USACERL Special Report EC-94/02
October 1993

US Army Corps
of Engineers
Construction Engineering
Research Laboratories

CDC
CENTERS FOR DISEASE CONTROL
AND PREVENTION

Environmental Compliance Assessment Protocol–Centers for Disease Control and Prevention (ECAP–CDC)

U.S. Centers for Disease Control and Prevention

In response to the growing number of environmental laws and regulations nationwide, the U.S. Centers for Disease Control and Prevention (CDC) has adopted an environmental compliance program that identifies compliance problems before they are cited as violations by the U.S. Environmental Protection Agency (USEPA).

The CDC compliance program, developed in 1992, is intended to help the agency maintain compliance with all Federal, state, and local environmental regulations. The goal is to protect human health, safety and the environment. CDC headquarters in Atlanta, Georgia, along with facilities in several other states, codeveloped and implemented a specific environmental assessment and management program tailored to the type and size of CDC facilities and operations. The resulting system combines Federal environmental regulations, along with documentation of good management practices and risk management information, into a series of checklists that show legal requirements and list specific items or operations to review.

The Environmental Compliance Assessment Protocol–Centers for Disease Control and Prevention (ECAP–CDC) incorporates existing checklists from USEPA and private industry. The system has been tested at several Georgia CDC facilities. The manual is updated continually to address new environmental compliance laws and regulations.

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave Blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	October 1993	Final

4. TITLE AND SUBTITLE
Environmental Compliance Assessment Protocol - Centers for Disease Control and Prevention (ECAP - CDC)

5. FUNDING NUMBERS
Reimbursable Order No. 3206, dated Feb 1992

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8. PERFORMING ORGANIZATION REPORT NUMBER
SR EC-94/02

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
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Atlanta, GA 30333

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)

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14. SUBJECT TERMS
Environmental Compliance Assessment Protocol
environmental compliance checklists
environmental compliance laws and regulations
Centers for Disease Control and Prevention

15. NUMBER OF PAGES
598

16. PRICE CODE

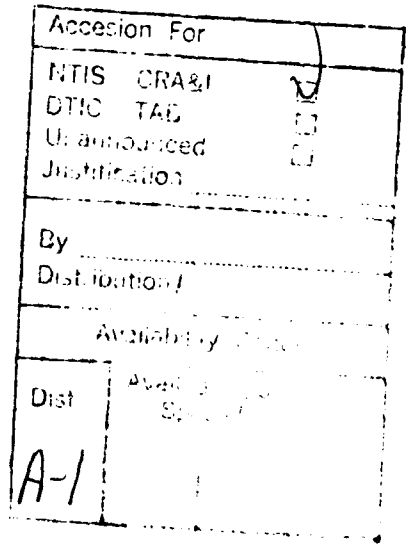
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	SAR

FOREWORD

This work was performed for the Centers for Disease Control and Prevention (CDC) under interagency agreement obligating document number 3206, dated February 1992. The CDC technical monitor was Rebecca L. West.

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 Donald H. Wiggins, Environmental Protocol Team, CECER-ECP. Tina M. Beckler and Donna J. Schell, CECER-ECP, were Associate Investigators. Dr. Diane K. Mann, CECER-ECP, is Acting Team Leader. Kurt A. Buehler is Acting Chief, CECER-EC, and Dr. William D. Goran is Chief, CECER-EL.

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



NOTICE

This manual is intended as general guidance for personnel at CDC facilities. 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 MANUAL

ASSESSMENT PROTOCOLS

INTRODUCTION

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 CDC facilities 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 an environmental compliance evaluation. Specifically, this manual:

1. Compiles applicable Federal environmental regulations with Agency 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 CDC environmental management program.

This manual is divided into sections (assessment areas). They are:

Air Emissions Management
Aboveground/Underground Storage Tank (AST/ UST) Management
Hazardous Materials Management
Hazardous Waste Management
Natural and Cultural Resources Management
Pesticide Management
Petroleum, Oil, and Lubricant (POL) Management
Solid Waste Management
Special Pollutants Management (includes asbestos, PCBs, radon, and noise)
Water Quality Management (potable water)

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

Table of Contents

INTRODUCTORY SECTION

PROTOCOL SECTION

ENVIRONMENTAL COMPLIANCE EVALUATION PROCESS

The environmental assessment 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 process.

1. 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 Agency 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, handling of tenants and off-facility 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 assessment 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.

Table 1

Previs:' Environmental Management Questionnaire

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

Name of Facility:_____

	YES	NO	N/A
SECTION 1. Air Emissions Management:			
1. Does the facility operate a fuel burner (central steam plant or hot water steam boiler)?	—	—	—
If **YES** how large and what fuel is used?			
Size Fuel			
---------- ----------			
---------- ----------			
---------- ----------			
2. Does the facility operate an incinerator? How large?	—	—	—
_____			
3. Does the facility dispense, store, or transfer gasoline?	—	—	—
4. Does the facility operate printing presses?	—	—	—
5. Does the facility store petroleum in aboveground storage tanks (ASTs)? What is the size of the largest tank? _____	—	—	—
6. Does the facility store volatile organic liquids in ASTs?	—	—	—

	YES	NO	N/A
7. Does the facility have fugitive emissions from volatile hazardous air pollutant (VHAP) equipment (currently VHAPs include vinyl chlorides and benzene)?	—	—	—
8. Does the facility use VOC-based solvent degreasers?	—	—	—
9. Does the facility procure/use CFC or Halon based substances?	—	—	—
10. Does the facility repair any units containing refrigerant?	—	—	—
11. Does the facility recycle/reclaim CFCs or halons?	—	—	—

SECTION 2. Aboveground/Underground Storage Tank (AST/ UST) Management:

1. Does the facility have any substandard USTs?	—	—	—
2. Does the facility have any new or upgraded USTs?	—	—	—
3. Has the facility repaired, or is it planning to repair, a UST?	—	—	—
3. Does the facility have hazardous substance USTs?	—	—	—
4. Does the facility have a deferred UST?	—	—	—
5. Does the facility have a metallic UST?	—	—	—
6. Does the facility have newly-installed USTs (i.e., after May, 1986)?	—	—	—
7. Have facility USTs undergone a change of service, or closure?	—	—	—
8. Does the facility have any USTs that were emptied of their contents and abandoned in place?	—	—	—
9. Does the facility have any aboveground storage tanks with capacity greater than 660 gallons (gal)?	—	—	—

	YES	NO	N/A
SECTION 3. Hazardous Materials Management:			
1. Does the facility store any hazardous materials such as paints, solvents, and pesticides?	—	—	—
2. Have there been any releases or spills of hazardous substances at the facility?	—	—	—
3. Are there any extremely hazardous substances at the facility?	—	—	—
4. Does the facility: have extremely hazardous substances in excess of 500 pounds (lb) or the threshold planning quantity (see Appendix 3-1); have hazardous chemicals in excess of 10,000 lb; or fall under Standard Industrial Classification Codes 20 to 39?	—	—	—
5. Does the facility store flammable/combustible liquids (i.e. paints, solvents) in lockers, storage sheds, tanks or industrial areas?	—	—	—
6. Does the facility store compressed gases (i.e. oxygen, acrtylene)?	—	—	—
7. Does the facility store acids?	—	—	—
8. Does the facility store hazardous materials in laboratories?	—	—	—
9. Does the facility transport hazardous material, or offer such materials for transport?	—	—	—
SECTION 4. Hazardous Waste Management:			
1. Is the facility a generator of hazardous waste?	—	—	—
a. Is the facility a small quantity generator (SQG) (i.e., generates less than 1000 kilograms (kg) of hazardous waste but more than 100 kg in 1 month (mo))?	—	—	—
b. Is the facility a conditionally exempt small quantity generator (CESQG) (i.e., generates less than 100 kg of hazardous waste in 1 mo)?	—	—	—
c. Is the facility a generator that generates more than 1000 kg of waste in 1 mo?	—	—	—

Complete this section before proceeding.

Any waste that is not excepted, is listed in 40 CFR 261, or that exhibits any of the following characteristics is a hazardous waste:

- Ignitability (flashpoint less than 140 °Fahrenheit (F))
- Corrosivity (pH less than 2, or greater than 12.5)
- TCLP Toxicity (for As,Ba,Cd,Cr,Pb,Hg,Se,Ag, and selected pesticides
- Reactivity (or CN).

The following are hazardous wastes that may typically be found at a facility:

	CHECK IF USED AT THIS FACILITY	Vol Gen/mo lb	Vol Gen/mo kg	Vol Accum lb	Vol Accum kg
___	* Solvents	___	___	___	___
___	Liquid Paint	___	___	___	___
___	Paint stripper, remover, or thinner	___	___	___	___
___	Spray paint booth air filters	___	___	___	___
___	Pesticides, Insecticides, Herbicides, etc.	___	___	___	___
___	Battery acid & Caustics (in unserviceable batteries)	___	___	___	___
___	Some pharmaceuticals	___	___	___	___
___	Printing ink, ink solvents and cleaners	___	___	___	___
___	Absorbent materials and soil contaminated with hazardous waste	___	___	___	___
___	Other_____	___	___	___	___
___	Other_____	___	___	___	___
___	Other_____	___	___	___	___
	TOTAL	___	___	___	___

* i.e., Trichlorethane, Methylene, chloride, Tetrachloroethylene, 1,1,1 Trichloroethane, Carbon Tetrachloride, Chlorinated Fluorocarbons, Toluene, MEK, Break-free in liquid form, Mineral Spirits, Xylene

	YES	NO	N/A
2. Does the facility transport hazardous waste?	—	—	—
3. Does the facility generate or dispose of restricted wastes?	—	—	—

SECTION 5. Natural and Cultural Resources Management:

1. Does the facility have any construction projects?	—	—	—
2. Does the facility have land management responsibilities?	—	—	—
3. Does the facility have endangered or threatened species?	—	—	—
4. Does the facility have floodplains or wetlands?	—	—	—
5. Does the facility have any historic properties under its jurisdiction?	—	—	—
6. Does the facility have cultural resources? List the facility's cultural resources below:	—	—	—

_____

_____

_____

7. Does the facility have any Native American graves or artifacts, or have any been discovered during an operation?	—	—	—

SECTION 6. Pesticide Management:

1. Do facility personnel engage in the application of pesticides?	—	—	—
2. Does the facility use contractor personnel in the application of pesticides?	—	—	—
3. Does the facility store, mix, or formulate pesticides?	—	—	—
a. Does the facility store/use pesticides classified highly toxic or moderately toxic (bearing DANGER, POISON, WARNING, or the skull and crossbones symbol)?	—	—	—
4. Does the facility dispose of pesticides?	—	—	—

SECTION 7. Petroleum, Oil and Lubricant (POL) Management:	YES	NO	N/A
1. Does the facility have a current SPCC plan?	—	—	—
2. Have there been any discharges of oil at the facility?	—	—	—
3. Does the facility use dikes as a means of containment for petroleum storage tanks?	—	—	—
4. Does the facility have used oil?	—	—	—

SECTION 8. Solid Waste Management:			
1. Does the facility collect or store solid waste on site?	—	—	—
2. Does the facility contract out the collection of its solid waste?	—	—	—
3. Does the facility recycle and reduce solid waste? Types of recycling _____	—	—	—
a. Does the facility have over 100 office workers?	—	—	—
b. Does the facility generate waste corrugated containers?	—	—	—
4. Does the facility handle or dispose of medical waste?	—	—	—

SECTION 9. Special Pollutants Management:			
1. Does the facility have PCBs of any kind?	—	—	—

Types	Quantities
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----------	----------

2. Does the facility have PCB Transformers?	—	—	—
3. Does the facility have PCB Items (PCB-contaminated heat transfer or hydraulic systems, electromagnets, switches, voltage regulators, capacitors, circuit breakers, reclosers, or cables)?	—	—	—
5. Does the facility use PCBs in research?	—	—	—

	YES	NO	N/A
6. Has the facility had a PCB spill?	—	—	—
7. Does the facility store PCBs?	—	—	—
8. Does the facility transport PCBs or PCB Items?	—	—	—
9. Does the facility dispose of PCBs or PCB Items?	—	—	—
10. Does the facility have an in-house asbestos removal team?	—	—	—
11. Does the facility demolish, renovate, or strip components from structures containing friable asbestos?	—	—	—
12. Does the facility dispose, or transport for disposal, asbestos or asbestos-containing waste?	—	—	—
13. Is the facility located in an area with a potential radon problem?	—	—	—
14. Does the facility have any possible sources of noise pollution or a noise hazardous area?	—	—	—

SECTION 10. Water Quality Management:

1. Does the facility have any point source discharges?	—	—	—
2. Does the facility have a NPDES/SPDES permit?	—	—	—
3. Does the facility have stormwater discharge not covered by a NPDES permit?	—	—	—
4. Does the facility discharge to a wastewater treatment plant?	—	—	—

	YES	NO	N/A
5. Does the facility operate a wastewater treatment plant?	—	—	—
6. Does the facility operate steam electric power generating sources?	—	—	—
7. Does the facility operate metal finishing point sources?	—	—	—
8. Does the facility operate a photo lab?	—	—	—
9. Does the facility treat, store, and distribute its own drinking water?	—	—	—

Signature of individual completing this form:_____

Date completed:_____

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

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

General

1. Detailed maps of the facility indicating street names and building numbers. Enough for one for every member of the assessment team.

2. A phone list.

3. Copies of Notices of Violations (NOVs) issued to the facility in any of these areas.

Air Emissions Management

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

Aboveground and Underground Storage Tanks (ASTs/ USTs)

1. Upgrading and/or closure plans
2. A list of all ASTs/USTs and their locations
3. Release detection documentation
4. Integrity test results
5. Site contamination reports after tank removals

Hazardous Materials Management.

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

Hazardous Waste Management

1. The Hazardous Waste Management plan
2. A list of hazardous wastes generated at the facility
3. A list of waste generation/storage areas
4. USEPA ID No.
5. Manifests
6. Any permits
7. The biennial report
8. Personnel training records

Natural and Cultural Resources Management

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

Pesticides Management

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

POL Management

1. The SPCC plan
2. A list of POL storage areas

Solid Waste Management

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

Special Pollutants Management

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

Water Quality Management

1. All NPDES/SPDES permits
2. Maps of the storm, sanitary, and industrial sewers
3. A copy of pretreatment standards imposed on the facility.
4. Locations of holding ponds, sedimentation pits, and open/end-of-pipe discharge points.

Site Evaluation Activities - Onsite, the evaluators will conduct record searches, interviews, and site surveys to determine the compliance status of the facility. 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. A Finding Summary form is available to assist evaluators in compiling needed information during an evaluation. A Finding Summary form should be completed for each finding during the evaluation. These forms comprise the basis of the assessment report. The format and content for evaluation reports will be in a separate supplement. Figure 1 shows a blank sample Finding Summary form. Figure 2 shows a sample completed Finding Summary form.

All items of the Finding Summary form 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, Agency, Good Management Practice) against which the facility is being measured. 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 hazardous waste management program, which is an SQG, 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 4-27 in the U.S. 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.

Figure 1

FINDING SUMMARY

Manual Edition Date:_____

INDIVIDUAL FINDING SHEET

(To provide detailed information for use by assessment team only)

MANDATORY ENTRIES

Section (Air, Hazardous Materials, etc.):_____ Question Number:_____

Type of Finding (Positive or Negative)_____ Building number or location _____

FINDING CATEGORY (Circle one) Significant Major Minor Management Practice

Basis of finding (*Citation or Regulation*)
(Reference applicable Federal, state, and local regulations) _____

CONDITION (What did you find?)

CRITERIA (What is the actual requirement?)

SAMPLING RESULTS (mandatory only if sampling was used)

Universe:____ Sample Size:____

Number of Discrepancies____ Percentage of Discrepancies:____

Is this a repeat finding (NOV, etc)? _____

PREPARED BY: **DATE:**

SUGGESTED SOLUTION(S):

OPTIONAL ENTRIES

COMMENTS:

Explanation of Ratings

Deficiencies noted on the Finding Summary are rated as follows:

Significant: A problem categorized as significant requires immediate attention. It poses, or has a high likelihood to pose, a direct and immediate threat to human health, safety, the environment, or the facility's mission. A leaking PCB transformer located next to a dining facility, for example, would likely be a significant deficiency.

Major: A major deficiency requires action, but not necessarily immediate action. Major deficiencies may pose a threat to human health, safety, or the environment. Any immediate threat, however, must be categorized as significant.

Minor: Minor deficiencies are usually administrative in nature, even though those findings might possibly result in a notice of violation. This category may also include temporary or occasional instances of noncompliance.

Management Practice: Management practice items are those for which there is no specific regulatory requirement.

Figure 2

FINDING SUMMARY

Manual Edition Date: Oct 1995

INDIVIDUAL FINDING SHEET

(To provide detailed information for use by assessment team only)

MANDATORY ENTRIES

Section (Air, Hazardous Materials, etc.): Haz Waste **Question Number:** 4-27

Type of Finding (Positive or Negative): Neg **Building number or location:** Building 5126

FINDING CATEGORY (Circle one): Significant (Major) Minor Management Practice

Basis of finding (Citation or Regulation):
(Reference applicable Federal, state, and local regulations) 40 CFR 262.34(a)(1)(ii) and 265.171

CONDITION (What did you find?)

Three 55-gallon containers of [illegible] were found in the [illegible] area.

CRITERIA (What is the actual requirement?):

Containers must be stored in accordance with [illegible] requirements.

SAMPLING RESULTS (mandatory only if sampling was used):

Universe:___ Sample Size:___

Number of Discrepancies:___ Percentage of Discrepancies:___

Is this a repeat finding (NOV, etc)? No

PREPARED BY: [illegible] **DATE:** [illegible]

SUGGESTED SOLUTION(S):

Properly overpack drums.

OPTIONAL ENTRIES

COMMENTS:

Containers were put in order immediately.

Explanation of Ratings

Deficiencies noted on the Finding Summary are rated as follows:

Significant: A problem categorized as significant requires immediate attention. It poses, or has a high likelihood to pose, a direct and immediate threat to human health, safety, the environment, or the facility's mission. A leaking PCB transformer located next to a dining facility, for example, would likely be a significant deficiency.

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Management Practice: Management practice items are those for which there is no specific regulatory requirement.

USING THE MANUAL

THE PROTOCOLS

CDC 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.

After a review of these activities at CDC facilities it is apparent that there are major categories of environmental compliance into which most environmental regulations and CDC activities could be grouped. This manual is divided into 10 sections that correspond to major compliance categories.

1 Air Emissions Management
2 Aboveground/ Underground Storage Tank (AST/ UST) Management
3 Hazardous Materials Management
4 Hazardous Waste Management
5 Natural and Cultural Resources Management
6 Pesticide Management
7 Petroleum, Oil, and Lubricant (POL) Management
8 Solid Waste Management
9 Special Pollutants Management (includes asbestos, PCBs, radon, and noise)
10 Water Quality 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 legislative 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 easily inserted.

D. Agency Regulations/Requirements

This section of the protocol identifies the relevant regulations, policies, or requirements associated with the compliance area that are promulgated by the Agency.

E. Key Compliance Requirements

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

F. Responsibility for Compliance

This section identifies and summarizes the individual organizations at an Agency facility with responsibility for maintenance, operation, or environmental monitoring of activities associated with the compliance category.

G. Key Compliance Definitions

This section of each protocol presents definitions taken from the Code of Federal Regulations (CFR) and Agency regulations 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.

MANUAL FORMAT

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

The second column gives instructions to help conduct the compliance 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 to the assessor. A legend at the bottom of the worksheet gives a description of the contact/location code.

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 facilities can be included on the worksheets.

SUPPLEMENTAL INFORMATION

A list of commonly used acronyms (Table 2) is located at the end of this section. These acronyms are used within the manual and are commonly used in discussions in environmental compliance.

Any findings discovered through the use of this guidance manual by the internal assessment should be validated by the environmental coordinator and legal counsel.

