are at least 3 ft wide when necessary for access to doors, windows, or standpipe connections.

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>17-23. Flammable/combustible materials stored outside of buildings must meet certain storage and handling criteria (29 CFR 1910.106 (d)(6)).</p> <p align="center">...</p>	<p>Verify that outdoor flammable/combustible storage meets the following: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - no more than 1100 gal of flammable/combustible liquids is stored adjacent to buildings located on the same premises unless 10 ft or more exists between buildings and the nearest flammable container - the storage area is graded to divert spills or is surrounded by a curb at least 6 in. high - drains terminate in a safe location - the storage area is protected against tampering and kept free of waste and other combustible materials - all containers bear contents, labels, and hazard markings - total quantity and arrangement of liquids outside a building complies with the requirements in Appendix 17-3. <p>(NOTE: These standards do not apply to</p> <ul style="list-style-type: none"> - 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 - 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.) <p align="center">...</p>
<p>17-24. Areas where flammable/combustibles are stored must meet certain fire protection standards (29 CFR 1910.106 (d)(7)).</p> <p align="center">...</p>	<p>Verify that all flammable/combustible storage locations meet the following: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - there is at least one 12-B rated portable fire extinguisher located outside and within 10 ft of a door opening into any room for storage - there is at least one 12-B rated portable fire extinguisher located within 10 to 25 ft of any Class I or Class II liquid storage area outside of a storage room, but inside a building - fire extinguishing sprinklers or systems meet the standards in 29 CFR 1910.159 - no smoking or open flame is permitted within 50 ft and signs are posted - incompatible materials are not stored together - no water reactive materials are stored in the same room with flammable/combustible liquids. <p>(NOTE: These standards do not apply to</p> <ul style="list-style-type: none"> - 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 - 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.) <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>Industrial Areas</p> <p>17-25. 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 align="center">...</p>	<p>(NOTE: Items 17-25 through 17-28 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)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - 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 - adequate precautions shall be taken to prevent sources of ignition at the site - Class I liquids shall not be dispensed into containers unless nozzles and containers are electrically interconnected - operations such as welding and cutting for repairs to equipment shall be done under the supervision of an individual in responsible charge - maintenance and operating practices shall control leakage and prevent the accidental escape of flammable or combustible liquids: <ul style="list-style-type: none"> - adequate aisles shall be maintained - combustible waste material and residues shall be kept to a minimum, stored in covered metal containers, and disposed of daily - the grounds area around the buildings and unit operating areas shall be kept free of weeds, trash or other unnecessary combustibles - 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 for Class I liquids and 15 ft for Class II and III liquids. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>17-26. Incidental storage of flammable/combustible liquids in industrial areas must conform to certain requirements (29 CFR 1910.106(e)(2)).</p> <p align="center">...</p>	<p>Verify that flammable and combustible liquids are stored in closed containers. (1)(2)(4)(5)(6)(12)(18)</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 17-19 and checklist items 17-21 except that: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - 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"> - 25 gal of Class IA liquids in containers - 120 gal of Class IB, IC, II, or III liquids in containers - 660 gal of Class IB, IB, II, or III liquids in a single portable tank - where large quantities of flammable or combustible liquids are needed, storage may be in tanks. <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)(2)(4)(5)(6)(12)(18)</p> <p>Verify that drainage or other means is provided to contain spills and adequate natural or mechanical ventilation is present. (1)(2)(4)(5)(6)(12)(18)</p> <p>Verify that the following practices are observed at the point of final use: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - flammable liquids are kept in covered containers when not actually in use - where flammable/ combustible liquids are used or handled means are provided to dispose promptly and safely of spills and leaks - Class I liquids are only used where there are no open flames or other sources of ignition - 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. <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>17-27. 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 align="center">...</p> <p>Tanks</p>	<p>Verify that the the following parameters are met: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - these areas are located so that each building or unit of equipment is accessible from at least one side for fire fighting - 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 - emergency drainage systems direct leakage and fire protection water to a safe location - emergency drainage systems, if connected to public sewers or discharged into public waterways, are equipped with traps or a separator - when Class I liquids are being used, ventilation is provided at a rate of not less than 1 cubic foot per minute per square foot of solid floor area through either natural or mechanical means - equipment is designed to limit flammable vapor-air mixtures. <p align="center">...</p>
<p>17-28. Tanks used for the storage of flammable/combustible liquids are required to meet specific design and construction standards (29 CR 1910.106(b)(1)).</p> <p align="center">...</p>	<p>Verify that tanks are built of steel unless: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - the tank is installed underground - the properties of the liquid being stored requires materials other than steel be used - the tank is designed according to specifications embodying principles recognized as good engineering design for the materials used - it is an unlined concrete tank that stores flammable or combustible liquids having a gravity of 40 degrees API or heavier. <p>Verify that tanks located aboveground or inside buildings are of noncombustible construction. (1)(2)(4)(5)</p> <p>(NOTE: Tanks designed for underground service not exceeding 2000 gal capacity may be used aboveground and low-pressure tanks and pressure vessels may be used as atmospheric tanks.)</p> <p>Verify that atmospheric tanks are not used for the storage of a flammable or combustible liquid at a temperature at or above its boiling point. (1)(2)(4)(5)</p> <p>Verify that the normal operating pressure of a low pressure tank does not exceed the design pressure of the tank. (1)(2)(4)(5)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>17-29. Outside aboveground tanks used for the storage of flammable/combustible liquids are required to be installed according to specific parameters (29 CFR 1910.106(b)(2)(i) through 1910.106(b)(2)(ii)).</p> <p align="center">...</p>	<p>Verify that there is a minimum distance of 3 ft between any two tanks. (1)(2)(4)(5)(6)(12)(18)</p> <p>Verify that the distance between any two adjacent tanks is not less than one-sixth the sum of their diameters. (1)(2)(4)(5)(6)(12)(18)</p> <p>(NOTE: When the diameter of one tank is less than half the diameter of the adjacent tank, the distance between the two tanks shall not be less than one-half the diameter of the smaller tank.)</p> <p>Verify that where unstable flammable or combustible liquids are stored, the distance between the tanks is not less than one-half the sum of their diameters. (1)(2)(4)(5)(6)(12)(18)</p> <p>Verify that when tanks are compacted in three or more rows or in an irregular pattern, greater spacing or other means is provided for firefighting access. (1)(2)(4)(5)(6)(12)(18)</p> <p>Verify that there is a minimum distance of 20 ft between a liquified petroleum gas container and a flammable or combustible liquid storage tank. (1)(2)(4)(5)(6)(12)(18)</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 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)(2)(4)(5)(6)(12)(18)</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 away from the centerline of the wall of the diked area. (1)(2)(4)(5)(6)(12)(18)</p> <p>(NOTE: The requirement concerning LPG containers and diked areas does not apply if LPG containers of 125 gal or less capacity are installed adjacent to fuel oil supply of 550 gal or less capacity.)</p> <p align="center">...</p>