Any change or suggestion for improving this guidance manual should be forwarded to the Environmental Program Manager, Office of Health and Safety.

CONTACT/LOCATION CODES

Each point of contact is assigned a number. These numbers are used as cross references within the text of the checklists. Examples of individuals/offices to include are:

(1) Environmental Program Manager
(2) Facility Supervisor/Director
(3) Facilities Operations Branch
(4) Section Chiefs
(5) Industrial Hygiene Section
(6) Radiation Protection & Fire Safety Section
(7) Chemical & Physical Hazards Branch
(8) Training Activity
(9) Medical Services
(10) Biosafety Branch
(11) Procurement & Grants Office
(12) Warehouse
(13) Facilities Design Branch
(14) Grounds Maintenance Section
(15) Engineering Services Office
(16) Real Property & Space Management Branch
(17) Sanitation Maintenance (Facilities Operations Branch)
(18) Electrical Section (Facilities Operations Branch)
(19) Asbestos Program Manager (Industrial Hygiene Section)
(20) Food Services Manager

Table 2

Glossary of Acronyms

ACM	Asbestos Containing Material
ANSI	American National Standards Institute
AQCR	Air Quality Control Regulations
ASME	American Society of Mechanical Engineers
ASTM	American Standards Test Manual
BAT	Best Available Technology
BOD	Biochemical Oxygen Demand
BPAT	Best Practically Available Treatment
Btu	British Thermal Units
C	Compliance
CAA	Clean Air Act
CELDS	Computer-Aided Environmental Legislative Data System
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response Compensation & Liability Act
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CHEMTREC	Chemical Transportation Emergency Center
CO	Carbon Monoxide
COD	Chemical Oxygen Demand
CO_2	Carbon Dioxide
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EPCRA	Emergency Planning & Community Right-to-Know Act
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FNSI	Finding of No Significant Impact
GMP	Good Management Practice
HCFC	Hydrogenated Chlorofluorocarbons
HCl	Hydrogen Chloride
HSWA	Hazardous and Solid Waste Amendment
ID	Identification
LD	Lethal Dose
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MSDS	Material Safety Data Sheet
MTR	Materials Testing Report
NA	Not Applicable
NAA	Non-Attainment Areas
NAAQS	National Ambient Air Quality Standards
NACE	National Association of Corrosion Engineers

Table 2 (continued)

Glossary of Acronyms

NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Prevention Association
NO_2	Nitrogen Dioxide
NPDES	National Pollutant Elimination System
NSPS	New Source Performance Standards
O&M	Operations and Management
OHSPC	Oil and Hazardous Substance Pollution Contingency (Plan)
OSHA	Occupational Safety and Health Act
O_2	Oxygen
PCB	Polychlorinated Biphenyl
PL	Public Law
POC	Point of Contact
POL	Petroleum, Oil, and Lubricants
POTW	Public Owned Treatment Works
PSD	Prevention of Significant Deterioration
PSIA	Pounds Per Square Inch Absolute
PSIG	Pounds Per Square Inch Gauge
PVC	Polyvinyl Chloride
RACT	Reasonably Available Control Technology
RCRA	Resource Conservation and Recovery Act
RMA	Requires Management Action
RQ	Reportable Quantity
RVP	Reid Vapor Pressure
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SIP	State Implementation Plan
SPCC	Spill Prevention Control and Countermeasure (Plan)
SQG	Small Quantity Generator
THM	Trihalomethane
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, or Disposal (Facility)
TU	Turbidity Unit
UIC	Underground Injection Control (Plan)
USACERL	U.S. Army Construction Engineering Research Laboratory
USEPA	U.S. Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WQA	Water Quality Act

Section 1

Air Emissions Management

SECTION 1

AIR EMISSIONS MANAGEMENT

A. Applicability

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

- Particulates, sulfur dioxide (SO_2), nitrogen oxide (NO_x), and carbon monoxide (CO) from fuel burning at steam and hot water generation plants and boilers.
- Particulates and toxic air emissions from the operation of hazardous waste, general waste, classified material, and medical, pathological, and/or infectious waste incinerators.
- The emission of volatile organic compound (VOC) vapors from the storage and transfer of certain petroleum fuels and chemicals (solvents), and the operation of degreasers and other processes (paint stripping and metal finishing) which use solvents.
- The emission of CO from vehicles operated on the facility.
- Fugitive particulate emissions from training activities and construction/ demolition operations.

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

B. Federal Legislation

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

The purposes of this Act are:

- to protect and enhance the quality of the nation's air resources so as to promote the public health and welfare and the productivity of its population
- to initiate and accelerate a national research and development program to achieve the prevention and control of air pollution
- to provide technical and financial assistance to state and local governments regarding the development and execution of their air pollution prevention and control efforts
- to encourage and assist the development and operation of regional air pollution prevention and control programs (42 USC 7401(b))
- to achieve a substantial reduction in emission of hazardous air pollutants from area sources and an equivalent reduction in the public health risks associated with such sources including a reduction of not less than 75 per centum in the incidence of cancer attributable to emissions from such sources (42 USC 7412(k)(1))
- to reduce the adverse effects of acid deposition through reductions in annual emissions of SO_2 of 10 million tons from 1980 emission levels, and of NO_x emissions of approximately 2 million tons from 1980 emission levels, in the 48 contiguous states and the District of Columbia; and to effectuate such reductions by requiring compliance by affected sources with prescribed emission limitations by specified deadlines, which limitations may be met through alternative methods of compliance provided by an emission allocation and transfer system. To encourage energy conservation, use of renewable and clean alternative technologies, and pollution prevention as a long-range strategy, consistent with the provisions of this Act, for reducing air pollution and other adverse impacts of energy production and use (42 USC 7651(b)).

A primary goal of this act is to encourage or otherwise promote reasonable Federal, state, and local government actions for pollution prevention (42 USC 7401(c)). The prevention and control of air pollution at its source is the primary responsibility of states and local governments (42 USC 7401(a)(3)).

Unless specified otherwise, nothing in this act precludes or denies the right of any state or political subdivision to adopt or enforce:

- any standard or limitation respecting emissions of air pollutants
- any requirement respecting control or abatement of air pollution.

However, if an emission standard or limitation is in effect under an applicable implementation plan or under section 7411 or 7412 of this Act, such state or political subdivision may not adopt or enforce any emission standard or limitation which is less stringent than the standard of limitation under such plan or section (42 USC 7416).

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

- any requirement whether substantive or procedural (including record-keeping, reporting, and emission)
- any requirement to pay a fee or charge imposed by any state or local agency to defray the costs of its air pollution regulatory program
- the exercise of any Federal, state, or local administrative authority
- any process and sanction, whether enforced in Federal, state, or local courts, or in any other manner (42 USC 7418(a)).

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

C. State/Local Requirements

The primary mechanisms regulating air pollutant emissions are the state or air quality control region (AQCR) regulations. These regulations will normally follow the Federal guidelines for state programs and will have many similar features. However, depending on the type and degree of air pollutant problems within the state/region, the individual regulations will vary. As an example, photochemical oxidant (ozone) problems are widespread in California and, therefore, the individual AQCRs in that state have stringent VOC emission requirements. The state of North Dakota has no such problem and, therefore, has fewer and less stringent VOC regulations.

New source performance standards (NSPSs) are established for particular pollutants in industrial categories based upon adequately demonstrated control technology.

A permit is normally required for new, expanded, or modified sources of air pollutants. Some state regulations apply directly to some facilities and operations without requiring a permit. At a minimum, state regulations should be reviewed for the following activities:

- fugitive dust emissions
- control of particulate emissions from the transportation of refuse or materials in open vehicles
- certification requirements for boiler operators
- emissions and emission control requirements for the operation of existing fossil fuel-fired steam generators
- open burning
- 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 fuel pumps.

D. CDC Regulations/Requirements

- This section includes a description of the environmental regulations, policies, and requirements of the CDC. At this time, the CDC has not issued environmental regulations for its components.

E. Key Compliance Requirements

- New Source Performance Standards (NSPSs) - 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 NSPSs have been developed, but only the following might apply to CDC facilities:

  - incinerators for beryllium containing waste
  - bulk gasoline terminals with greater than 284,250 liters (L) (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 151,600 L (40,000 gal) capacity
- rotogravure printers.

- Hazardous Air Pollutants - National Emissions Standards for Hazardous Air Pollutants (NESHAPs) are based on health effects with strong reliance on technological capabilities. They apply to both existing and new stationary sources. The asbestos NESHAP is likely to have the greatest impact on CDC activities. This NESHAP imposes controls on demolition, renovation and land disposal of asbestos containing materials (ACM). See Section 9, *Special Pollutants Management.*

  Additionally, the NESHAPs address the control of fugitive emissions of volatile hazardous air pollutants (VHAP) from sources such as compressors, flanges, pressure relief devices, and pumps. This includes fugitive emissions of benzene and vinyl chloride.

- Vehicular Emission Inspections - Many states require owners of fleet vehicles to have annual inspections of exhaust gases to determine emissions of CO and hydrocarbons.

- VOC Emissions Compliance - Most states regulate the emission of VOCs into the atmosphere. Typical 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 are usually expressed in pounds of VOC/unit volume of substance used.

- Particulate Emission Compliance - Particulates emitted from fuel burning equipment and incinerators on CDC 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 start-up and maintenance operations for short periods of time (5 minutes (min)/hour (h)).

- Permits to Operate Air Contaminant Sources - CDC 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.

- SO_2 Emission Compliance - Sources burning fuel containing sulfur are typically limited to an allowable stack emission rate in pounds of SO_2/ million British thermal uni's (MBtu) heat input (lb/MBtu) or the use of a fuel with a specific fuel sulfurcontent. 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, are regulated in 40 Code of Federal Regulations (CFR) 82.

F. Responsibility for Compliance

- Environmental Program Manager - responsible for ensuring that permits are applied for, obtained, and complied with, and for monitoring the use of CFCs and Halons. As part of this process, the Environmental Program Manager is responsible for maintaining an inventory of air emission sources at CDC facilities.

- Facilities Operations Branch - responsible for the operation and maintenance of boilers and incinerators. The Facilities Operations Branch is also responsible for maintaining fuel and VOC storage tanks, both above and below ground.

G. Key Compliance Definitions

These definitions were obtained from the Federal regulations listed previously.

- *Appliance* - any device that contains and uses a Class I or Class II substance as a refrigerant and that 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 that has applied for and received approval from the Administrator pursuant to 82 CFR 160 (82 CFR 152(b)).

- *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 month (mo) period at the maximum design heat input capacity (40 CFR 60.41(c)).

- *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).

- *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 National Ambient Air Quality Standard (NAAQS) for ozone pursuant to rule-making 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 on any land or water
    2. the disassembly of any appliance for discharge, deposit, dumping or placing of its discarded component parts into or on any land or water
    3. the disassembly of an appliance for reuse of its component parts.

- *Duct Burner* - a device that combusts fuel and 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 they enter a steam generating unit (40 CFR 60.41(c)).

- *Emerging Technology* - any SO_2 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 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 the atmosphere from other than a stack chimney, vent, or other functionally equivalent opening. For example: vapors, dust, fumes (40 CFR 51.301(j)).

- *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, not including 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 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, nonmanufacturing activities at prisons, and government facilities (40 CFR 60.51(a)).

- *Lignite* - coal that is classified as lignite A or B according to the American Society for Testing and Materials (ASTM) Standards (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, thereby 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 the Resource Conservation and Recovery Act (RCRA) or any household waste as defined in RCRA-C (40 CFR 60.51(a)).

- *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 type solid waste does include motor vehicle maintenance materials, limited to vehicle batteries, used motor oil, and tires. Municipal type solid waste does not include wastes that are solely segregated medical wastes, although any mixture of segregated medical wastes and other wastes that contains more than 30 percent medical waste discards is considered to be municipal type 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's or passenger's compartment of a nonroad motor vehicle. This includes the air conditioning equipment found on agricultural or construction vehicles. This definition is not intended to cover appliances using HCFC-22 refrigerant (82 CFR 152(l)).

- *Opacity* - the degree to which emissions reduce the transmission of light and obscure the viewing 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).

- PM_{10} - 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 of 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)).

- *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).

- *Steam Generating Unit* - any furnace, boiler, or other device used for combusting fuel for the purpose of producing steam (including fossil fuel-fired steam generators associated with combined cycle gas turbines). Nuclear steam generators are not included (40 CFR 60.41(a)).

- *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 other than 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 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. (75.946 cm) of mercury). This definition includes, but is not limited to, equipment using refrigerants -13 and -503 (82 CFR 152(y)).

- *Very Low Sulfur Oil* - an oil that contains no more than 0.5 weighted percent sulfur or that, when combusted without SO_2 emission control, has a SO_2 emission rate equal to or less than 0.5 lb/MBtu heat input (40 CFR 60.41(b)).

- *VOC Service* - in relationship to fugitive emissions, when a piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight (40 CFR 61.241).

- *Volatile Hazardous Air Pollutant (VHAP)* - a substance regulated under 40 CFR 61, subpart V for which a standard for equipment leaks of the substance has been proposed and promulgated. Benzene and vinyl chloride are VHAPs (40 CFR 61.241).

- *Volatile Hazardous Air Pollutant (VHAP) Service* - a piece of equipment that either contains or contacts a fluid (liquid or gas) that is at least 10 percent VHAP by weight (40 CFR 61.241).

- *Volatile Organic Compound (VOC)* - any compound of carbon, excluding CO, carbon dioxide (CO_2), carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions (40 CFR 51.100).

AIR EMISSIONS MANAGEMENT PROTOCOL

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Facilities	1-1 through 1-4	(1)(2)
Incinerators	1-5	(1)(2)
Printing Presses	1-6	(1)(2)
POL Storage Vessels	1-7 and 1-8	(1)(3)
CFCs and Halons	1-9 through 1-11	(1)
Refrigerants		
General	1-12 through 1-25	(1)
Recordkeeping	1-26 and 1-27	(1)

(a)CONTACT/LOCATION CODE:

(1) Environmental Program Manager
(2) Facility Supervisor/Director
(3) Facilities Operations Branch

AIR EMISSIONS MANAGEMENT

Records to Review

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

Physical Features to Inspect

- All air pollution sources (fuel burners, incinerators, VOC sources, etc.)
- Air pollution monitoring and control devices
- Air emission stacks
- Air intake vents

People to Interview

- Environmental Program Manager
- Facility Supervisor/Director
- Facilities Operations Branch

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL FACILITIES	
1-1. Determine actions or changes since previous review of air quality (GMP).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report. (1)
...	...
1-2. Copies of all relevant Federal, Agency, state, and local regulations and guidance documents on air emissions should be available at the facility (GMP).	Verify that copies of the following regulations are available and kept current: (1)(2) - 40 CFR 60, *Standards of Performance for New Stationary Sources.* - 40 CFR 61, *National Emission Standards for Hazardous Air Pollutants.* - 40 CFR 80, *Regulation of Fuels and Fuel Additives.* - 40 CFR 82, *Protection of Stratospheric Ozone.* - applicable state and local regulations.
...	...
1-3. Facilities are required to comply with state and local air quality regulations (CAA, 42 USC 7418(a)).	Verify that the facility is complying with state and local air quality requirements. (1)(2) Verify that the facility is operating according to permits issued by the state or local agencies. (1)(2) (NOTE: Issues typically regulated by state and local agencies include: - 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 - 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.)

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
1-3. (continued)	(NOTE: Under 42 USC 7418(c) and 7418(d) each department, agency, and instrumentality of executive, legislative, and judicial branches of the Federal Government is 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.)
...	...
1-4. Facilities must meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning air quality have been issued since the finalization of the manual. (1)(2) Verify that the facility is in compliance with newly issued regulations. (1)(2)
...	...
INCINERATORS	
1-5. Incinerators that process beryllium containing waste, beryllium, beryllium oxide, or beryllium alloys are required to meet specific standards (40 CFR 61.30 through 61.34).	Verify that emissions to the atmosphere do not exceed 10 grams (g) of beryllium over a 24 h period unless approval has been received for a larger quantity of emissions. (1)(2) Verify that emissions testing is done within 90 days of the startup of a new source. (1)(2) Verify that monitoring sites are operated continuously. (1)(2) Verify that records of the emissions testing results are kept and made available for 2 yr. (1)(2)
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
PRINTING PRESSES	
1-6. Publication rotogravure printing presses, except for proof presses, that started construction, modification, or reconstruction after 28 October 1980 are required to meet specific standards concerning VOC emissions (40 CFR 60.430 through 60.435).	Determine if the facility operates any publication rotogravure printing presses. (1)(2) Verify that gases are not being discharged containing VOC equal to more than 16 percent of the total mass of VOC solvent and water used at that facility during any one performance averaging period. (1)(2) (NOTE: Each performance averaging period is 30 consecutive calendar days.) Verify that facilities using waterborne ink systems or solvent-borne ink systems with solvent recovery systems record the amount of solvent and water used, solvent recovered, and estimated emission percentage for each calendar month and maintain these record for 2 yr. (1)(2)
...	...
POL STORAGE VESSELS	
1-7. Storage vessels for petroleum liquids with a storage capacity greater than 151,600 L (40,000 gal), but less than 246,350 L (65,000 gal), that started construction or modification after 8 march 1974 but before 19 May 1978, or with a capacity greater than 246,350 L (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).	*Determine whether or not* the facility has any petroleum storage tanks meeting these parameters. (1)(3) Determine what the vapor pressure is of the petroleum liquids being stored. (1)(3) Verify that if the true vapor pressure of the petroleum stored is equal to or greater than 1.5 pounds 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)(3) 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)(3) 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)(3) (NOTE: Facilities storing petroleum liquids with a Reid Vapor pressure (RVP) of less than 1.0 psia are not required to keep records.)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-8. Storage vessels for petroleum liquids with a storage capacity greater than 151600 L (40,000 gal) constructed after 18 May 1978 are required to meet specific standards (40 CFR 60.110(a) through 60.115(a)).	Determine if the facility has any liquid petroleum storage vessels meeting these parameters. (1)(3) Determine the true vapor pressure of the liquids stored. (1)(3) 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)(3) - 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. 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)(3) Verify that the following testing is done: (1)(3) - gap measurement for primary seals of external floating roofs shall be taken at least once every 5 yr - gap measurement for secondary seals of external floating roofs shall be taken at least once a year. Verify that the following records are kept: (1)(3) - records of gap measurement are to be kept for at least 2 yr following the date of measurement - records of 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.
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
CHLOROFLUORO-CARBONS (CFCs) AND HALONS	
1-9. In order to minimize atmospheric emissions of ozone-depleting substances, specific good management practices should be instituted at the facility (GMP).	Verify that ozone-depleting substances are procured only in the absence of suitable alternatives. (1) Verify that there is no disposal of ozone-depleting substance by direct release to the atmosphere. (1) Verify that ozone-depleting substances are recycled. (1)
...	...
1-10. 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 substance used as a refrigerant in an appliance or industrial process refrigeration in such a manner that the substance enters the environment (42 USC 7671g(c)).	Verify that Class I or Class II substances are not knowingly vented, released, or disposed of in the environment. (1) (NOTE: Minimal releases associated with good faith attempts to recapture and recycle or safely dispose of Class I or Class II substances are exempted.) (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 that contains and uses a substitute substance unless the U.S. Environmental Protection Agency (USEPA) decides that this does not pose a threat to the environment.)
...	...
1-11. As of 1 January 2015 the use of Class II substances (see Appendix 1-1) is forbidden except in specific situations (42 USC 7671d(a)).	Verify that a program is underway to eliminate the use of Class II substances unless a substance: (1) - has been reused or recycled - is used and entirely consumed (except for trace quantities) in the production of other chemicals - is used as a refrigerant in appliances manufactured prior to 1 January 2020.
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
REFRIGERANTS **General**	
1-12. 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)).	Determine if the installation is maintaining, servicing, repairing, or disposing of appliances containing refrigerants. (1) Verify that Class I or Class II substances are not being vented to the atmosphere. (1) (NOTE: De minimis releases that are associated with good faith attempts to recycle or recover refrigerants are not considered a violation.) (NOTE: These requirements apply to the following: - any person servicing, maintaining, or repairing appliances except for MVACs - persons disposing of appliances, including MVACs - refrigerant reclaimers, appliance owners, recycling and recovery equipment.)
...	...
1-13. No person can open appliances other than MVACs for maintenance, service, or repair, and no person can dispose of appliances other than small appliances, MVACs, and MVAC-like appliances, unless specific requirements are met (40 CFR 82.154(b) and 82.156(a)(5)).	Verify that the required practices outlined in 40 CFR 82.156 are met (see checklist items 1-16 through 1-25). (1) Verify that equipment is used that is certified for the appliance in question. (1)
...	...
1-14. Installations maintaining, servicing, or repairing appliances other than MVACs and installations disposing of appliances other than small appliances and MVACs, are required to submit certification to the USEPA (40 CFR 82.162 (a)).	Verify that the installation has submitted certification to the USEPA that it has acquired certified recovery or recycling equipment and is in compliance applicable requirements. (1)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-15. Installations recovering refrigerant from small appliances, MVACs, and MVAC-like appliances for the purpose of disposing of these appliances are required to certify to the USEPA that appropriate recovery equipment has been acquired (40 CFR 82.162(c)).	Verify that the installation has submitted certification to the USEPA that it has acquired appropriate recovery equipment. (1)
...	...
1-16. 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)).	Verify that the installation has at least one available piece of equipment. (1) (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 an MVAC-like appliance.)
...	...
1-17. System-dependent equipment must not be used with appliances normally containing more than 15 lb of refrigerant (40 CFR 82.156(c)).	Verify that system-dependent equipment is not used with appliances normally containing more than 15 lb of refrigerant. (1)
...	...
1-18. When appliances other than MVACs are opened for service, maintenance, or repair, the refrigerant must be evacuated in either the entire unit or the part to be serviced if that part can be isolated, to a system receiver or a certified recovery or recycling machine (40 CFR 82.150 and 82.156(a)).	Verify that refrigerant is evacuated to either a system receiver or certified recovery or recycling machine. (1)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-19. When appliances other than small appliances, MVACs, and MVAC-like appliances are disposed of, the refrigerant must be evacuated from the entire unit to a certified recovery or recycling machine (40 CFR 82.150 and 82.156(a)).	Verify that if disposal is occurring, the refrigerant is being evacuated to a certified recovery or recycling machine. (1)
...	...
1-20. When appliances other than small appliances, MVACs, and MVAC-like appliances are opened for maintenance, service, or repair, they must be evacuated to specific levels before they are opened (40 CFR 82.150, 82.156(a)(1), and 82.156(a)(2)).	Verify that evacuation is done to the levels in Appendix 1-2 prior to opening the appliance unless one of the following is met: (1) - 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 1-2 are not possible because of leaks in the equipment or because the refrigerant being recovered would be substantially contaminated. Verify that if evacuation is not to be done after completion of the maintenance, service, or repair, and the maintenance, service, or repair is not major, the appliance is: (1) - evacuated to a pressure no higher than 0 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. Verify that if the evacuation limits in Appendix 1-2 are not possible because of leaks in the equipment or because the refrigerant being recovered would be substantially contaminated, the person opening the appliance: (1) - 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.
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-21. Appliances, except for small appliances, MVACs and MVAC-like appliances, that are being disposed of must be evacuated to the levels in Appendix 1-2 (40 CFR 82.150 and 82.156(a)(3)).	Verify that appliances are evacuated to the levels listed in Appendix 1-2 prior to disposal. (1)
...	...
1-22. Specific evacuation limits must be met when opening small appliances for maintenance, service, or repair (40 CFR 82.150 and 82.156(a)(4)).	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. (1) Verify that when recycling and recovery equipment manufactured on or after 15 November 1993 is used, 90 percent of the refrigerant in the appliance is recovered when the compressor in the appliance is operating or 80 percent of the refrigerant when the compressor is not operating or the small appliance is evacuated to 4 in. of mercury vacuum. (1)
...	...
1-23. Installations that 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)).	(NOTE: This includes, but is not limited to, scrap recyclers and landfill operators.) Verify that installations: (1) - recover any remaining refrigerant from the appliance - check that the refrigerant has been evacuated previously from the appliance or shipment of appliances by reviewing a signed statement by the person from whom the appliance or shipment of appliances is obtained that all refrigerant has been recovered. Verify that copies of signed statements are retained for 3 yr. (1)
...	...
1-24. Installations recovering refrigerant for purposes of disposal must meet specific standards (40 CFR 82.156(g) and 82.156(h)).	Verify that if the installation recovers refrigerant from MVACs and MVAC-like appliances for the purpose of disposing of these appliances, the system pressure is reduced to or below 102 millimeters (mm) of mercury vacuum. (1) Verify that installations recovering refrigerant from small appliances for the purpose of disposal of these appliances do one of the following: (1) - 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.
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-25. Leaking appliances must be repaired when specific limits are exceeded (40 CFR 82.156(i)).	Verify that if the installation owns commercial and industrial process refrigeration equipment, all leaks are repaired if the equipment is leaking at a rate such that the loss of refrigerant will exceed 35 percent of the total charge during a 12 mo period. (1) 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. (1) (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.) 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 itself from information that would have revealed a leak. (1)
...	...
Recordkeeping	
1-26. 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)).	Verify that facilities on the installation that sell or distribute any Class I or Class II substance for use as a refrigerant retain invoices indicating the name of the purchaser, the date of sale, and the quantity of refrigerant purchased. (1) Verify that records are retained for 3 yr. (1)
...	...
1-27. 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)).	Verify that documentation of servicing and amounts of refrigerant added is provided to the appliance owner and retained for 3 yr. (1)

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch

Appendix 1-1

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_2F_2 - Dichlorodifluoromethane (CFC-12)	1.0
CCl_2F-$CClF_2$ - Trichlorotrifluoroethane (CFC-113)	0.8
CF_2Cl-$CClF_2$ - Dichlorotetrafluoroethane (CFC-114)	1.0
$CClF_2$-CF_3 - (Mono)chloropenthafluoroethane (CFC-115)	0.6
All isomers of the above chemicals	
Group II	
CF_2BrCl - Bromochlorodifluoromethane (Halon 1211)	3.0
CF_3Br - Bromotrifluoromethane (Halon 1301)	10.0
$C_2F_4Br_2$ - Dibromotetrafluoroethane (Halon 2402)	6.0
All isomers of the above chemicals	
Group III	
CF_3Cl - Chlorotrifluoromethane (CFC-13)	1.0
C_2FCl_5 - (CFC-111)	1.0
$C_2F_2Cl_4$ - (CFC-112)	1.0
C_3FCl_7 - (CFC-211)	1.0
$C_3F_2Cl_6$ - (CFC-212)	1.0
$C_3F_3Cl_5$ - (CFC-213)	1.0
$C_3F_4Cl_4$ - (CFC-214)	1.0
All isomers of the above chemicals	

Appendix 1-1 (continued)

Controlled Substance	Ozone Depletion Weight
Group III (continued)	
$C_3F_5Cl_3$ - (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_2FCl - 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
C_3HFCl_6 - (HCFC-221)	[res.]

Appendix 1-1 (continued)

Controlled Substance	Ozone Depletion Weights
Class II (continued)	
$C_3HF_2Cl_5$ - (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 - 2

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

Type of Appliance	Inches of Hg vacuum (relative to standard and atmospheric pressure of 29.8 in. Hg)	
	Using recovery or recycling equipment manufactured or imported before 15 Nov 1993	Using recovery or recycling equipment manufactured or imported on or after 15 Nov 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

INSTALLATION:	COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Centers for Disease Control and Prevention	DATE:	REVIEWER(S):

STATUS NA C RMA	REVIEWER COMMENTS:

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch

Section 2

Aboveground/Underground Storage Tank (AST/UST) Management

SECTION 2

ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT

A. Applicability

This section applies to CDC facilities which utilize aboveground or underground storage tanks (ASTs/ USTs) for storage of hazardous materials or petroleum products. The section presents review action items for the proper management of ASTs/ USTs. The evaluation of AST/ UST management ranges from the installation of new systems, and the maintenance of existing systems, to the repair, replacement, or permanent removal of USTs.

USTs have been in use for many years. Many states as well as local agencies have developed individual requirements for USTs; these may be more stringent than the Federal regulations and should be taken into consideration when evaluating the facility's UST program.

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 USTs. It required the U.S. Environmental Protection Agency (USEPA) to issue standards on leak detection, record maintenance, release reporting, corrective actions, tank upgrading, and replacement (42 USC 6991b(a)(c)).

- *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.

- *The Federal Water Pollution Control Act*, commonly known as the *Clean Water Act (CWA)*, as amended 4 February 1987, 33 USC 1251-1387, 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 (POTW)
  -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).

- *The Occupational Safety and Health Act (OSHA) of 1970.* This Act, last amended in November 1990, 29 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 conditions 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 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)).

C. State/Local Requirements

Many state and local governments have active UST programs. These various governments have developed regulations specific to the physical environment and the regulated communities' needs. It is important to review regulations at the state and local level to ensure that any differences such as reporting or notice requirements, and monitoring requirements can be complied with.

D. CDC Regulations

- This section includes a description of the environmental regulations, policies, and requirements of the CDC. At this time, the CDC has not issued environmental regulations for its components.

E. Key Compliance Requirements

- Bulk ASTs over 2501.4 liters (L) (660 gallons (gal)) are required to have secondary containment under 40 Code of Federal Regulations (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.

- New Petroleum USTs, installed after December 1988, must be certified that the tank and piping were properly installed; by December 1993, the tank must be equipped with devices to prevent spills and overfill; 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 and by December 1998, must have corrosion protection for steel tanks and piping that prevent spills and overfills, and leak detection devices installed.

- UST leaks must be corrected following short- and long-term requirements.

- Release Detection for USTs - Depending on the age, size, and construction of the tank, acceptable methods of release detection include:

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

- Closure procedures must be followed when a UST is temporarily or permanently closed.

- Reporting to regulatory agencies must be accomplished for installation, closure, suspected releases and confirmed releases.

- Records must be maintained to prove leak detection performance and upkeep, inspection of corrosion protection systems, proper repair or upgrade, and documentation of proper closure.

- New hazardous substance USTs, installed after December 1988, containing hazardous materials (hazardous wastes are covered in 40 CFR 260-270) must meet the same installation, corrosion protection, spill and overfill prevention, corrective action, and closure requirements, but also have secondary containment and interstitial monitoring.

- Existing hazardous substance USTs, installed before December 1988, must meet the same standards as existing petroleum USTs, leak detection; must be installed on an accelerated schedule; and in addition, chemical USTs must have secondary containment in place by 1998.

F. Responsibility for Compliance

- Environmental Program Manager - responsible for developing and maintaining spill plans.

- Facilities Operations Branch (Engineering Services Office) - responsible for receiving and utilizing petroleum products in a safe and efficient manner, and for operating and maintaining organizational storage tanks.

G. Key Compliance Definitions

These definitions were obtained from Federal regulations 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 a UST system and aboveground releases associated with overfills and transfer operations as the regulated substance moves to or from a UST system (40 CFR 280.12).

- *Ancillary Equipment* - any devices including, but not limited to, 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 280.12).

- *Cathodic Protection Tester* - a person who can demonstrate understanding of the principles and measurements of all common types of cathodic protection systems as applied to buried or submerged metal piping and tank systems. At a minimum, such persons must have education and experience in soil resistivity, stray current, structure-to-soil potential, and component electrical isolation measurements of buried metal piping and tank systems (40 CFR 280.12).

- *CERCLA* - Comprehensive Environmental Response Compensation and Liability Act of 1980 as amended (40 CFR 280.12).

- *Compatible* - the ability of two or more substances to maintain their respective physical and chemical properties upon contact with one another for the design life of the tank system under conditions likely to be encountered in the UST (40 CFR 280.12).

- *Connected Piping* - all underground piping including valves, elbows, joints, flanges, and flexible connectors attached to a tank system through which regulated substances flow. For the purpose of determining how much piping is connected to any individual UST system, the piping that joins two UST systems should be allocated equally between them (40 CFR 280.12).

- *Consumptive Use* - with respect to heating oil means consumed on the premises (40 CFR 280.12).

- *Corrosion Expert* - a person who, by reason of thorough knowledge of the physical sciences and the principles of engineering and mathematics acquired by a professional education and related practical experience, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be accredited or certified as being qualified by the National Association of Corrosion Engineers (NACE) or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks (40 CFR 280.12).

- *Deferred USTs* - USTs which are exempt from meeting the requirements in 40 CFR 280 except those concerning release response and corrective action for UST systems containing petroleum or hazardous substances in 40 CFR 280.60 through 280.67. These tanks include:
    1. wastewater treatment tank systems
    2. any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954
    3. any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
    4. airport hydrant fuel distribution systems
    5. UST system with field-constructed tanks (40 CFR 280.10(e)).

- *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).

- *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).

- *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 that are not required to meet the requirements found in 40 CFR 280 and include:
    1. any UST system holding hazardous wastes listed under Subtitle C of the *Solid Waste Disposal Act (SWDA)*, or a mixture of such hazardous waste and other regulated substances
    2. any wastewater treatment tank system that is part of a wastewater treatment facility regulated under Section 402 or 307(b) of the CWA
    3. equipment of machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment
    4. any UST system whose capacity is 416.9 L (110 gal) or less
    5. any UST system that contains a de minimis concentration of a regulated substance
    6. any emergency spill or overflow containment UST system that is expeditiously emptied after use (40 CFR 280.10(b)).

- *Existing Tank System* - a tank system used to contain an accumulation of regulated substances or for which installation has commenced on or before 22 December 1988. Installation is considered to have commenced if (40 CFR 280.12):
    1. the owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system, and if
    2. either a continuous onsite physical construction or installation program has begun, or
    3. 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 for the storage of material prior to their introduction into the production process or for the storage of finished products or by-products from the production (40 CFR 280.12).

- *Free-product* - a regulated substance that is present as a nonaqueous phase liquid (i.e., liquid not dissolved in water) (40 CFR 280.12).

- *Gathering Lines* - any pipeline, equipment, facility, or building used in the transportation of oil or gas during oil or gas production (40 CFR 280.12).

- *Hazardous Substance UST System* - any UST system that contains a hazardous substance defined in section 101(14) of CERCLA (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. Heating oil is typically used in the operation of heating equipment, boilers, or furnaces (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).

- *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 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 has commenced after 22 December 1988 (40 CFR 280.12).

- *Noncommercial Purposes with Respect to Motor Fuel* - not for resale (40 CFR 280.12).

- *Oil* - is defined in 40 CFR 122.2 as oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse.

- *On the Premises where Stored (heating oil)* - UST systems located on the same property where the stored heating oil is used (40 CFR 280.12).

- *Operator* - any person in control of or having responsibility for the daily operation of the UST system (40 CFR 280.12).

- *Overfill Release* - a release that occurs when a tank is filled beyond its capacity, resulting in a discharge of the regulated substance to the environment (40 CFR 280.12).

- *Person* - an individual, trust, firm, joint stock company, Federal agency, corporation, state, municipality, commission, political subdivision of a state, or any interstate body. "Person" also includes a consortium, joint venture, commercial entity, and the U.S. Government (40 CFR 280.12).

- *Petroleum UST System* - a UST system that contains petroleum or a mixture of petroleum with de minimis quantities of other regulated substances. Such systems include those containing motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils (40 CFR 280.12).

- *Pipe or Piping* - a hollow cylinder or tubular conduit that is constructed of nonearthen materials (40 CFR 280.12).

- *Pipeline Facilities* - (including gathering lines) are new and existing pipe rights-of-way 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 that 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 (^{O}F) and 14.7 pounds per square inch absolute (psia)) (40 CFR 280.12).

  (NOTE: The term "regulated substance" includes, but is not limited to, petroleum and petroleum-based substances comprising a complex blend of hydrocarbons derived from crude oil though 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.)

- *Release* - any spilling, leaking, emitting, discharging, escaping, leaching, or disposing from a UST into groundwater, surface water, or subsurface soils (40 CFR 280.12).

- *Release Detection* - determining whether a release of a regulated substance has occurred from the UST system into the environment or into the interstitial space between the UST system and its secondary barrier or secondary containment around it (40 CFR 280.12).

- *Repair* - to restore a tank or UST system component that has caused a release of product from the UST system (40 CFR 280.12).

- *Residential Tank* - a tank located on property used primarily for dwelling purposes (40 CFR 280.12).

- *SARA* - Superfund Amendments and Reauthorization Act (40 CFR 280.12).

- *Septic Tank* - a water-tight covered receptacle designed to receive or process, through liquid separation or biological digestion, the sewage discharged from a building sewer. The effluent from such a receptacle is distributed through the soil, and settled solids and scum from the tank are pumped out periodically and hauled to a treatment facility (40 CFR 280.12).

- *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 soil, having a combined specific gravity equivalent to, or greater than, water (40 CFR 110.2).

- *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).

- *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 ten percent or more beneath the surface of the ground. This term does not include any (40 CFR 280.12):
    1. farm or residential tank of 4169 L (1,100 gal) or less capacity used for storing motor fuel for noncommercial purposes
    2. tank used for storing heating oil for consumptive use on the premises where stored
    3. septic tanks
    4. pipeline facility (including gathering lines) which are regulated by other acts
    5. surface impoundment, pit, pond, or lagoon
    6. stormwater or wastewater collection system
    7. flow-through process tank
    8. liquid trap or associated gathering lines directly related to oil or gas production and gathering operations
    9. storage tank situated in an underground area if the storage tank is situated upon or above the surface of the floor such as basements or tunnels
    10. tanks holding 416.9 L (110 gal) or less, or
    11. emergency spill and overfill tanks.

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

- *Upgrade* - the addition or retrofit of some systems such as cathodic protection, lining, or spill and overfill controls to improve the ability of a UST system to prevent the release of product (40 CFR 280.12).

- *UST System or Tank System* - UST, connected underground piping, underground ancillary equipment, and containment system, if any (40 CFR 280.12).

- *Wastewater Treatment Tank* - a tank that is designed to receive and treat influent wastewater through physical, chemical, or biological methods (40 CFR 280.12).