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>17-30. Tanks for the storage of flammable/combustible liquids are required to meet specific containment requirements (29 CFR 1910.106(b)(2)(vii)).</p> <p align="center">...</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)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - 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 - 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. <p>Verify that walls of diked areas are of earth, concrete, steel, or solid masonry designed to be liquid tight. (1)(2)(4)(5)(6)(12)(18)</p> <p>Verify that earthen walls 3 ft or more in height have a top that is no less than 2 foot wide. (1)(2)(4)(5)(6)(12)(18)</p> <p>Verify that the walls of the diked area are restricted to an average height of 6 ft above interior grade. (1)(2)(4)(5)(6)(12)(18)</p> <p>Verify that there are no loose combustible materials, empty or full drums or barrels within the diked area. (1)(2)(4)(5)(6)(12)(18)</p> <p align="center">...</p>
<p>17-31. 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 align="center">...</p>	<p>Verify that sources of ignition such as open flames, smoking, welding and cutting, hot surfaces, sparks, and radiant heat are avoided. (1)(2)(4)(5)(6)(12)(18)</p> <p align="center">...</p>
<p>17-32. 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 align="center">...</p>	<p>Verify that the tank is marked with a American Society of Mechanical Engineers (ASME) code stamp, American Petroleum Institute (API) monogram, or the label of the Underwriters Laboratory as evidence of having had a strength test. (1)(2)(4)(5)(6)(12)(18)</p> <p align="center">...</p>

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**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
ECAAR**