AST/UST MANAGEMENT PROTOCOL

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Facilities	2-1 through 2-5	(1)(2)(3)
ASTs	2-6 through 2-9	(1)(3)
Substandard USTs	2-10	(1)(3)
New or Upgraded USTs	2-11 through 2-15	(1)(3)
Metallic USTs	2-16	(1)(3)
Heating Oil USTs	2-17	(1)(3)
UST Filling	2-18 and 2-19	(1)(3)
Corrosion Protection and Repairs	2-20 and 2-21	(1)(3)
Release Detection	2-22 through 2-24	(1)(3)
UST Releases	2-25 through 2-31	(1)(3)
Hazardous Substance USTs	2-32	(1)(3)
Deferred UST Systems	2-33	(1)(3)
Documentation	2-34 and 2-35	(1)(3)
Changes in Service or Closure	2-36 through 2-42	(1)(3)
Flammable/Combustible Liquid Storage Tanks	2-43 through 2-47	(1)(3)(4)(6)
Pipelines	2-48 and 2-49	(1)(3)

(a)CONTACT/LOCATION CODE:

(1) Environmental Program Manager
(2) Facility Supervisor/Director
(3) Facilities Operations Branch
(4) Section Chiefs
(6) Radiation Protection & Fire Safety Section

AST/UST MANAGEMENT

Records to Review

- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 years(yr))
- Official correspondence with state implementing agency
- Spill Prevention and Response plan
- Records of spill response training programs
- Results of all UST testing, sampling, monitoring, inspection, maintenance, and repair work (for 1 yr)
- Registration records for all in-service, temporarily out-of-service, and permanently closed tanks
- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)
- Records for UST disposal, closure, and removal from activity and results of excavation area assessment (for 3 yr)

Physical Features to Inspect

- ASTs and UST fill points (for signs of overfill/spill)

People to Interview

- Environmental Program Manager
- Facility Supervisor/Director
- Facilities Operations Branch
- Section Chiefs
- Radiation Protection & Fire Safety Section

COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL FACILITIES	
2-1. Determine actions or changes since previous review of storage tank management (GMP).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report. (1)
...	...
2-2. Copies of all relevant Federal, CDC, state, and local regulations and guidance documents on storage tank operation, maintenance, and closure should be available at the facility (GMP).	Verify that copies of the following regulations are available and kept current, as needed: (1)(2) - 29 CFR 1910, *Occupational Safety and Health Standards* - 40 CFR 112, *Oil Pollution Prevention* - 40 CFR 280, *Technical Standards and Corrective Action Requirements for Owners and Operators of USTs.* - Executive Order (EO) 12088, *Federal Compliance with Pollution Control Standards.* - Appropriate state and local regulations.
...	...
2-3. Facilities are required to comply with state and local regulations (EO 12088, Section 1-1).	Verify that the facility is complying with state 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 typically regulated by state and local agencies include: - operational standards - permitting requirements - replacement and removal schedules - cathodic protection requirements - alarm system requirements.)
...	...
2-4. Facilities must meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning storage tanks have been issued since the finalization of the manual. (1)(2) Verify that the facility is in compliance with newly issued regulations. (1)(2)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (4) Section Chiefs (6) Radiation Protection & Fire Safety Section

COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-5. All organizational fuel tanks should be inspected annually (GMP).	Verify the following by inspecting forms: (1)(3) - certified tank calibration charts to measure fuel volumes are present on all tanks of 2505.2 L (661 gal) and over - condition of tanks, piping, and dikes is noted - verify that any confirmed leaking tanks were repaired or replaced.
...	...
ASTs	
2-6. All bulk storage tanks (over 2501.4 L (660 gal)) should be provided with a secondary means of containment for the entire contents of the largest single tank plus sufficient freeboard to allow for precipitation (40 CFR 112.7(e)(2)(ii)).	Verify that adequate containment is provided for bulk storage tanks in the storage area and at remote tanks. (1)(3) Verify that diked areas are impervious enough to contain spilled oil. (1)(3) (NOTE: Dikes, containment curbs, and pits are commonly employed for this purpose, but they may not always be appropriate. An alternative system could consist of a complete drainage trench enclosure arranged so that a spill could terminate and be safely contained in an in-plant catchment basin or holding pond.) (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 that, 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 that 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 159,180 L (42,000 gal) or less of oil - the storage capacity that is not buried at the facility is 5002.8 L (1320 gal) of oil or less, and no single container exceeds a capacity of 2501.4 L (660 gal) (40 CFR 112.1(d)(2)).)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (4) Section Chiefs (6) Radiation Protection & Fire Safety Section

COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT

Centers for Disease Control and Prevention

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
2-7. Drainage of rainwater from diked areas must be controlled by a valve that is closed when not in active use (40 CFR 112.7(e)(1) and 112.7(e)(2)(iii)).	Verify that valves are closed when not in use by inspecting drainage valves at diked areas. (1)(3) Verify that drainage valves are attended when opened to drain diked/bermed area by interviewing personnel. (1)(3) Determine if operating personnel understand the meaning of a harmful discharge as described in 40 CFR 110.6. (1)(3) Inspect records for any drainage water that was inspected to determine if it would represent a harmful discharge. (1)(3) (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 that, 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 that are subject to the authority of the DOT - both of the following criteria are met: - the underground buried storage capacity of the facility is 159,180 L (42,000 gal) or less of oil - the storage capacity that is not buried at the facility is 5002.8 L (1320 gal) of oil or less, and no single container exceeds a capacity of 2501.4 L (660 gal) (40 CFR 112.1(d)(2)).)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (4) Section Chiefs (6) Radiation Protection & Fire Safety Section

COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-8. Drainage water that is determined to contain petroleum products in harmful quantities must be treated prior to discharge to meet applicable water quality standards (40 CFR 112.7 (e)(2)).	Determine if discharges containing harmful quantities of petroleum products were properly treated, recovered, or disposed and reported by interviewing onsite personnel. (1)(3) (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 that, 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 that are subject to the authority of the DOT - both of the following criteria are met: - the underground buried storage capacity of the facility is 159,180 L (42,000 gal) or less of oil - the storage capacity that is not buried at the facility is 5002.8 L (1320 gal) of oil or less, and no single container exceeds a capacity of 2501.4 L (660 gal) (40 CFR 112.1(d)(2)).)
...	...
2-9. ASTs are subject to periodic integrity testing (40 CFR 112.7(e)(2)(vi)).	Verify that periodic leak tests have been conducted (a decrease in converted fuel volume equal to or greater than 0.635 centimeters (cm) (1/4 inch (in.)) constitutes a suspected leak) and check the results of these tests. (1)(3) Determine if leaking tanks have been repaired or replaced. (1)(3) (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.) (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 that, 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 that are subject to the authority of the DOT - both of the following criteria are met: - the underground buried storage capacity of the facility is 159,180 L (42,000 gal) or less of oil - the storage capacity that is not buried at the facility is 5002.8 L (1320 gal) of oil or less, and no single container exceeds a capacity of 2501.4 L (660 gal) (40 CFR 112.1(d)(2)).)

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (4) Section Chiefs (6) Radiation Protection & Fire Safety Section

COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

SUBSTANDARD USTs
 	
2-10. Substandard UST systems must be upgraded, closed, or removed from service by 22 December 1998 (40 CFR 280.21(a) through 280.21(c)).
	(NOTE: See Appendix 2-1 for guidance on applicability of checklist items.)
	
	(NOTE: If a release detection system is not available for the UST, it must be phased out in 1 to 5 yr.)
	
	Determine if there are currently any plans for upgrades or decommissioning of a substandard UST. (1)(3)
	
	Verify that upgrading of steel USTs includes one of the following methods: (1)(3)
	
	- internal lining according to the following requirements:
	  - 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:
	  - 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 months (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:
	  - if lining is installed according to requirements
	  - if cathodic protection system meets requirements.
	
	Verify that when spill and overfill equipment is added, the tank meets the same standards as new USTs. (1)(3)
	
	Verify that piping that routinely contains regulated substances and is in contact with the ground is cathodically protected. (1)(3)

...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (4) Section Chiefs (6) Radiation Protection & Fire Safety Section

COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
NEW OR UPGRADED USTs	
2-11. New or upgraded USTs are required to be fitted with spill and overfill prevention equipment (40 CFR 280.20(c) and 280.21(d)).	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)(3) Verify that overfill prevention equipment does one of the following: (1)(3) - automatically shuts off flow into the tank when the tank is no more than 95 percent full - alerts the transfer operator when the tank is no more than 90 percent full by restricting the flow into the tank or triggering a high-level alarm - 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. (NOTE: This equipment is not required if approved equivalent equipment is used or the UST system is filled by transfers of no more than 94.8 L (25 gal) at one time.) (NOTE: All existing tanks must be upgraded by 1998.)
...	...
2-12. Notice must be given within 30 days when a UST system is brought into service after 8 May 1986 (40 CFR 280.22).	Determine if the facility has brought any USTs into service after 8 May 1986. (1)(3) Verify that appropriate notification was issued. (1)(3) (NOTE: State forms may be used for notification in lieu of a USEPA form 7530. These notices must be sent to the appropriate agency.)
...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

2-13. 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)).
 	
...
	Verify that USTs conform to industry standards by reviewing records. (1)(3)
	
	Verify that USTs meet the following: (1)(3)
	
	- they have leak/spill prevention protection
	- the tank is constructed of one of the following materials:
	  - fiberglass-reinforced plastic
	  - steel that has one of the following types of cathodic protection:
	  - coated with a suitable dielectric material
	  - field-installed cathodic protection (expert-installed)
	  - impressed current systems that allow determination of current operating status
	  - steel fiberglass reinforced plastic composite
	  - metal without additional corrosion protection provided that:
	  - 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 done in a manner deemed to prevent release of the regulated substance.
	
	(NOTE: Piping must also meet these criteria with the exception of not being constructed of steel fiberglass reinforced plastic composite.)
	
	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-14. Installation of USTs must be done by a certified installer and according to standard practices (40 CFR 280.20(d) and 280.20(e)).	Determine if new UST systems have been properly installed by reviewing records for certification. (1)(3) Verify that if the facility does its own installation of USTs, the installation is done according to standard practices. (1)(3) Verify that the installer was certified by manufacturer or implementing agencies. (1)(3)
...	...
2-15. Facilities are required to use UST systems made of or lined with materials compatible with the substance stored (40 CFR 280.32).	Verify that the substances stored in UST systems are compatible with the system. (1)(3) Determine which USTs are being used to store a substance other than that for which it was originally intended. (1)(3)
...	...
METALLIC USTs	

2-16. 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)).	Verify that new USTs are appropriately protected from corrosion by inspecting records and interviewing personnel. (1)(3)
	
	Verify that the tanks are pressure tested regularly. (1)(3)
	
	(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 that, 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 that are subject to the authority of the DOT
	- both of the following criteria are met:
	  - the underground buried storage capacity of the facility is 159,180 L (42,000 gal) or less of oil
	  - the storage capacity that is not buried at the facility is 5002.8 L (1320 gal) of oil or less, and no single container exceeds a capacity of 2501.4 L (660 gal) (40 CFR 112.1(d)(2)).)

...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
HEATING OIL USTs	
2-17. USTs used to store heating oil for consumptive use on the premises should meet the requirements outlined in 40 CFR 280 (GMP).	Determine if the facility has tanks used for storing heating oil for consumptive use on the premise. (1)(3) Verify that these tanks meet release detection requirements, spill and overfill protection requirements, corrosion control requirements, and release reporting requirements applicable to tanks that meet the definition of UST. (1)(3) (NOTE: Under 40 CFR 280.12, USTs storing heating oil for consumptive use on the premises are exempted from the regulatory definition of UST.)
...	...
UST FILLING	
2-18. The filling of a UST must include the prevention of overfilling and spilling of the substance (40 CFR 280.30 (a)).	Determine if there is a problem with overfilling of USTs or spills by observing the filling operations, reviewing records, and checking the ground around the fill-lines for visible or odorous indications of contamination. (1)(3) Determine if the level of the UST is checked before a transfer is made and that the volume available in the tank is greater than the volume of the product to be transferred. (1)(3) Verify that fill-lines are capped and locked. (1)(3) Verify that the transfer is monitored constantly. (1)(3)
...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-19. Facilities with UST systems are required to contain and immediately clean up a spill or overfill and report it to the implementing agency within 24 hours (h) in specific situations (40 CFR 280.30(b) and 280.53).	Determine if the facility has reported, contained, and cleaned up any and all spills or overfills that met the following criteria: (1)(3) - spills or overfills of petroleum that resulted in a release to the environment of more than 94.8 L (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 *Hazardous Materials Management* appendices). (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).) Verify that the facility has contained and immediately cleaned-up a spill or overfill of petroleum that is less than 94.8 L (25 gal) or a spill or overfill of a hazardous substance that is less than the reportable quantity. (1)(3) 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)(3)
...	...
CORROSION PROTECTION AND REPAIRS	
2-20. UST systems with corrosion protection must meet specific requirements (40 CFR 280.31).	Determine which UST systems have corrosion protection. (1)(3) Verify that the corrosion protection systems operate continuously to provide corrosion protection to the metal components that routinely contained regulated substances and are in contact with the ground. (1)(3) Verify that all cathodic protection systems are tested within 6 mo after installation and every 3 yr thereafter. (1)(3) Verify that UST systems with impressed current cathodic protection are inspected every 60 days. (1)(3) Verify that inspection records are maintained of the last three inspections for systems with impressed current cathodic protection and of the last two inspections for all other cathodic protection systems. (1)(3) Verify that inspections are carried out by a qualified cathodic protection tester. (1)(3)
...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-21. Repairs to USTs must be performed according to industry code (40 CFR 280.33, 280.43, and 280.44).	Determine if there have been any repairs by reviewing the records and interviewing personnel. (1)(3) Determine who does repairs to USTs and that the following procedures are used to repair USTs: (1)(3) - 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 specifications. Verify that tanks and piping that have been replaced or repaired are tested for tightness within 30 days. (1)(3) (NOTE: Tanks and piping need not be tested if: - repairs that 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)(3) - 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)(3)
...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
RELEASE DETECTION **2-22.** Facilities with new and existing USTs are required to provide a method, or combination of methods, of release detection (40 CFR 280.10(d), 280.40, and 280.45). ...	Verify that the installed release detection system can detect a release from any portion of the tank and the connected underground piping. (1)(3) Verify that the facility has a program in place (or at least in the proposed stage) for provisions of release detection. (1)(3) Verify that the facility complies with the appropriate schedule (see Appendix 2-2). (1)(3) (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 that store fuel solely for use by emergency power generators.) (NOTE: See Appendices 2-3 and 2-4 for information on release detection methodologies.) Verify that records are kept as follows: (1)(3) - all written performance claims pertaining to any release detection system used for 5 yr from the date of installation - the results of any sampling testing or monitoring for 1 yr - the results of tank-tightness testing, until the next test is done - written documentation of calibration, maintenance, and repair, of release detection equipment permanently located onsite, at least 1 yr after the servicing is done - schedules of required calibration and maintenance provided by the release detection equipment manufacturer, 5 yr after the date of installation. ...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

2-23. UST systems containing petroleum must meet specific release detection system requirements (40 CFR 280.41, 280.43, and 280.44).	Verify that tanks are monitored every 30 days using the method in Appendix 2-3 except as follows: (1)(3)
	- UST systems that meet performance standards for new or upgraded systems and meet 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 that 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 that hold less than 2084.5 L (550 gal) may use weekly tank gauging.
	
	Verify that underground piping that routinely contains a regulated substance has the following release detection done according to the methods in Appendix 2-4: (1)(3)
	- pressurized piping
	  - equipped with automatic line leak detector
	  - annual tightness testing or monthly monitoring
	- suction piping
	  - line-tightness testing every 3 yr or monthly monitoring
	  - no release detection system is needed for suction piping that is below grade and:
	  - 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.
	
	(NOTE: Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs that store fuel solely for use by emergency power generators.)

...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

2-24. UST systems containing fuel used solely for emergency generators should meet specific release detection system requirements (GMP).	Verify that tanks are monitored every 30 days using the method in Appendix 2-3 except for: (1)(3)
	
	- UST systems that meet performance standards for new or upgraded systems and meet 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 that 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 that hold less than 2084.5 L (550 gal) may use weekly tank gauging.
	
	Verify that underground piping that routinely contains a regulated substance has the following release detection done according to the methods in Appendix 2-3: (1)(3)
	
	- pressurized piping
	  - equipped with automatic line leak detector
	  - annual tightness testing or monthly monitoring
	- suction piping
	  - line-tightness testing every 3 yr or monthly monitoring
	  - no release detection system is needed for suction piping that is below grade and:
	  - 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.
	
	(NOTE: Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs that store fuel solely for use by emergency power generators.)

...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT
Centers for Disease Control and Prevention

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
UST RELEASES	
2-25. Facilities with UST systems are required to report releases under specific conditions (40 CFR 280.50).	Determine if the facility has reported any and all releases that met the following criteria: (1)(3) - 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 that the problem lies in the equipment, but it is not leaking and is immediately repaired or replaced - monitoring results indicate a possible release. Verify that the implementing agency was notified within 24 h (or time period specified by the implementing agency) of the release. (1)(3)
...	...
2-26. Installations must investigate and confirm all suspected releases of a regulated substance requiring reporting within 7 days unless a corrective action is started immediately as detailed in 40 CFR 280.60 through 280.67 (40 CFR 280.52).	Verify that tightness testing is done within 7 days of a suspected release to determine whether a leak is in the tank or the delivery piping. (1)(3) 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 measures for the presence of a release in the areas where contamination is most likely to be present. (1)(3) (NOTE: If the results indicate that a leak has occurred, corrective actions must be started.) (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.)
...	...
2-27. 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).	Verify that facility personnel are aware of the following initial response actions: (1)(3) - 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.
...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT
Centers for Disease Control and Prevention

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
2-28. 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).	Verify that the following actions are performed: (1)(3) - 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 has previously been confirmed - an investigation for the presence of free product and the removal of free product are 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, as well as the resulting information and collected data. (1)(3)
...	...
2-29. 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 information is collected: (1)(3) - 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)(3)
...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-30. 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).	Determine if there are any release sites at the facility where free product has been confirmed. (1)(3) Verify that free product removal is done so that the spread of contamination is minimized. (1)(3) Verify that, unless exempted by the implementing agency, within 45 days after confirming a release, a free product removal report is submitted to the implementing agency that includes the following: (1)(3) - 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 or offsite discharges during the recovery operation and where this discharge will be located - the type of treatment used for any discharge during the recovery operation and where this discharge will be located - the steps taken to obtain any required permits - the disposition of the recovered free product.
...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-31. 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). ...	Verify that an investigation of the release, the release site, and possibly-affected surrounding areas has been done and identified if any of the following conditions exists: (1)(3) - 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. Verify that the results of the investigation are submitted to the implementing agency according to a time schedule defined by the implementing agency. (1)(3) ...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

HAZARDOUS SUBSTANCE USTs
 	
2-32. Hazardous substance USTs must meet specific standards (40 CFR 280.42).
	Verify that existing hazardous substance USTs meet release detection standards for petroleum USTs. (1)(3)
	
	Verify that existing hazardous substance USTs meet the requirements for new hazardous substance USTs by 22 December 1998 as stated below: (1)(3)
	
	- secondary containment is checked for evidence of a release at least every 30 days and is designed and constructed to:
	  - 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:
	  - 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:
	  - 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, and
	  - the tank is completely surrounded.
	
	Verify that underground piping is equipped with secondary containment that satisfies the requirements for UST secondary containment. (1)(3)
	
	Verify that piping that delivers regulated substances under pressure is equipped with an automatic line leak detector. (1)(3)
	
	Verify that when other release detection methods are used, they are approved by the implementing agency. (1)(3)

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
DEFERRED UST SYSTEMS	
2-33. 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)(3) - releases due to corrosion or structural failure will be prevented for the operational life of the system - they are cathodically protected against corrosion, constructed of noncorrodible materials, steel clad with a noncorrodible material, or designed to prevent release - they are 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. (1)(3)
...	...
DOCUMENTATION	
2-34. 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)(3) - notifications of new USTs - release reports - planned or complete corrective actions - notice of closure or change-in-service.
...	...
2-35. Facilities with USTs are required to meet specific record-keeping requirements (40 CFR 280.34(b), 280.34 (c), and 280.74).	Verify that records are kept of the following: (1)(3) - 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 - closure records - results of any site investigations. Verify that records are available for inspection at one of the following: (1)(3) - the UST site - a readily available alternative site.