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p>COMPRESSED GASES STORAGE</p> <p>17-33. The in-plant storage, handling, and utilization of all compressed gases in cylinders, portable tanks, rail tank cars, or motor vehicles must be done according to the Compressed Gas Association Pamphlet P-1-1965 (29 CFR 1910.101).</p> <p align="center">...</p> <p>17-34. Compressed gases should be handled according to specific procedures and practices (GMP).</p> <p align="center">...</p>	<p>Verify that compressed gas cylinders and tanks have safety relief devices. (1)(2)(4)(5)(6)(12)(18)</p> <p align="center">...</p> <p>Verify that the following practices and procedures are followed: (1)(2)(4)(5)(6)(12)(18)</p> <ul style="list-style-type: none"> - oxygen cylinders are free from grease or oil - numbers or markings that are stamped on the cylinders are not altered or defaced - additional markings are not applied to cylinders without approval - empty cylinders are stored separately but in the same manner as full cylinders - valves on empty cylinders are closed - NO SMOKING signs are posted in and around compressed gas storage sheds. <p align="center">...</p>

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**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
ECAAR**

**REGULATORY
REQUIREMENTS:**

REVIEWER CHECKS:

ACID STORAGE

17-35. Bulk storage of acids should meet certain storage and handling criteria (GMP).

...

Verify that bulk acid storage sites meet the following: (1)(2)(4)(5)(6)(12)(18)

- building are one story in height, preferably of nonflammable construction
- there are permanent louvered openings at floor and ceiling levels or other gravity ventilation method
- there is safety equipment available and operating (eye wash, deluge shower, self-contained breathing apparatus, protective clothing)
- the building is heated to prevent freezing (if applicable)
- different acids are stored in separate spaces or noncombustible sealed barriers at least 3 ft high between acids
- NO SMOKING are signs posted
- automatic sprinkler protection is provided
- workers are provided with protective safety equipment and a copious, flowing supply of fresh, clean water for first aid.

...

TRANSPORTATION

17-36. Transportation of hazardous materials should be done in a manner that prevents spills to the environment, exposure risks to personnel and promotes safe handling practices (GMP).

...

Determine if facility personnel transport hazardous materials on and/or offsite. (1)(2)(4)(5)(6)(12)(18)

Verify that precautions are taken when transporting including the following: (1)(2)(4)(5)(6)(12)(18)

- MSDS sheets are available in case of an accident
- personnel are trained in how to handle the materials being transported
- materials are closed when being transported
- vehicles are placarded to indicate the types of materials being transported as in Appendix 17-4.

(NOTE: The regulations found in Title 49, Subchapter C of the CFR 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, commerce is defined in terms of making a profit in this instance, therefore Subchapter C does not apply to Federal agencies.)

...

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Appendix 17-1

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

Container Type	Flammable Liquids			Combustible Liquids	
	<i>IA</i>	<i>IB</i>	<i>IC</i>	<i>II</i>	<i>II</i>
Glass or approved plastic	1 pt	1 qt	1 gal	1 gal	1 gal
Metal (other than DOT drums)	1 gal	5 gal	5 gal	5 gal	5 gal
Safety cans	2 gal	5 gal	5 gal	5 gal	5 gal
Metal drums (DOT specifications)	60 gal	60 gal	60 gal	60 gal	60 gal
Approved portable tanks	660 gal	660 gal	660 gal	660 gal	660 gal

Appendix 17-2

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

<i>Fire Protection¹ Provided</i>	<i>Fire Resistance</i>	<i>Maximum Size</i>	<i>Total Allowable Quantities² (gall/sq ft floor area)</i>
Yes	2 h	500 sq ft	10
No	2 h	500 sq ft	4
Yes	1 h	150 sq ft	5
No	1 h	150 sq ft	2

Note ¹: Fire protection system will be sprinkler, water spray, or other approved method.
Note ²: If metric containers are being stored, use the nearest metric equivalent.

Appendix 17-3

Flammable/Combustible Materials (29 CFR 1910.106(d)(5) and 1910.106(d)(6), Table H-14 through H-17)

Indoor Container Storage

Class	Liquid Storage Level	Protected Maximum		Storage per Pile	
		Gallons	Height	Gallons	Height
A	Ground and Upper Floors	2,750 (50)	3 ft (1)	600 (12)	3 ft (1)
	Basement	Not Permitted		Not Permitted	
B	Ground and Upper Floors	5,500 (100)	6 ft (2)	1,375 (25)	3 ft (1)
	Basement	Not Permitted		Not Permitted	
C	Ground and Upper Floors	16,500 (300)	6 ft (2)	4,125 (25)	3 ft (1)
	Basement	Not Permitted		Not Permitted	
II	Ground and Upper Floors	16,500 (300)	9 ft (3)	4,125 (75)	9 ft (3)
	Basement	5,500 (100)	9 ft (3)	Not Permitted	
III	Ground and Upper Floors	55,000 (1,000)	15 ft (5)	13,750 (250)	12 ft (4)
	Basement	8,250 (450)	9 ft (3)	Not Permitted	

(NOTE: Numbers in parentheses 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 from an aisle. Main aisles will be at least 8-ft wide and side aisles at least 4 ft wide.