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (4) Section Chiefs (6) Radiation Protection & Fire Safety Section

COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
CHANGES IN SERVICE OR CLOSURE	
2-36. USTs that 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)(3) Verify that proper maintenance is being performed for the following: (1)(3) - corrosion protection - release detection. Verify that if the UST has been out-of-service for near or over 1 yr, plans have been made for permanent closure. (1)(3) (NOTE: If the UST is empty, release detection is not required.) (NOTE: An empty UST is one that has no more than 2.5 cm (1 in.) of residue, or less than 0.3 percent by weight of total capacity of the UST system.) Verify that if a UST system is closed for 3 mo or more, the vent lines are open and functioning and all other lines, pumps, manways, and ancillary equipment are capped and secured. (1)(3) Verify that if the UST has been out of service for more than 12 mo and does not meet the standards for new or upgraded USTs, it is permanently closed unless the implementing agency has provided an extension. (1)(3)
...	...
2-37. Notification must be given to the implementing agency (USEPA) for any closure or change in service either 30 days in advance or within a reasonable time frame as determined by the implementing agency (40 CFR 280.71(a)).	Determine if the facility is planning to close of change any USTs. (1)(3) Verify that notification of changes were given within 30 days. (1)(3)
...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-38. UST closure must be done in one of the following methods: - removed from the ground - left in place with the substance removed, and filled with an inert solid material, closing it to all future outside access (40 CFR 280.71(b)).	Determine if there are any closed USTs or USTs in the process of being closed at the facility. (1)(3) Verify that tanks being permanently closed are emptied and cleaned by removing all liquids and accumulated sludges. (1)(3) Determine if there are any possible abandoned USTs and if there are plans to close the UST in an appropriate manner. (1)(3) Determine, by reviewing records, if a site assessment was made to ensure that no releases to the environment have occurred. (1)(3)
...	...
2-39. Prior to a change-in-service, tanks must be emptied and cleaned, and a site assessment conducted (40 CFR 280.71(c)).	Determine if there are any tanks that the facility has continued to use for storing a nonregulated substance (a change-in-service). (1)(3) Verify that prior to the change the tank was emptied and cleaned. (1)(3) Verify that prior to the change a site assessment was done. (1)(3)
...	...
2-40. Prior to permanent closure or the completion of change-in-service, 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).	Verify that measurements for the presence of a release have been done. (1)(3) (NOTE: These requirements are met if one of the leak detection methods outlined in checklist item 10-11 has occurred.)
...	...
2-41. 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).	Determine if the facility has any USTs that were closed prior to 22 December 1988. (1)(3) Verify that the excavation zone of these USTs has been assessed and cleanup done as needed. (1)(3)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (4) Section Chiefs (6) Radiation Protection & Fire Safety Section

COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-42. Excavation zone assessment records shall be maintained for 3 yr (40 CFR 280.74).	Verify that excavation zone assessment records are maintained for 3 yr in one of the following ways: (1)(3) - by the facility - at the implementing agency if they cannot be maintained at the closed facility.
...	...
FLAMMABLE/ COMBUSTIBLE LIQUID STORAGE TANKS	
2-43. Tanks used for the storage of flammable/ combustible liquids are required to meet specific design and construction standards (29 CFR 1910.106(b)(1)).	Verify that tanks are built of steel unless: (1)(3)(4)(6) - the tank is installed underground - the properties of the liquid being stored require that 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. Verify that tanks located aboveground or inside buildings are of noncombustible construction. (1)(3)(4)(6) (NOTE: Tanks designed for underground service not exceeding 7580 L (2000 gal) capacity may be used aboveground, and low-pressure tanks and pressure vessels may be used as atmospheric tanks.) 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)(3)(4)(6) Verify that the normal operating pressure of a low-pressure tank does not exceed the design pressure of the tank. (1)(3)(4)(6)
...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-44. 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)).	Verify that there is a minimum distance of 91 cm (3 feet (ft)) between any two tanks. (1)(3)(4)(6) Verify that the distance between any two adjacent tanks is not less than one-sixth the sum of their diameters. (1)(3)(4)(6) (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.) 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)(3)(4)(6) Verify that when tanks are compacted in three or more rows, or in an irregular pattern, greater spacing or other means are provided for firefighting access. (1)(3)(4)(6) Verify that there is a minimum distance of 610 cm (20 ft) between a liquefied petroleum gas container and a flammable or combustible liquid storage tank. (1)(3)(4)(6) (NOTE: In the case of flammable or combustible liquid tanks operating at pressure exceeding 2.5 pounds per square inch gauge (psig), or equipped with emergency venting that will permit pressures to exceed 2.5 psig, spacing of 91 cm (3 ft) or the formula concerning one-sixth of diameters may be used.) Verify that means such as diversion curbs or grading are provided to prevent the accumulation of flammable or combustible liquids under adjacent liquid petroleum gas containers. (1)(3)(4)(6) Verify that if flammable/combustible liquid storage tanks are within a diked area, liquid petroleum gas containers are outside the diked area and at least 305 cm (10 ft) away from the centerline of the wall of the diked area. (1)(3)(4)(6) (NOTE: The requirement concerning liquid petroleum gas containers and diked areas does not apply if liquid petroleum gas containers of 473.8 L (125 gal) or less capacity are installed adjacent to fuel oil supply of 2084.5 L (550 gal) or less capacity.)
...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-45. Tanks for the storage of flammable/combustible liquids are are required to meet specific containment requirements (29 CFR 1910.106(b)(2)(vii)).	Verify that the area surrounding a tank or a group of tanks is either provided with drainage or diked as follows: (1)(3)(4)(6) - 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 full tank. Verify that walls of diked areas are of earth, concrete, steel, or solid masonry designed to be liquid tight. (1)(3)(4)(6) Verify that earthen walls 91 cm (3 ft) or more in height have a top that is no less than 61 cm (2 ft) wide. (1)(3)(4)(6) Verify that the walls of the diked area are restricted to an average height of 183 cm (6 ft) above interior grade. (1)(3)(4)(6) Verify that there are no loose combustible materials, or empty or full drums or barrels within the diked area. (1)(3)(4)(6)
...	...
2-46. 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)).	Verify that sources of ignition such as open flames, smoking, welding and cutting, hot surfaces, sparks, and radiant heat are avoided. (1)(4)(6)
...	...
2-47. 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)).	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)(3)(4)(6)
...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
PIPELINES	
2-48. Buried piping at a transfer facility, pumping station, or in-plant processing facility is required to have a protective wrapping and coating, and is required to be cathodically protected if soil conditions warrant (40 CFR 112.7(e)(3)(i)).	Verify that buried fuel piping is properly protected from corrosion by examining records and interviewing personnel. (1)(3) Verify that methods are appropriate and correctly applied if cathodic protection is used. (1)(3) Verify that detected leaks and failures are being reported. (1)(3) (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 that, 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 that are subject to the authority of the DOT - both of the following criteria are met: - the underground buried storage capacity of the facility is 159,180 L (42,000 gal) or less of oil - the storage capacity that is not buried at the facility is 5002.8 L (1320 gal) of oil or less, and no single container exceeds a capacity of 2501.4 L (660 gal) (40 CFR 112.1(d)(2)).)
...	...

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COMPLIANCE CATEGORY: ABOVEGROUND/UNDERGROUND STORAGE TANK (AST/UST) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

2-49. All aboveground and belowground fuel piping systems at transfer facilities, pumping stations, and in-plant processing facilities must be regularly examined, and any suspected leaks should be investigated immediately (40 CFR 112.7(e)(3)(iv)).	Verify that regular inspections have been conducted by examining records and interviewing personnel. (1)(3)
	
	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. (1)(3)
	
	Verify that confirmed leaks have been reported and leaking pipes repaired or replaced. (1)(3)
	
	(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 that, 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 that are subject to the authority of the DOT
	- both of the following criteria are met:
	  - the underground buried storage capacity of the facility is 159,180 L (42,000 gal) or less of oil
	  - the storage capacity that is not buried at the facility is 5002.8 L (1320 gal) of oil or less, and no single container exceeds a capacity of 2501.4 L (660 gal) (40 CFR 112.1(d)(2)).)

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Appendix 2-1

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	2-33
USTs storing fuel for emergency generators	40 CFR 280.20 through 280.22	2-10 through 2-14
	280.30 through 280.34	2-15, 2-18 through 2-21, 2-34, and 2-35
	280.50 through 280.53	2-25 and 2-26
	280.60 through 280.67	2-27 through 2-31
	280.70 through 270.74	2-36 through 2-42

Appendix 2-2

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 40 CFR 280.41(b)(1).
RD = must begin release detection for tanks and suction piping.

Appendix 2-3

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 one-eighth of an inch
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 one 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 *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

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 ground water, 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.

6. Groundwater monitoring: Testing or monitoring for liquids in the ground water must meet the following requirements:

1. the regulated substance stored is immiscible in water and has a specific gravity of less than one
2. ground water 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 ground water 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 one-eight of an inch of free product on tip of the ground water 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 ground water, 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

5. the site is assessed to ensure that the secondary barrier is always above the ground water 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 (ppi) 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, ground water 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 2-4

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 2-2 for phase-in schedule). A synopsis of 40 CFR 280.20 through 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 0.758 L/h (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 610 cm (20 ft) of ground surface
- Soils must have hydraulic conductivity of 10^{-2} cm/sec (0.0039 in./sec) or greater
- Proper monitoring well design and proper number of wells
- Use an automatic or manual method capable of detecting a 0.3175 cm (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 8 - Any other Method (approved by the implementing agency)
which can detect a 0.758 L/h (0.2 gal/h) leak or 569 L (150 gal) release per month with a 95 percent probability of false positives.

Pipeline Release Monitoring

The EPA 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; and
- Have annual tightness test or monthly monitoring system soil vapors, groundwater 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: ABOVEGROUND /UNDERGROUND STORAGE TANK (AST /UST) MANAGEMENT Centers for Disease Control and Prevention	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch
(4) Section Chiefs (6) Radiation Protection & Fire Safety Section

Section 3

Hazardous Materials Management

SECTION 3

HAZARDOUS MATERIALS MANAGEMENT

A. Applicability

This section primarily addresses the proper storage and handling of chemicals and the spill contingency and response requirements related to hazardous materials. Oil, pesticides, and asbestos are hazardous materials that require special management practices at CDC facilities, and are addressed in separate sections. Radioactive substances and the general category of hazardous wastes are also not included in this section. This section does not focus on individual hazardous chemicals or substances used, but deals with the generic requirements and good management practices (GMPs) associated with minimizing impacts on the environment due to spills or releases of hazardous materials because of improper storage and handling.

All storage tank regulations that apply to hazardous materials have been consolidated into the section titled *Aboveground/Underground Storage Tank (AST/UST) Management.*

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 that 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 conditions 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 that 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 will help achieve the objectives of this Act and accurately describe the nature of 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 that 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 that are inherent in the transportation of hazardous materials in commerce (49 USC 1801).

- *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980.* This Act was amended by the *Superfund Amendments and Reauthorization Act (SARA) of 1986*, 42 USC 9601-11050, 10 USC 2701-2810 et al. CERCLA/SARA regulates the prevention, control, and compensation relating to environmental pollution.

- *The Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA).* This Act was designed to promote emergency planning and preparedness at both the state and local levels. 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 Title III.

- The National Fire Code, *Flammable and Combustible Liquids Code National Fire Protection Association (NFPA) 30*, prohibits the storage of Class I and Class II liquids in plastic containers in general-purpose warehousing.

C. State/Local Requirements

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

D. CDC Regulations/Requirements

This section includes a description of the environmental regulations, policies, and requirements of the CDC. At this time, the CDC has not issued environmental regulations for its components.

It is currently the policy for each individual laboratory to be responsible for procuring, handling, and storing hazardous materials. As a result, there is no comprehensive hazardous materials inventory or hazardous materials minimization program. Assessors will need to carefully check throughout each building for hazardous materials storage areas.

E. Key Compliance Requirements

- Hazardous Substance Release Reporting - Persons in charge of CDC facilities or vessels are required to notify U.S. Environmental Protection Agency (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.

- Hazardous Materials Transportation - Facilities that ship hazardous materials offsite must comply with regulations regarding packaging, labeling, and spill response. Depending on the type of hazardous materials transportation activity at the facility, certain sections of 49 CFR 171-173 will apply.

- 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 requirements found in 29 CFR 1910.

- Community Right-to-Know - Facilities that use or manufacture hazardous or toxic chemicals will conform with substantive requirements of EPCRA, participate in local Emergency Planning Committees, and provide emergency notification upon release of substances regulated by the Act.

F. Responsibility for Compliance

- Occupational Health and Safety Committees - Each center has its own Occupational Health and Safety Committee that is responsible for reviewing safety issues, including the handling and storage of hazardous materials, and setting policy within its center. Each committee sends one representative to a central committee. The central Occupational Health and Safety Committee is an information-sharing body only, and has no authority over the individual centers.

- Radiation Protection and Fire Safety Section - This section, a part of the Chemical and Physical Hazards Branch of the Office of Health and Safety, has responsibility for ensuring that flammable/combustible materials are stored in a safe manner.

- Industrial Hygiene Section - This section, a part of the Chemical and Physical Hazards Branch of the Office of Health and Safety, has responsibility for ensuring that hazardous materials (except for flammable/combustible materials - see above) are stored in a safe manner.

G. Key Compliance Definitions

These definitions were obtained from the regulations previously cited in this section.

- *Aerosol* - a material that is dispensed from its container as a mist, spray, or foam by a propellant under pressure (29 CFR 1910.106(a)(1)).

- *Airbourne Radioactivity Area* - this includes:
    1. any room, enclosure, or operating area in which airborne radioactive materials, composed wholly or partly of radioactive material, exist in concentrations in excess of the amounts specified in column 1 of Table 1 of Appendix B of 10 CFR 20)
    2. any room, enclosure, or operating area in which airborne radioactive materials exist in concentrations that, averaged over the number of hours in any week during which individuals are in the area, exceed 25 percent of the amounts specified in column 1 of table 1 of Appendix B to 10 CFR 20 (29 CFR 1910.96(e)(4)(i)).

- *Approved* - listed or approved by Underwriter's Laboratories, Inc., Factory Mutual Engineering Corporation, the Bureau of Mines, the National Institute of Occupational Safety and Health (NIOSH), the American National Standards Institute (ANSI), the NFPA, or other nationally recognized agencies that 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 that has been designed to operate at pressures from atmospheric through 0.5 pounds per square inch gauge (psig) (29 CFR 1910.106(a)(2)).

- *Barrel* - a volume of 42 gallons (gal) (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 the American Society for Testing and Materials (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}Fahrenheit (F) (37.8 ^{o}Centigrade (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 for 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 ^{o}F (60 ^{o}C), and below 200 ^{o}F (93.4 ^{o}C), except for any mixture having components with flashpoints of 200 ^{o}F or higher, the total volume of which makes up 99 percent or more of the total volume of the mixture.
    3. Class III B liquids have flashpoints at or above 200 ^{o}F (93.4 ^{o}C).

- *Fire Area* - that portion of a building separated from the remainder by construction having a rated fire resistance of at least 1 hour (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 ^{o}F (37.8 ^{o}C), except for any mixture having components with flashpoints of 100 ^{o}F or higher, the total of which makes up 99 percent or more of the total volume of the mixture. Flammable liquids are categorized as Class I liquids, and are further subdivided as follows (29 CFR 1910.106(a)(19)):
    1. Class I A are those that have a flashpoint below 73 ^{o}F (22.8 ^{o}C) and boiling point below 100 ^{o}F (37.8 ^{o}C).
    2. Class I B are those that have a flashpoint below 73 ^{o}F (22.8 ^{o}C) and boiling point at or above 100 ^{o}F (37.8 ^{o}C).
    3. Class I C are those that have a flashpoint at or above 73 ^{o}F (22.8 ^{o}C) and below 100 ^{o}F (37.8 ^{o}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)).

- *High Radiation Area* - any area accessible to personnel, in which there exists radiation at such levels that a major portion of the body could receive in any 1 h a dose in excess of 100 millirem (29 CFR 1910.96(d)(3)(iii)).

- *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 that 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 that contains information on hazardous chemicals such as common name, physical hazards, and 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)).

- *Personnel Monitoring Equipment* - devices designed to be worn or carried by an individual for the purpose of measuring the dose received (29 CFR 1910.96(d)(3)(i)).

- *Portable Tank* - a closed container having a liquid capacity over 60 gal 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 (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)).

- *Rad* - a measure of the dose of any ionizing radiation to body tissues in terms of the energy absorbed per unit of mass of the tissue (29 CFR 1910.19(a)(6)).

- *Radiation* - includes alpha rays, beta rays, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other atomic particles, but does not include sound or radio waves, visible light, or infrared or ultraviolet light (29 CFR 1910.96(a)(1)).

- *Radiation Area* - any area accessible to personnel in which there exists radiation, originating in whole or in part with licensed material, at such levels that a major portion of the body could receive in any 1 h a dose in excess of 5 millirem, or in any 5 consecutive days a dose in excess of 100 millirems (29 CFR 1910.96(d)(3)(ii)).

- *Radioactive Material* - any material that emits, by spontaneous nuclear disintegration, corpuscular or electromagnetic emanations (29 CFR 1910.106 (a)(2)).

- *Rem* - a measure of the dose of any ionizing radiation to body tissue in terms of estimated biological effect relative to a dose of 1 roentgen (r) of X-rays (29 CFR 1910.96(a)(7)).

- *Restricted Area* - any area the access to which is controlled by the employer for purposes of protection of individuals from exposure to radiation or radioactive materials (29 CFR 1910.96(a)(3)).

- *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)).

- *Selcct Carcinogens* - any substances that meet one of the following criteria:
  - regulated by the Occupational Safety and Health Administration (OSHA) as a carcinogen
  - listed under the category "known to be carcinogens" in the *Annual Report on Carcinogens* published by the National Toxicology Program (NTP)
  - listed under Group 1 (carcinogenic to humans) by the International Agency for Research on Cancer Monographs (IARC)
  - listed in either Group 2A or 2B by IARC, or under the category "reasonably anticipated to be carcinogens" by NTP, and cause statistically significant tumor incidences in experimental animals under specific situations (29 CFR 1910.1450(b)).

- *Unrestricted Area* - any area the access to which is not controlled by the employer for purposes of protection of individuals from exposure to radiation or radioactive materials (29 CFR 1910.96(a)(4)).

- *Vapor Pressure* - the pressure, measured in psia, exerted by a volatile liquid (29 CFR 1910.106(a)(30)).

HAZARDOUS MATERIALS MANAGEMENT PROTOCOL

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PEOPLE OR GROUPS:(a)
All Facilities	3-1 through 3-11	(1)(2)(4)(5)(6)
Personnel Training	3-12 and 3-13	(1)(4)(8)
Laboratories	3-14 through 3-17	(1)(2)(4)(5)(8)(9)
Releases	3-18 through 3-21	(1)(2)(4)(5)
Emergency Planning	3-22	(1)(2)(4)(5)
Right-to-Know	3-23	(1)(4)(5)(6)
Flammable/Combustible Liquid Storage		
General	3-24 through 3-32	(1)(3)(4)(5)(6)
Industrial Areas	3-33 through 3-35	(1)(4)(6)
Compressed Gas Storage	3-36 and 3-37	(1)(4)(5)
Transportation	3-38	(1)(5)(11)(12)
Radioactive Materials	3-39 through 3-44	(1)(2)(6)

(a)CONTACT/LOCATION CODE:

(1) Environmental Program Manager
(2) Facility Supervisor/Director
(3) Facilities Operations Branch
(4) Section Chiefs
(5) Industrial Hygiene Section
(6) Radiation Protection & Fire Safety Section
(8) Training Activity
(9) Medical Services
(11) Procurement & Grants Office
(12) Warehouse

HAZARDOUS MATERIALS MANAGEMENT

Records to Review

- Hazardous Substance Spill Control and Contingency plan
- Spill records
- Emergency plan documents
- MSDSs
- Inventory records
- Hazardous substance release reports
- Shipping papers
- Training records
- Placarding of hazardous materials

Physical Features to Inspect

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

People to Interview

- Environmental Program Manager
- Facility Supervisor/Director
- Facilities Operations Branch
- Section Chiefs
- Industrial Hygiene Section
- Radiation Protection & Fire Safety Section
- Training Activity
- Medical Services
- Procurement & Grants Office
- Warehouse

COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL FACILITIES	
3-1. Determine actions or changes since previous review of hazardous materials (GMP).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report. (1)
...	...
3-2. Copies of all relevant Federal, CDC, state, and local regulations and guidance documents on hazardous materials should be available at the facility (GMP).	Verify that copies of the following regulations are available and kept current, as needed: (1)(2) - 29 CFR 1910, *Occupational Safety and Health Standards.* - 40 CFR 300, *National Oil and Hazardous Substances Pollution Contingency Plan.* - 40 CFR 302, *Reportable Quantities of Hazardous Materials (Table 302.4).* - 40 CFR 355, *Emergency Planning and Notification.* - 40 CFR 370, *Hazardous Chemical Reporting: Community Right-To-Know.* - 49 CFR 171, *General Information, Regulations, and Definitions.* - 49 CFR 172, *Hazardous Materials Tables, Hazardous Materials Communications Requirements and Emergency Response Information Requirements.* - 49 CFR 173, *Shippers, General Requirements for Shipments and Packaging.* - 49 CFR 178, *Specifications by Packaging.* - 49 CFR 179, *Specifications for Tank Cars.* - Executive Order (EO) 12088, *Federal Compliance with Pollution Control Standards.* - NFPA, *Fire Protection Guide of Hazardous Materials.*
...	...
3-3. Facilities are required to comply with state and local regulations (EO 12088, Section 1-1).	Verify that the facility is complying with state 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 typically regulated by state and local agencies include: - transportation of hazardous materials - notification requirements - response plan requirements - spill response requirements.)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-4. Facilities will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning hazardous materials have been issued since the finalization of the manual. (1)(2) Verify that the facility is in compliance with newly issued regulations. (1)(2)
...	...
3-5. A master listing of all hazardous materials storage sites should be maintained at the facility (GMP).	Determine the locations of all hazardous materials storage areas on the facility by interviewing staff. (1)(2)(4)(5)(6) (NOTE: Hazardous constituents of expired materials discovered during the inventory process, or at any other time, should be identified prior to disposal. See the appropriate checklist item in the *Hazardous Waste Management* section.)
...	...
3-6. CDC should maintain inventory control over the procurement, distribution, storage, and disposal of hazardous materials (GMP).	Verify that each laboratory documents hazardous materials requirements. (1)(2) Verify that each laboratory inventories hazardous materials on hand and assesses hazardous materials management. (1)(2) Verify that centralized inventory and management records are maintained. (1)(2)
...	...
3-7. Hazardous materials storage sites should be inspected by the Safety Officer (GMP).	Determine if the Safety Officer inspects hazardous material storage sites and which sites are inspected. (1)(5)(6) Verify that corrective actions have been made when needed as noted in the safety inspection records. (1)(5)(6)
...	...
3-8. Facilities should coordinate with the local 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 that are used in a given operation (GMP).	Determine if the facility has coordinated efforts with the local fire department. (1)(2)(6) Determine if the department is aware of areas that are at high risk for chemical incidents. (1)(2)(6)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-9. Specific persons should be designated as responsible for hazardous materials storage areas, and the precise nature of their responsibilities should be specified (GMP).	Verify that specific individuals have been designated as responsible for hazardous materials storage areas. (1)(2)(4) Verify that the individuals designated as responsible for hazardous materials storage areas are aware of the precise nature of their responsibilities. (1)(2)(4)
...	...
3-10. Facilities are required to have on file an MSDS for each hazardous chemical stored and used at the facility (29 CFR 1910.1200(b)(3)(ii), 1910.1200(b)(4)(ii), 1910.1200(b)(6), 1910.1200(g)(1) and 1910.1200(g)(8)).	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)(5) (NOTE: These requirements do not apply to: - hazardous waste - tobacco or tobacco products - wood or wood products - articles - food, drugs, or cosmetics intended for personal consumption by employees while in the workplace - any consumer product or hazardous substance as defined in the *Consumer Product Safety Act* and the *Federal Hazardous Substances Act*, for which the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and whose use results in a duration and frequency of exposure that is not greater than exposure experienced by consumers.) (NOTE: This requirement applies to laboratories and to work operations where employees only handle chemicals in sealed containers that are not opened under normal conditions of use.)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-11. 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)).	Verify that all containers of hazardous chemicals in the workplace are labeled with the following information: (1)(2)(5) - identity of the hazardous chemical - appropriate hazard warnings. (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 container to which it is applicable.) (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.) (NOTE: These requirements do not apply to: - any pesticide as such term is defined in the *Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)*, 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 *Federal Food, Drug, and Cosmetic Act* - any consumer product or hazardous substance as defined in the *Consumer Product Safety Act* and the *Federal Hazardous Substances Act* when subject to a consumer product safety standard or labeling requirement under those Acts.) (NOTE: This requirement also applies to laboratories and to work operations where employees only handle chemicals in sealed containers that are not opened under normal conditions.)
...	...

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COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
Centers for Disease Control and Prevention

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
PERSONNEL TRAINING	

3-12. Facilities are required to provide all employees with information about the hazardous chemicals to which they are exposed (29 CFR 1910.1200(b)(6) and 1910.1200(e)(1)).	Verify that there is a written hazard communication program that contains the following: (1)(4)(8)
	- 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:
	  - identity of the hazardous chemicals contained
	  - appropriate hazard warning
	  - details of employee training.
	
	(NOTE: These requirements do not apply to:
	- hazardous waste
	- tobacco or tobacco products
	- wood or wood products
	- articles
	- food, drugs, or cosmetics intended for personal consumption by employees while in the workplace
	- any consumer product or hazardous substance as defined in the *Consumer Product Safety Act* and the *Federal Hazardous Substances Act*, for which the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and whose use results in a duration and frequency of exposure that is not greater than exposure experienced by consumers.)

...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (4) Section Chiefs (5) Industrial Hygiene Section (6) Radiation Protection & Fire Safety Section (8) Training Activity (9) Medical Services (11) Procurement & Grants Office (12) Warehouse

COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-13. 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), and 1910.1200(h)).	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)(4)(8) Verify that employees are informed of the following: (1)(4)(8) - 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 MSDSs. Verify that training includes: (1)(4)(8) - methods and observations used for detecting 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, MSDSs, and how employees can obtain and use the appropriate hazard information. (NOTE: These requirements do not apply to: - hazardous waste - tobacco or tobacco products - wood or wood products - articles - food, drugs, or cosmetics intended for personal consumption by employees while in the workplace - any consumer product or hazardous substance as defined in the *Consumer Product Safety Act* and the *Federal Hazardous Substances Act*, for which the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and whose use results in a duration and frequency of exposure that is not greater than exposure experienced by consumers.) (NOTE: These requirements also apply to laboratories and, as necessary for protection in event of a spill or leak, to work operations where employees only handle chemicals in sealed containers that are not opened under normal conditions of use.)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
LABORATORIES	(NOTE: The requirements for hazardous materials in laboratories do not apply to: - uses of hazardous chemicals that do not meet the definition of laboratory use - laboratory uses of hazardous chemicals that provide no potential for exposure such as: - commercially prepared kits, such as pregnancy tests, in which all the reagents needed to conduct the test are contained in the kit - procedures using chemically-impregnated test media such as Dip-and-Read tests.)
3-14. Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to have a Chemical Hygiene Plan (29 CFR 1910.1450(e)).	Verify that a written Chemical Hygiene Plan exists and is: (1)(2)(4)(5) - capable of protecting employees from health hazards associated with hazardous chemicals in the laboratory - capable of keeping exposure to regulated substances below required limits. Verify that the plan is readily available to employees and employee representatives. (1)(2)(4)(5) Verify that the plan includes the following elements and indicates specific measures to be taken when laboratory work involves the use of hazardous chemicals: (1)(2)(4)(5) - standard operating procedures (SOPs) relevant to safety and health considerations - criteria that will be used to determine and implement control measures to reduce employee exposure to hazardous chemicals, including engineering controls, the use of personal protective equipment, and hygiene practices - a requirement that fume hoods and other protective equipment are functioning properly and that specific measures are taken to ensure proper and adequate performance of the equipment - provisions for employee information and training - circumstances and situations that require prior approval from a designated individual - provisions for medical consultations and medical exams - designation of individuals responsible for the implementation of the plan - assignment of a Chemical Hygiene Officer and, if appropriate, establishment of a Chemical Hygiene Committee

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
3-14. (continued)	- provisions for additional employee protection when working with particularly hazardous substances, including select carcinogens, reproductive toxins, and substances that have a high degree of acute toxicity. Provisions might include: - establishment of a designated area - use of containment devices such as fume hoods or glove boxes - procedures for safe removal of contaminated waste - decontamination procedures. Verify that the plan is reviewed annually and updated as needed. (1)(2)(4)(5)
...	...
3-15. Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to provide employees with information and training concerning the hazards of the chemicals in their work areas (29 CFR 1910.1450(f)).	Verify that information about the hazards of the chemicals in the work area is provided at the time of initial employment and prior to assignment involving new exposure risks. (1)(4)(5)(8) (NOTE: The frequency of refresher training is to be determined by the facility.) Verify that employees are informed of: (1)(4)(5)(8) - the requirements about which to be trained and informed - the location and availability of the Chemical Hygiene Plan - the permissible exposure limits for OSHA-regulated substances or recommended exposure levels for other hazardous chemicals where there is no OSHA limit - signs and symptoms associated with exposure - the location and known availability of known reference material such as MSDSs. Verify that training includes: (1)(4)(5)(8) - methods and observations that may be used to detect the presence or release of a hazardous chemical - physical and health hazards of chemicals in the work area - measures employees can take to protect themselves - applicable details of the Chemical Hygiene Plan.
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-16. Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to follow specific handling and operating procedures (29 CFR 1910.1450(h)).	Verify that labels on incoming containers of hazardous chemicals are not removed or defaced. (1)(4)(5) Verify that MSDSs are maintained and readily accessible to lab employees. (1)(4)(5) Verify that if the facility is developing chemical substances, a determination is made as to whether or not a substance is a hazardous chemical if the composition of the chemical is known and the chemical is produced only for use by the laboratory. (1)(4)(5) Verify that if the facility is developing chemical substances as a byproduct, and the composition of a substance is not known, it is assumed to be hazardous. (1)(4)(5) Verify that if a chemical substance is produced for a user outside the lab, the lab meets the standards outlined in 40 CFR 1910.1200 (checklist items 3-10 through 3-13). (1)(4)(5)
...	...
3-17. Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to maintain specific records (29 CFR 1910.1450(j)).	Verify that records of monitoring for employee exposure are maintained along with any medical records or test results. (1)(4)(5)(9)
...	...
RELEASES	
3-18. Absorbant materials should be available for spill and/or release cleanup in areas where hazardous materials are used or stored (GMP).	Verify that absorbant materials are available for spill cleanup. (1)(2)(4)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (4) Section Chiefs (5) Industrial Hygiene Section (6) Radiation Protection & Fire Safety Section (8) Training Activity (9) Medical Services (11) Procurement & Grants Office (12) Warehouse

COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-19. Releases in excess of or equal to reportable quantities of hazardous substances shall be reported immediately to the National Response Center (NRC) (40 CFR 302.1 through 302.6).	Verify that spills in excess of the reportable quantities listed in Appendix 3-1 have been reported. (1)(2)(4)(5) Verify that a procedure is in place for the notification of the NRC immediately after becoming aware of the release. (1)(2)(4)(5) Verify that if mixtures or solutions of hazardous substances are released, except for radionuclides, it is reported when: (1)(2)(4)(5) - 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, or - 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. (NOTE: Notification requirements for radionuclide releases are not included in this protocol.)
...	...

3-20. Facilities with releases that are continuous and stable in quantity and rate are required to meet limited notification requirements (40 CFR 302.8).	Determine if the facility has any releases that are continuous and stable in quantity and rate. (1)(2)(4)(5)
	
	Verify that the following notifications have been given: (1)(2)(4)(5)
	
	- 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:
	  - 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 h period that represents a statistically significant increase.
	
	(NOTE: Instead of the initial written report or follow-up report, the facility 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).)

...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

3-21. Facilities where an extremely hazardous chemical is produced, used, or stored where there is a release of a reportable quantity of any extremely hazardous substance of CERCLA hazardous substance are required to meet specific notification requirements (40 CFR 355.40).	Verify that a procedure is in place to immediately notify the community emergency coordinator or local emergency planning committee (or Governor if there is no planning committee) of any area likely to be affected, and the state emergency response commission of any state likely to be affected, by the release of a reportable quantity or greater of an extremely hazardous substance or a CERCLA hazardous substance. (1)(2)(4)(5)
	
	(NOTE: Check Appendix 3-1 for a listing of extremely hazardous substances and look up the reportable quantities for those substances in Appendix 3-1.)
	
	Verify that a procedure is in place to provide a written follow-up emergency notification as soon as practicable after the release. (1)(2)(4)(5)
	
	(NOTE: These notification requirements do not apply to:
	- any release resulting in exposure to persons solely within the boundaries of the facility
	- any release which is a "Federally permitted release" as defined by CERCLA
	- any release which is continuous and stable except:
	  - initial notification
	  - notification of statistically significant increase
	  - notification of a new release
	  - notification of any change in the normal range
	- any release of a pesticide exempt by CERCLA
	- any release meeting the definition of release under CERCLA.)

EMERGENCY PLANNING	
3-22. Facilities where there are extremely hazardous substances present in amounts equal to or greater than the threshold limits found in Appendix 3-1 are required to follow specific emergency planning procedures (40 CFR 355.10 through 355.30, and 355 Appendix A).	Determine if the facility has any of the items listed in Appendix 3-1 in amounts equal to or greater than those listed in Appendix 3-1. (1)(2)(4)(5) Verify that the facility has notified the state emergency response commission, or Governor if there is not an emergency response commission, that the facility is subject to emergency planning requirements within 60 days after the facility first becomes subject to these requirements. (1)(2)(4)(5) Verify that a representative has been designated as the facility response coordinator to participate in the local emergency planning process. (1)(2)(4)(5) Verify that the facility has notified the local emergency planning committee, or Governor if there is no committee, of the facility representative on or before September 1987 or 30 days after establishment of a local emergency planning committee, whichever is earlier. (1)(2)(4)(5) Verify that a procedure is in place to notify the local emergency planning committee of changes at the facility that are relevant to emergency planning. (1)(2)(4)(5)

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
RIGHT-TO-KNOW **3-23.** Facilities that are required to prepare or have available an MSDS for a hazardous chemical under OSHA are required to meet specific reporting requirements (40 CFR 370.20 through 370.28).	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)(4)(5)(6) - 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 threshold planning quantity (TPQ) (See Appendix 3-1). Verify that the facility submitted MSDSs on or before 17 October 1990 (or within 3 months (mo) after the facility has become subject to these requirements) for all hazardous chemicals and extremely hazardous substances. (1)(4)(5)(6) Determine if, instead of submitting MSDSs, the following have been submitted: (1)(4)(5)(6) - 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. Verify that revised MSDSs are provided within 3 mo after the discovery of significant new information concerning the hazardous chemical. (1)(4)(5)(6) Verify that a Tier I or Tier II form has been submitted on or before 1 March 1990 (or 1 March of the 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 jurisdictions over the installation for: (1)(4)(5)(6) - 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.
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

FLAMMABLE/ COMBUSTIBLE LIQUID STORAGE	(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 3-25 through 3-32) do not apply to the following:
	- 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 NFPA standards:
	  - drycleaning plants
	  - manufacture of organic coatings
	  - solvent extraction plants
	  - stationary combustion engines and gas turbines (29 CFR 1910.106(j)).)

...	...
General	
3-24. Specific good management practices should be considered when storing and handling flammable/combustible materials (GMP).	Verify that the following GMPs are followed: (1)(3)(4)(5)(6) - 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. Verify that containers are stored and handled such that: (1)(3)(4)(5)(6) - 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 immediately removed from the storage area - containers are stored so that they are issued or used in the order of dates of manufacture, with the oldest material being used first - there are no open containers.
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-25. 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)).	Verify that flammable and combustible liquid containers meet the constraints outlined in Appendix 3-2 except that glass or plastic containers of no more than 1 gal capacity may be used for a Class IA or IB flammable liquid if: (1)(3)(4)(5)(6) - 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 (pt) of a Class IA liquid or more than 1 quart (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 1/16 the capacity of the container allowed under Appendix 3-2 for the class of liquid. 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)(3)(4)(5)(6) (NOTE: These standards do not apply to: - storage of containers in service stations, Class I or Class II liquids in the fuel tanks of motor vehicles, aircraft, boats, or portable or stationary engines - 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.)
...	...
3-26. 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)).	Verify that exits or common traffic routes are not blocked. (1)(4)(6) (NOTE: These standards do not apply to: - storage of containers in service stations, Class I or Class II liquids in the fuel tanks of motor vehicles, aircraft, boats, or portable or stationary engines - 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.)
...	...
3-27. Storage cabinets used for the storage of flammable/combustible liquids must meet specific requirements (29 CFR 1910.106(d)(3)).	Verify that storage cabinets meet the following: (1)(4)(6) - 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.
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-28. Storage cabinets used for the storage of flammable/combustible liquids should meet specific requirements (GMP).	Verify that storage cabinets meet the following: (1)(4)(6) - materials within the cabinet are segregated - there are no open containers within the cabinet - all containers in the cabinet are labeled.
...	...
3-29. Inside flammable/combustible storage rooms must meet certain specifications (29 CFR 1910.106(d)(4)).	Verify that the facility's flammable/combustible storage facility meets the following: (1)(4)(6) - the walls meet fire resistance test NFPA 251-1969 - a 4-inch (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 meets the requirements in Appendix 3-3 - there is either a 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 feet (ft) wide - containers over 30 gal capacity are not stacked one upon the other - all wood shelving is at least 1 in. thick - dispensing is done by an approved pump or self-closing faucet.
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-30. The storage of flammable or combustible liquids in warehouses or storage buildings shall meet specific requirements (29 CFR 1910.106 (d)(5)(vi)).	Verify that the following requirements are met: (1)(4)(6) - 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 3-4 are met - containers are separated by pallets or dunnage when necessary to provide stability and prevent excess stress on container walls - portable tanks 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 - aisles are at least 3 ft wide when necessary for access to doors, windows, or standpipe connections.
...	...
3-31. Flammable/combustible materials stored outside of buildings must meet certain storage and handling criteria (29 CFR 1910.106(d)(6)).	Verify that outdoor flammable/combustible storage meets the following requirements: (1)(4)(6) - no more than 1100 gal of flammable/combustible liquids are 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 wastes or 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 3-4. (NOTE: These standards do not apply to: - storage of containers in service stations, Class I or Class II liquids in the fuel tanks of motor vehicles, aircraft, boats, or portable or stationary engines - 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.)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-32. Areas where flammables/combustibles are stored must meet certain fire protection standards (29 CFR 1910.106 (d)(7)).	Verify that all flammable/combustible storage locations meet the following requirements: (1)(4)(6) - there is at least one 12-B rated portable fire extinguisher located outside and within 10 ft of the 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 to this effect are posted - incompatible materials are not stored together - no water reactive materials are stored in the same room with flammable/combustible liquids. (NOTE: These standards do not apply to: - storage of containers in service stations, Class I or Class II liquids in the fuel tanks of motor vehicles, aircraft, boats, or portable or stationary engines - 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.)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Industrial Areas	(NOTE: Items 3-33 through 3-35 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 that do not involve chemical reactions.)

3-33. 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)).	Verify that the following provisions are met: (1)(4)(6)
	- 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:
	  - 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.

...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

3-34. Incidental storage of flammable/combustible liquids in industrial areas must conform to certain requirements (29 CFR 1910.106(e)(2)).	Verify that flammable and combustible liquids are stored in closed containers. (1)(4)(6)
	
	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 3-27 and 3-29 except that: (1)(4)(6)
	
	- the quantity of liquid that can be located outside of an inside storage room or storage cabinet in a building, or in any one fire area of a building, shall not exceed:
	  - 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.
	
	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)(4)(6)
	
	Verify that drainage or other means is provided to contain spills, and adequate natural or mechanical ventilation is present. (1)(4)(6)
	
	Verify that the following practices are observed at the point of final use: (1)(4)(6)
	
	- 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 tank by gravity through an approved self-closing valve. Transfer by means of air pressure on the container or portable tanks is prohibited.