Note 3: Each pile shall be separated from each other by at least 4 ft.

Appendix 17-3 (continued)

Flammable/Combustible Materials

Outdoor Container Storage

	Distance to property line that can be built upon (gal)	Distance to street, alley, public way (ft)	Maximum per pile (ft)	Distance be- tween piles (ft)
IA	1,100	5	20	10
IB	2,200	5	20	10
IC	4,400	5	20	10
II	8,800	5	10	5
III	22,000	5	10	5

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

Note 2: Within 200 ft of each container, there will be a 12-foot 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 4 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.

Appendix 17-3 (continued)

**Flammable/Combustible Materials
Indoor Portable Tank Storage**

Class	Storage Level	Protected Storage Maximum per Pile	Unprotected Storage Minimum per Pile
IA	Ground and upper floors Basement	Not permitted Not permitted	Not permitted Not permitted
IB	Ground and upper floors Basement	20,000 Not permitted	2,000 Not permitted
IC	Ground and upper floors Basement	40,000 Not permitted	5,500 Not permitted
II	Ground and upper floors Basement	40,000 20,000	5,500 Not permitted
III	Ground and upper floors Basement	60,000 20,000	22,000 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 from an aisle. Main aisles will be at least 8 ft wide and side aisles at least 4 ft wide.

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

Appendix 17-3 (continued)

Flammable/Combustible Materials Outdoor Portable Tank Storage

Class	Maximum per pile (Gal)	Distance between piles (Ft)	Distance to property line that can be built upon (Ft)	Distance to street, alley public way (Ft)
IA	2,200	5	20	10
IB	4,400	5	20	10
IC	8,800	5	20	10
II	17,600	5	10	5
III	44,000	5	10	5

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 of each container, there will be a 12-foot 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.

Appendix 17-4

Placarding Guidelines

The following table specifies placards that should be used for the transportation of ANY QUANTITY of the listed hazardous material.

Hazardous Materials

<i>Classed or Described As</i>	<i>Placards</i>
Class A Explosives	EXPLOSIVES A
Class B Explosives	EXPLOSIVES B
Poison A	POISON GAS
Flammable Solid	FLAMMABLE SOLID

(NOTE: Any of the above substances that are dangerous when wet should also have the placard: DANGEROUS WHEN WET, in addition to their primary placard.)

The following table specifies placards that should be used for the transportation of 1000 lb or more of the listed hazardous materials.

Hazardous Materials

<i>Classed or Described As</i>	<i>Placards</i>
Class C Explosives	FLAMMABLE
Nonflammable Gas	NONFLAMMABLE GAS
Nonflammable Gas (Chlorine)	CHLORINE
Nonflammable Gas (Fluorine)	POISON
Nonflammable Gas (Oxygen, pressurized liquid)	OXYGEN
Flammable Gas	FLAMMABLE GAS
Combustible Liquid	COMBUSTIBLE
Flammable Liquid	FLAMMABLE
Flammable Solid	FLAMMABLE SOLID
Oxidizer	OXIDIZER
Organic Peroxide	ORGANIC PEROXIDE
Poison B	POISON
Corrosive Material	CORROSIVE
Irritating Material	DANGEROUS

Appendix 17-4 (continued)

1. Placards should be affixed on both sides, rear and front, of the motor vehicle.
2. Place placards clear of ladders, pipes, and tarps.
3. Placards should be at least 3 in. away from advertising and markings.
4. The DANGEROUS placards may be used when a motor vehicle contains two or more classes of hazardous materials requiring different placards. The DANGEROUS placard may be used in place of the separate placards for each class.
5. Portable tanks having a rated capacity of 1000 gal or more must be placarded.
6. Cargo tanks having any quantity of hazardous material must be placarded.

INSTALLATION:	COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT ECAAR	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) MUSARC Engineer/Facility Coordinator (2) Facility Manager (4) Accumulation Point Manager
 (5) Directorate of Engineering and Housing (DEH)/DPW (6) Director of Logistics (DOL) (12)
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