...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-35. 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)).	Verify that the the following parameters are met: (1)(4)(6) - these areas are located so that each building or unit of equipment is accessible from at least one side for firefighting - 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 (cu ft) per min per square foot (sq ft) of solid floor area through either natural or mechanical means - equipment is designed to limit flammable vapor-air mixtures.
...	...
COMPRESSED GAS STORAGE	
3-36. The in-plant storage, handling, and utilization of all compressed gases in cylinders, portable tanks, rail tankers, or motor vehicles must be done according to the Compressed Gas Association Pamphlet P-1-1965 (29 CFR 1910.101).	Verify that compressed gas cylinders and tanks have safety relief devices. (1)(4)(5)
...	...
3-37. Compressed gases should be handled according to specific procedures and practices (GMP).	Verify that the following practices and procedures are followed: (1)(4)(5) - 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.
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
TRANSPORTATION	
3-38. 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 CDC personnel transport hazardous materials on and/or offsite. (1)(5)(11)(12) Verify that precautions are taken when transporting including the following: (1)(5)(11)(12) - MSDSs 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. (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 (DOT), commerce is defined in terms of making a profit in this instance, therefore Subchapter C does not apply to Federal agencies.)
...	...
RADIOACTIVE MATERIALS	
3-39. Personnel working around radioactive materials are required to be notified of specific information and trained (29 CFR 1910.96(i)).	Verify that all individuals working in or frequenting any portion of a radiation area are: (1)(2)(6) - informed of the existence of radioactive materials - instructed in the safety problems associated with exposure to such materials and radiation and in precautions or devices to minimize exposure - advised of reports that must be made concerning exposure. Verify that the facility has conspicuously posted a current copy of its provisions and operating procedures in locations where radioactive materials are found or keeps the documents in a place where they are available on request. (1)(2)(6)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-40. Specific notification requirements must be met for radioactive material incidents (29 CFR 1910.96(l) and 1910.96(m)).	Verify that the facility notifies the Assistant Secretary of Labor or his duly appointed representative by telephone or telegraph of any incident that may have caused or threatens to cause: (1)(2)(6) - exposure of the whole body or any individual to 25 rems or more of radiation - exposure of the skin of the whole body of any individual to 150 rems or more of radiation - exposure of the feet, ankles, hands, or forearms of any individual to 375 rems or more of radiation. Verify that the facility notifies the Assistant Secretary of Labor or his duly appointed representative by telephone or telegraph of any incident that may have caused or threatens to cause the release of radioactive material in concentrations which, if averaged over a period of 24 h, would exceed 5000 times the limits specified in Appendix 3-6 (table II of Appendix B of 10 CFR 20). (1)(2)(6) Verify that notification is made within 24 h of the following: (1)(2)(6) - exposure of the whole body or any individual to 5 rems or more of radiation - exposure of the skin of the whole body of any individual to 30 rems or more of radiation - exposure of the feet, ankles, hand or forearms to 75 rems or more of radiation. Verify that a written report of overexposure is made within 30 days. (1)(2)(6)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
3-41. Specific signs are required in radiation areas (29 CFR 1910.96(e)(1) through 1910.96(e)(3)(i), 1910.96(e)(4) through 1910.96(e)(5), and 1910.96(g)).	Verify that each radiation area is posted with a conspicuous sign or signs bearing the radiation symbol and the words CAUTION, RADIATION AREA. (1)(2)(6) Verify that each high radiation area is posted with a conspicuous sign or signs bearing the radiation symbol and the words CAUTION, HIGH RADIATION AREA. (1)(2)(6) Verify that each airborne radioactivity area is posted with a conspicuous sign or signs bearing the radiation symbol and the words CAUTION, AIRBORNE RADIOACTIVITY AREA. (1)(2)(6) Verify that each area or room in which radioactive material is used or stored and which contains any radioactive material (other than natural uranium or thorium) in any amount exceeding 10 times the quantity of such material specified in Appendix 3-7 (Appendix C of 10 CFR 20) is conspicuously posted with a sign or signs bearing the radiation caution symbol and the words CAUTION, RADIOACTIVE MATERIALS. (1)(2)(6) (NOTE: The following are exempted from sign posting requirements: - a room or an area with a sealed source then the radiation level 12 in. from the surface of the source container or housing does not exceed 5 millirems/h - rooms or other areas containing radioactive material for periods of less than 8 h if: - the materials are constantly attended during such periods by an individual who takes appropriate precautions - the room is under the control of the facility.)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-42. Containers of radioactive materials are required to be labeled according to specific standards (29 CFR 1910.96(e)(6) and 1910.96(h)).	Verify that each container in which is transported, stored, or used a quantity of radioactive material (other than natural uranium or thorium) greater than the quantity of the material specified in Appendix 3-5 bears a durable, clearly visible label with the radiation caution symbol and the words CAUTION, RADIOACTIVE MATERIAL. (1)(2)(6) (NOTE: A label is not required if: - the concentration of the material in the container does not exceed that specified in Appendix 3-5 - the containers are laboratory containers such as beakers, flasks, and test tubes used transiently in laboratory procedures, and the user is present.) Verify that when containers are used for storage, the labels also state the quantities and kinds of radioactive materials in the containers as well as the date of measurement of the quantities. (1)(2)(6) (NOTE: Radioactive materials packaged and labeled according to DOT rules do not have to be labeled according to these requirements if the inside containers are labeled according to these requirements.)
...	...
3-43. High radiation areas are required to be equipped with specific control devices (29 CFR 1910.96(e)(3)(ii)).	Verify that each high radiation area is equipped with a control device that either causes the level of radiation to be reduced below the level at which an individual might receive a dose of 100 millirems in 1 h upon entry into the area or energizes a conspicuous visible or audible alarm signal so that the individual entering and the supervisor of the activity are aware of the entry. (1)(2)(6) (NOTE: This requirement does not apply to high radiation areas established for a period of 30 days or less.)
...	...
3-44. Radioactive materials stored in a non-radiation area must be secured against unauthorized removal from the place of storage (29 CFR 1910.96(j)).	Verify that radioactive materials are stored in a manner that they are secured against unauthorized removal. (1)(2)(6)

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Appendix 3-1

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 MSDS 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 TPQ, is found in 40 CFR 355.

2. CERCLA Hazardous Substances Reportable Quantity (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 Part 302, Table 302.4.

3. SARA Section 313 Toxic Chemicals - Emissions or releases of which must be reported annually as part of SARA Title III's community right-to-know provisions. A list of these toxic chemicals is found in 40 CFR 372.65.

4. RCRA Hazardous Wastes - from the "P" and "U" lists (40 CFR 261.33), of specific chemicals. RCRA hazardous wastes from the "F" and "K" lists are not included here; such waste streams are also CERCLA hazardous substances. This listing is provided as an indicator that you may already have data on a specific chemical that can be used for Title III reporting purposes.

There are four columns in the consolidated list corresponding to these four statutory provisions. If a chemical is listed as an extremely hazardous substance under Section 302, its TPQ is given in the extremely hazardous sunstance 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.

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.

+- EPA 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.

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 which are Haz. Mat.	RCRA	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-hydroxy-2-(methylamino) ethyl]-		1000		P042		51-43-4
1,2-Benzisothiazolin-3(2H) one,1,1-dioxide		100	x	U202		81-07-2
1,2-Benzphenanthrene		100		U050		218-01-9
1,2-Butylene oxide			x			106-88-7
1,2-Dibromo-3-chloropropane		1	x	U066		96-12-8
1,2-Dichloroethane		100	x	U077		107-06-2
1,2-Dichloroethylene			x			540-59-0
1,2-Dichloropropane		1000	x	U083		78-87-5
1,2-Dimethylhydrazine		1		U099		540-73-8
1,2-Diphenylhydrazine		10	x	U109		122-66-7
1,2-Oxathiolane,2,2-dioxide		10	x	U193		1120-71-4
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 3-1 (continued)

Chemical Name	Extremely Has. Sub. 40 CFR 355 (lb)	Has. Sub. RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65	Has. Wastes which are Haz. Mat.	RCRA	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-Cyclohexl-4, 6-dinitrophenoll		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 3-1 (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 which are Haz. Mat.	RCRA	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				32534-95-5
2,5-Furandione		5000	x	U147		108-31-6
2,6-Dichlorophenol		100		U082		87-65-0
2,6-Xylidine			x			87-62-7
3,3-Dichlorobenzidine			x			91-94-1
3,4-Diaminotoluene		10	x	U221		95-80-7
3,4-Dinitrotoluene		10				610-39-9
3,4,5-Trichlorophenol		10				609-19-8
3,5-Dichloro-N-(1,1-dimethyl-2-propynyl) benzamide		5000		U192		23950-58-5
4-Aminoazobenzene			x			60-09-3
4-Aminobiphenyl			x			92-67-1
4-Chloro-m-cresol		5000		U039		59-50-7
4-Chlorophenyl phenyl ether		5000				7005-72-3
4-Nitrobiphenyl			x			92-93-3
4,4'-Diaminodiphenyl ether			x			101-80-4
4,4'-Isopropylidenediphenol			x			80-05-7
4,4'-Methylene bis(N,N-dimethyl) 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-(aminothioxomethyl)-		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 3-1 (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 which are Haz. Mat.	RCRA	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 3-1 (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 which are Haz. Mat.	RCRA	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
Analine,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 3-1 (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 which are Haz. Mat.	RCRA	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
Benzenenamine, 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
Benzenearsonic 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 3-1 (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 which are Haz. Mat.	RCRA	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
Benzotrichloride	500	10	x	U023		98-07-7
Benzoyl chloride		1000	x			98-88-4
Benzoyl peroxide			x			94-36-0
Benzyl chloride	500	100	x	P028		100-44-7
Benzyl cyanide	500					140-29-4
Beryllium chloride		1				7787-47-5
Beryllium fluoride		1				7787-49-7
Beryllium nitrate		1				13597-99-4
Beryllium nitrate		1				7787-55-5
Beryllium		10	x	P015		7440-41-7
beta-Endosyulfan		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 3-1 (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 which are Haz. Mat.	RCRA	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 3-1 (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 which are Haz. Mat.	RCRA	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
Chlorsulfonic acid		1000				7790-94-5
Chlorthiophos	500					21923-23-9
Chromic acetate		1000				1066-30-4
Chromic acid		10				11115-74-5
Chromic acid		10				7738-94-5
Chromic chloride	1/10,000					10025-73-7
Chromic sulfate		1000				10101-53-8
Chromium		5000	x			7440-47-3
Chromous chloride		1000				10049-05-5
Cobalt			x			7440-50-8
Cobalt,((2,2'-1,2-ethanediylbis (nitrilomethylidyne))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 hyroperoxide			x			80-15-9
Cupferron			x			135-20-6

Appendix 3-1 (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 which are Haz. Mat.	RCRA	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-nitrosoureido)-		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)phthlate (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 3-1 (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 which are Haz. Mat.	RCRA	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
Dimefox	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 3-1 (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 which are Haz. Mat.	RCRA	CAS No.
Diphosphoramide, octamethyl-	100	100		P085		152-16-9
Dipropylamine		5000		U110		142-84-7
Diquat		1000				85-00-7
Diquat		1000				2764-72-9
Disulfoton	500	1		P039		298-04-4
Dithiazinine iodide	500/10,000					514-73-8
Dithiobiuret	100/10,000	100		P049		541-53-7
Diuron		100				330-54-1
Dodecylbenzenesulfonic acid		1000				27176-87-0
Emetine,dihyrochloride	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,1,1,2,2-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

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 which are Haz. Mat.	RCRA	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
Florouracil	500/10,000					51-21-8
Fluenetil	100/10,000					4301-50-2
Fluometuron			x			2164-17-2
Fluorene		5000				86-73-7
Fluorine	500	10		P056		7782-41-4
Fluoroacetamide	100/10,000	100		P057		640-19-7
Fluoroacetic acid	10/10,000					144-49-0
Fluoroacetyl chloride	10					359-06-8
Fonofos	500					944-22-9
Formaldehyde	500	100	x	U122		50-00-0
Formaldehyde cyanohydrin	1000					107-16-4
Formetanate hydrochloride	500/10,000					23422-53-9
Formic acid		5000		U123		64-18-6
Formothion	100					2540-82-1
Formparanate	100/10,000					17702-57-7
Fosthietan	500					21548-32-3
Fuberidazole	100/10,000					3878-19-1
Fulminic acid, mercu-ry(II) salt		10		P065		628-86-4
Fumaric acid		5000				110-17-8
Furan	500	100		U124		110-00-9
Furan, tetrahydro-		1000		U213		109-99-9
Gallium trichloride	500/10,000					13450-90-3
Glycidylaldehyde		10		U126		765-33-4
Guanidine,N-nitroso-N methyl-N'-nitro		10		U163		70-25-7
Heptachlor		1	x	P059		76-44-8
Heptachlor epoxide		1				1024-57-3
Hexachloro-1,3-butadiene		1	x	U128		87-68-3
Hexachlorocyclopentadiene	100	10	x	U130		77-47-4

Appendix 3-1 (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 which are Haz. Mat.	RCRA	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 (Hydrogen 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 perioxide (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
iso-Butyric acid		5000				79-31-2
Isobenzan	100/10,000					297-78-9
Isobutyl alcohol		5000		U140		78-83-1
Isobutyraldehyde			x			78-84-2
Isobutyronitrile	1000					78-82-0
Isocyanic acid,3,4-dichlorophenyl ester	500/10,000					102-36-3
Isodrin	100/10,000	1		P060		465-73-6
Isophorone		5000				78-59-1
Isophorone diisocyanate	100					4098-71-9
Isoprene		100				78-79-5
Isopropanolamine dodecylbenzene 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

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 which are Haz. Mat.	RCRA	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 3-1 (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 which are Haz. Mat.	RCRA	CAS No.
Methanesulfanyl chloride, trichloro	500	100		P118		594-42-3
Methanesulfonyl fluoride	1000					558-25-8
Methanol		5000	x	U154		67-56-1
Methapyrilene		5000		U155		91-80-5
Methidathion	500/10,000					950-37-8
Methiocarb	500/10,000	10				2032-65-7
Methomyl	500/10,000	100		P066		16752-77-5
Methoxychlor		1	x			72-43-5
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-(phenylisocyanate)(MBI)			x			101-68-8
Methylmercuric dicyanamide	500/10,000					502-39-6
Methylthiouracil		10		U164		56-04-2
Methyltrichlorosilane	500					75-79-6
Metolcarb	100/10,000					1129-41-5
Mevinphos	500	10				7786-34-7
Mexacarbate	500/10,000	1000				315-18-4
Michler's ketone			x			90-94-8
Mitomycin C	500/10,000	10		U010		50-07-7
Molybdenum trioxide			x			1313-27-5
Moncrotophos	10/10,000					6923-22-4
(Mono)chloropentafluoroethane (CFC 115)			x			76-15-3
Monoethylamine		100				75-04-7
Monomethylamine		100				74-89-5
Muscimol	500/10,000	1000		P007		2763-96-4
Mustard gas	500		x			505-60-2
n-Butyl alcohol			x			71-36-3
N,N'-Dimethylaniline			x			121-69-7
N,N'-Diethylhydrazine		10		U086		1615-80-1
N-Nitroso-N-ethylurea		1	x			759-73-9
N-Nitroso-N-methylurea		1	x			684-93-5

Appendix 3-1 (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 which are Haz. Mat.	RCRA	CAS No.
N-Nitrosodiphenylamine		100	x			86-30-6
N-Nitrosomethylvinylamine		10	x			4549-40-0
N-Nitrosomorpholine			x			59-89-2
N-Nitrosonornicotine			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
Nitrilotriacetic 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 3-1 (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 which are Haz. Mat.	RCRA	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					2665-30-7
Phosphonothioic acid, methyl-O-ethyl-O-(4-(methylthio)phenyk Ester	500					2703-13-1
Phosphonothioic acid, methyl-,s-(2-(bis(1-methylethyl)amino Ethyl o-Ethyl Ester	100					50782-69-9
Phosphoric acid		5000	x			7664-38-2
Phosphoric acid, dimethyl	500					3254-63-5

Appendix 3-1 (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 which are Haz. Mat.	RCRA	CAS No.
4-(methylthio)phenyl ester						
Phosphorothioc acid O,O-diethyl, O-pyrazinyl ester	500	100		P040		297-97-2
Phosphorothioic acid,O,O-dimethyl-S-(2-methylthio)ethyl est	500					2587-90-8
Phosphorus	100	1	x			7723-14-0
Phosphorus oxychloride	500	1000				10025-87-3
Phosphorus pentachloride	500					10026-13-8
Phosphorus pentasulfide		100		U189		1314-80-3
Phosphorus pentoxide	10					1314-56-3
Phosphorus trichloride	1000	1000				7719-12-2
Physostigmine	100/10,000					57-47-6
Physostigmine, salicylate (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 3-1 (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 which are Haz. Mat.	RCRA	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 3-1 (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 which are Haz. Mat.	RCRA	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(1) carbonate	100/10,000	100		U215		6533-73-9
Thallium (I)sulfate	100/10,000	100		P115		10031-59-1
Thallium(I)nitrate		100		U217		10102-45-1
Thallium(I)selenide		1000		P114		12039-52-0
Thallous chloride	100/10,000	100		U216		7791-73-9
Thallous malonate	100/10,000					2757-18-8
Thallous 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 3-1 (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 which are Haz. Mat.	RCRA	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
Toluene2,4-diisocyanate	500	100	x			584-84-9
Toluene2,6-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 acetater	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

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 which are Haz. Mat.	RCRA	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)Pentanenitrile)-,(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

Appendix 3 - 2

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

Container Type	Flammable Liquids			Combustible Liquids	
	IA	*IB*	*IC*	*II*	*II*
Glass or approved plastic	1 pt	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 3 - 3

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

Fire Protection Provided[1]	*Fire Resistance*	*Maximum Size*	*Total Allowable Quantities (gals/sq ft floor area)*[2]
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

[1] Fire protection system will be sprinkler, water spray, or other approved method.
[2] If metric containers are being stored, use the nearest metric equivalent.

Appendix 3-4

29 CFR 1910.106(d)(5) and 1910.106(d)(6), Tables H-14 through H-17

Flammable/Combustible Materials

Indoor Container Storage

Class Liquid	Storage Level	Protected Storage Maximum per Pile	Unprotected Storage Minimum per Pile
A	Ground and upper floors	2750 (50)	600 (12)
	Basement	Not permitted	Not permitted
B	Ground and upper floors	5500 (100)	1375 (25)
	Basement	Not permitted	Not permitted
C	Ground and upper floors	16,500 (300)	4125 (25)
	Basement	Not permitted	Not permitted
II	Ground and upper floors	16,500 (300)	4125 (75)
	Basement	5500 (100)	Not permitted
III	Ground and upper floors	55,000 (1000)	13,750 (250)
	Basement	8250 (450)	Not permitted

Numbers in parenthesis indicate corresponding number of 55 gal drums.

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

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

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

Flammable/Combustible Materials
Outdoor Container Storage

Class	Maximum per pile	Distance between piles	Distance to property line that can be built upon	Distance to street, alley or public way
	(gal)	(ft)	(ft)	(ft)
IA	1100	5	20	10
IB	2200	5	20	10
IC	4400	5	20	10
II	8800	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 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 ft-wide accessway 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.

Flammable/Combustible Materials
Indoor Portable Tank Storage

Class Liquid	Storage Level	Protected Storage Maximum per Pile (gal)	Unprotected Storage Minimum per Pile (gal)
IA	Ground and upper floors	Not permitted	Not permitted
	Basement	Not permitted	Not permitted
IB	Ground and upper floors	20,000	2000
	Basement	Not permitted	Not permitted
IC	Ground and upper floors	40,000	5500
	Basement	Not permitted	Not permitted
II	Ground and upper floors	40,000	5500
	Basement	20,000	Not permitted
III	Ground and upper floors	60,000	22,000
	Basement	20,000	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.

Flammable/Combustible Materials
Outdoor Portable Tank Storage

Class	Maximum per pile	Distance between piles	Distance to property line that can be built upon	Distance to street, alley public way
	(gal)	(ft)	(ft)	(ft)
IA	2200	5	20	10
IB	4400	5	20	10
IC	8800	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 ft-wide accessway 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.

INSTALLATION:	COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Centers for Disease Control and Prevention	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (4) Section Chiefs (5) Industrial Hygiene Section (6) Radiation Protection & Fire Safety Section (8) Training Activity (9) Medical Services (11) Procurement & Grants Office (12) Warehouse

Section 4

Hazardous Waste Management

SECTION 4

HAZARDOUS WASTE MANAGEMENT

A. Applicability

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

This section and its associated evaluation worksheets are more complex than other sections in this volume. All evaluation items will not be applicable. Guidance is provided on the worksheets to direct the evaluator to the regulations related to the type of hazardous waste activities/facilities on the facility.

Additionally, this section covers the requirements pertaining to the storage of radioactive waste. Radioactive waste is required to be handled according to a different set of criteria than hazardous waste. It is included in this section due to the potential dangers involved in storing it.

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. Specifically, RCRA prohibits the placement of bulk or noncontainerized liquid hazardous waste or free liquids containing hazardous waste into a landfill. It also prohibits the land disposal of specified wastes and disposal of hazardous waste through underground injection within 1/4 mile (mi) of an underground source of drinking water.

- *The Federal Facility Compliance Act (FFCA) of 1992.* This act provides for a waiver of sovereign immunity with respect to Federal, state, and local procedural and substantive requirements relating to RCRA solid and hazardous waste laws and regulations. Additionally, it defines hazardous waste in relation to public vessels, expands the definition of mixed waste, addresses the issue of munitions, and discusses waste discharges to Federally owned treatment works (FOTWs).

C. State/Local Requirements

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

- This section includes a description of the environmental regulations, policies, and requirements of the CDC. At this time, the CDC has not issued environmental regulations for its components.

E. Key Compliance Requirements

- Generator Requirements - Responsibilities of CDC facilities are based on the amount of waste being generated in 1 month (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 kilogram (kg) of hazardous waste or 1 kg of acutely hazardous waste in a 1 mo time period. CESQGs 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 kilograms (kg) or more than 1000 kg of waste has accumulated onsite, the facility is required to comply with the more stringent standards applicable to an SQG.

2. An SQG produces between 100 and 1000 kg of hazardous waste in 1 mo. The waste cannot accumulate onsite for more than 180 days unless the waste is transported more than 200 mi to a Treatment, Storage, or 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 facility. 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 facility 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 1 mo.

(NOTE: Using water, which weighs approximately 8 pounds/gallon (lb/gal) (3.67 kg/gal) as a basis of measurement, 100 kg would equal about 28 gal (one-half of a 55 gal drum), 1000 kg would equal about 273 gal (almost five, 55 gal drums).)

Whether the facility is a CESQG, an SQG, or a generator determines the type of records the facility 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 CDC facility is required to test its solid waste or use prior knowledge to determine if it has hazardous characteristics. Every CDC facility 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.

- Transport Requirements - Containers of hazardous waste shipped off post must be labeled identifying the waste and its hazard class.

- Accumulation Point Management - An accumulation point is an area in or near the workplace where hazardous waste is accumulated/stored before being turned in for disposal. Storage in these areas is temporary and the permissible length of time for accumulation depends on what size generator the facility is.

- 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.

F. Responsibility for Compliance

- Environmental Program Manager - responsible for all aspects of the hazardous waste management program. This office receives copies of the manifest labels from the contractor who comes onto the facility to pick up hazardous waste for disposal.

G. Key Compliance Definitions

These definitions were obtained from the previously cited regulations.

- *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) can be visually inspected (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).

- *Airborne Radioactivity Area* - this includes:
    1. any room, enclosure, or operating area in which airborne radioactive materials, composed wholly or partly of radioactive material, exist in concentrations in excess of the amounts specified in column 1 of Table 1 of Appendix B of 10 CFR 20
    2. any room, enclosure, or operating area in which airborne radioactive materials exist in concentrations which, averaged over the number of hours in any week during which individuals are in the area, exceed 25 percent of the amounts specified in Column 1 of Table 1 of Appendix B to 10 CFR 20 (29 CFR 1910.96(e)(4)(i)).

- *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 with 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) are 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 that identify hazardous waste (40 CFR 261.20 through 261.24).

- *Component* - refers to either the tank or the ancillary equipment of the tank system (40 CFR 260.10).

- *Consignee* - the ultimate TSDF in a receiving country to which the hazardous waste will be sent (40 CFR 262.51).

- *Container* - any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled (40 CFR 260.10).

- *Containment Building* - a hazardous waste management unit that is used to store or treat hazardous waste under 40 CFR 264.1100 through 264.1103 and 265.1100 through 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 that could threaten human health or the environment (40 CFR 260.10).

- *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 millimeters (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 TSDF that is identified on a manifest as the destination of a hazardous waste shipment. The facility must have an appropriate permit, interim status, or be regulated under specific recycling requirements (40 CFR 260.10).

- *Dike* - an embankment or ridge of either natural or man-made 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 onto any land or water (40 CFR 260.10).

- *Disposal* - the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters (40 CFR 260.10).

- *EPA Hazardous Waste Number* - the number assigned by the 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 the USEPA to each generator, transporter, and TSDF (40 CFR 260.10).

- *Existing Hazardous Waste Management (HWM) Facility or Existing Facility* - a facility that was in operation or for which construction commenced on or before 19 November 1980 (40 CFR 260.10).

- *Existing Tank System or Existing Component* - a tank system or component that is used for the storage or treatment of hazardous waste and that is in operation, or for which installation has commenced on or before 14 July 1986. Installations will have been considered to be commenced if the owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system and if either:
    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).

- *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 that 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 term typically refers to a facility that produces 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, that 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 that are listed in Appendix 4-1 (40 CFR 268.2).

- *Hazardous Debris* - debris that contains a hazardous waste or that exhibits a characteristic of hazardous waste (40 CFR 268.2).

- *Hazardous Waste* - a solid waste identified as a characteristic or listed hazardous waste in 40 CFR 261.3 (40 CFR 260.10).

- *Hazardous Waste Constituent* - a constituent that caused the hazardous waste to be listed in 40 CFR 261, Subpart D (lists of hazardous wastes from non-specific 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).

- *High Radiation Area* - any area accessible to personnel, in which there exists radiation at such levels that a major portion of the body could receive in any 1 hour (h) a dose in excess of 100 millirem (29 CFR 1910.96(d)(3)(iii)).

- *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. comingling with another waste or material under uncontrolled conditions because the comingling conditions produce heat or pressure, fire or explosion, violent reaction, toxic dusts, mist, 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).

- *Inground Tank* - a device meeting the definition of "tank" in 40 CFR 260.10 whereby a portion of the tank is situated to any degree within the ground, thereby preventing visual inspection of that external surface area of the tank that is in the ground (40 CFR 260.10).

- *Injection Wells* - a well into which fluids are injected (40 CFR 260.10).

- *Inner Liner* - a continuous layer of material placed inside a tank or container that 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).

- *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 devise 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).

- *Management or Hazardous Waste Management* - the systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous waste (40 CFR 260.10).

- *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 twelve-digit number assigned to the generator plus a unique 5-digit number assigned to the Manifest by the generator for recording and reporting purposes (40 CFR 260.10).

- *Movement* - that hazardous waste transported to a facility in an individual vehicle (40 CFR 260.10).

- *New Tank System or New Component System* - a tank system or component that will be used for the storage and treatment of hazardous waste and for which installation has commenced after 14 July 1986, except however, for purposes of 264.193(g)(2) and 265.193(g)(2), a new tank system is one for which construction commenced after 14 July 1986. (See also "existing tank system.") (40 CFR 260.10).

- *Nonwastewaters* - wastes that do not meet the criteria for wastewaters (40 CFR 268.2).

- *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 that 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).

- *Personnel Monitoring Equipment* - devices designed to be worn or carried by an individual for the purpose of measuring the dose received (29 CFR 1910.96 (d)(3)(i)).

- *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).

- *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 that is owned by a "state" or "municipality" (as defined by section 502(4) of the Clean Water Act (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 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 groundwater 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).

- *Rad* - a measure of the dose of any ionizing radiation to body tissues in terms of the energy absorbed per unit of mass of the tissue (29 CFR 1910.19(a)(6)).

- *Radiation* - includes alpha rays, beta rays, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other atomic particles, but does not include sound or radio waves or visible light, or infrared, or ultraviolet light (29 CFR 1910.96(a)(1)).

- *Radiation Area* - any area accessible to personnel in which there exists radiation, originating in whole or in part with licensed material, at such levels that a major portion of the body could receive in any 1 h a dose in excess of 5 millirem, or in any 5 consecutive days a dose in excess of 100 millirems (29 CFR 1910.96(d)(3)(ii)).

- *Radioactive Material* - any material that emits, by spontaneous nuclear disintegration, corpuscular or electromagnetic emanations (29 CFR 1910.106(a)(2)).

- *Rem* - a measure of the dose of any ionizing radiation to body tissue in terms of estimated biological effect relative to a dose of 1 roentgen (r) of X-rays (29 CFR 1910.96(a)(7)).

- *Representative Sample* - a sample of a universe or whole (i.e., waste pile, lagoon, groundwater) that can be expected to exhibit the average properties of the universe or whole (40 CFR 260.10).

- *Restricted Area* - any area access to which is controlled by the employer for purposes of protection of individuals from exposure to radiation or radioactive materials (29 CFR 1910.96(a)(3)).

- *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 that generates less than 1000 kg but more than 100 kg of hazardous waste in a calendar month (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 TSDFs; 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).

- *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) that provide structural support (40 CFR 260.10).

- *Tank System* - a hazardous waste storage or treatment tank and its associated ancillary equipment and containment system (40 CFR 260.10).

- *Transport Vehicle* - a motor vehicle or rail car used used for the 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. if the waste is amenable to the treatment process
    2. what pretreatment, if any, is required
    3. the optimal process conditions needed to achieve the desired treatment
    4. the efficiency of a treatment process for a specific waste or wastes
    5. the characteristics and volumes of residuals from a particular treatment process (40 CFR 260.10).

  Also included in this definition for the purpose of the 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 to neutralize such waste, or to recover energy or material resources from the waste, or 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).

- *Unrestricted Area* - any area the access to which is not controlled by the employer for purposes of protection of individuals from exposure to radiation or radioactive materials (29 CFR 1910.96(a)(4)).

- *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).

- *Wastewater Treatment Unit* - a device that is part of a wastewater treatment facility subject to regulation under section 402 or 307 of the CWA and receives and treats or stores an influent wastewater that is a hazardous waste (as defined in 40 CFR 261.3) or that generates and accumulates a wastewater treatment sludge that is a hazardous waste, or treats or stores a wastewater treatment sludge and meets the definition of tank or tank system (40 CFR 260.10).

- *Wastewaters* - wastes that contain less than 1 percent by weight total organic compounds (40 CFR 268.2).

- *Zone of Engineering Control* - an area under the control of the owner/operator that upon detection of a hazardous waste release, can be readily cleaned up before the release of hazardous waste or hazardous constituents to groundwater or surface water (40 CFR 260.10).

HAZARDOUS WASTE MANAGEMENT PROTOCOL

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Facilities	4-1 through 4-7	(1)(2)
All Generators		
General	4-8 through 4-13	(1)(2)
Personnel training	4-14 and 4-15	(1)(2)(8)
Satellite accumulation points	4-16	(1)(2)
Conditionally Exempt Small Quantity Generators (CESQGs)	4-17 through 4-20	(1)(2)
Small Quantity Generators (SQGs)		
General	4-21 through 4-25	(1)(2)
Containers	4-26 through 4-31	(1)(2)
Container Storage Areas	4-32 through 4-34	(1)(2)
Large Quantity Generators (LQGs)		
General	4-35 through 4-42	(1)(2)
Personnel Training	4-43 and 4-44	(1)(2)(8)
Containers	4-45 through 4-50	(1)(2)(8)
Container Storage Areas	4-51 through 4-53	(1)(2)
Containment Buildings	4-54 through 4-60	(1)(2)
Transportation	4-61 through 4-65	(1)(2)
Land Disposal of Restricted Wastes	4-66 through 4-75	(1)(2)
Radioactive Waste	4-76 through 4-82	(1)(2)

(a)CONTACT/LOCATION CODE:

(1) Environmental Program Manager
(2) Facility Supervisor/Director
(8) Training Activity

HAZARDOUS WASTE MANAGEMENT

Records to Review

- 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
- Contingency plan (LQGs only)
- Notifications of hazardous waste oil fuel marketing or blending activity

Physical Features to Inspect

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

People to Interview

- Environmental Program Manager
- Facility Supervisor/Director
- Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL FACILITIES	
4-1. Determine actions or changes since previous review of hazardous waste (GMP).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report. (1)
...	...
4-2. Copies of all relevant Federal, CDC, state, and local regulations and guidance documents on hazardous waste should be available at the facility (GMP).	(NOTE: State may obtain partial 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.) Verify that copies of the following regulations are available and kept current, as needed: (1)(2) - 40 CFR 260, *Hazardous Waste Management Systems: General.* - 40 CFR 261, *Identification and Listing of Hazardous Waste.* - 40 CFR 262, *Standards Applicable to Generators of Hazardous Waste.* - 40 CFR 268, *Land Disposal Restrictions.* - Executive Order (EO) 12088, *Federal Compliance with Pollution Control Standards. State hazardous waste management regulations.* Determine if facility staff involved in hazardous waste generation, storage, or disposal are familiar and knowledgeable of regulatory requirements. (1)(2)
...	...
4-3. Facilities are required to comply with state and local hazardous waste regulations (Federal Facilities Compliance Act, Section 102(a)(3)).	Verify that the facility is complying with state and local hazardous waste requirements. (1)(2) Verify that the facility is operating according to permits issued by the state or local agencies. (1)(2) (NOTE: Issues typically regulated by state and local agencies include: - additional manifesting requirements - more frequent reporting requirements - transportation - identification of special waste or waste categories - regulation of specific substances as hazardous waste such as: medical, pathological, and infectious waste; used oil, explosives; used batteries - small and very small quantity generator requirements - disposal requirements - construction and operation of storage and disposal facilities.)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-4. Facilities will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning hazardous waste have been issued since the finalization of the manual. (1)(2) Verify that the facility is in compliance with newly issued regulations. (1)(2)
...	...
4-5. Material resources should be procured and used in a way that minimizes waste production (GMP).	Verify that the facility has a plan to recycle, reuse material, and substitute less hazardous products to the greatest extent possible. (1)(2)
...	...
4-6. Specific persons should be designated responsible for hazardous waste storage areas, and the precise nature of their responsibilities should be specified (GMP).	Verify that specific individuals have been designated responsible for hazardous waste storage areas. (1)(2) Verify that the individuals designated responsible for hazardous waste storage areas are aware of the precise nature of their responsibilities. (1)(2)
...	...
4-7. A survey of past actions and activities at the facility should be done and appropriate sampling and testing initiated to identify potentially contaminated sites (GMP).	Determine if the facility has had previous spills or actions occur that could lead to possible contamination of groundwater, surface water, soil, or structures. (1)(2) Verify that actions such as monitoring and sampling have been done to ascertain the extent of contamination. (1)(2) Verify that records of releases, and subsequent sampling and monitoring results for each site are maintained in a centralized location, or by the Environmental Program Manager. (1)(2) Verify that the records of laboratory and animal research activities that may have resulted in contamination are maintained in a centralized location. (1)(2) Verify that any information gathered in the identification process is maintained for documentation. (1)(2)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL GENERATORS **General** **4-8.** Facilities that generate solid wastes must determine if the wastes are hazardous wastes (40 CFR 261.3, 261.24, and 262.11).	Determine if there is a hazardous waste inventory describing all the waste streams and a hazardous waste analysis plan identifying and characterizing the facility hazardous waste streams. (1)(2) (NOTE: Expired materials that 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: - knowledge of all the constituents of the waste - laboratory analysis.) Discuss with staff how wastes generated on the facility were identified and classified. (1)(2) 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) 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) (NOTE: The following solid wastes are not considered to be hazardous wastes: - 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 that consists of discarded arsenical-treated wood or wood products that fail the test for Toxicity Characteristics for Hazardous Waste Codes 0004 through 0017 and that 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 and are required to meet the corrective action regulations under 40 CFR 280 (see *Aboveground/Underground Storage Tank Management*)

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

4-8. (continued)	- 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
	- used oil containing less than 1000 ppm halogens
	- non-tern 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:
	  - 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 that will remove used oil.)
	
	Verify that wastes are tested for ignitability, reactivity, and corrosivity. (1)(2)
	
	Verify that wastes are tested for toxicity characteristics or are previously identified as toxic (see Appendix 4-2). (1)(2)
	
	Determine if wastes contain contaminants in greater concentrations than the Toxicity Characteristics listed in Appendix 4-3. (1)(2)
	
	Verify that wastes that exceed toxicity characteristics are handled as hazardous wastes. (1)(2)
	
	Verify that all data, including quality assurance data is maintained and kept available for reference or inspection. (1)(2)

...	...
4-9. 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).	Determine if the generator tests for restricted wastes. (1)(2) Determine if the facility generates restricted wastes by reviewing test results (see Appendix 4-4). (1)(2) (NOTE: Use the Land Disposal section questions for generators of these wastes in addition to the questions in this section.)
...	...
4-10. A facility must not offer its hazardous waste to transporters or to TSDFs that have not received a USEPA ID No. (40 CFR 262.12(c)).	Examine records pertaining to TSDF or transporter contract awards; verify that all transporters of hazardous wastes or TSDFs have a USEPA ID No. (1)(2)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
4-11. 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)).	Verify that the biennial report (USEPA Form 8700-13A) is complete and was submitted in a timely manner. (1)(2) Verify that copies are kept for 3 years (yr). (1)(2) (NOTE: Reporting for exports of hazardous waste is not required.) (NOTE: This does not apply to CESQGs.)
...	...
4-12. Facilities that are generators are required to use manifests, and maintain records (40 CFR 262.40(a), 262.40(b), and 262.40(d)).	Verify that copies of manifests are kept for 3 yr. (1)(2) (NOTE: Periods of retention for manifests may be extended automatically during the course of any unresolved enforcement action.)
...	...
4-13. Generators are required to keep records of waste analyses, test and waste determinations (40 CFR 262.40(c)).	Verify that appropriate records are kept for at least 3 yr from the date the waste was last sent to onsite or offsite TSDF. (1)(2)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Personnel Training	
4-14. All facility personnel who handle hazardous waste should meet certain training requirements (GMP).	Verify that the training program is directed by a person trained in hazardous waste management procedures. (1)(2)(8) Verify that the training program includes the following: (1)(2)(8) - 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. Verify that new employee training is completed within 6 mo of employment. (1)(2)(8) Verify that an annual review of initial training is provided. (1)(2)(8) Verify that employees do not work unsupervised until training is completed. (1)(2)(8) Verify specifically that accumulation point managers and hazardous waste handlers have been trained. (1)(2)(8)
...	...
4-15. Training records should be maintained for all facility staff who manage hazardous waste (GMP).	Examine training records and verify they include the following: (1)(2)(8) - 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. Determine if training records are retained for 3 yr after employment at the facility. (1)(2)(8) Verify that records are transferred with employees. (1)(2)(8)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Satellite Accumulation Points	
4-16. 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)).	(NOTE: This type of storage is often referred to as a satellite accumulation point.) 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) 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) Verify that the containers are marked HAZARDOUS WASTE or other appropriate identification. (1)(2) (NOTE: See Appendix 4-1 and Appendix 4-5 for a guidance list of hazardous and acute wastes.) Verify that when waste is accumulated in excess of quantity limitations the following actions are taken by interviewing the shop managers: (1)(2) - the excess container is marked with the date the excess amount began accumulating - the waste is transferred to a 90 day storage area or permitted storage area within 3 days.
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

CONDITIONALLY EXEMPT SMALL QUANTITY GENERATORS (CESQGs)
 	
4-17. Generators of no more than 100 kg (220 lb)/mo of hazardous waste may qualify as conditionally exempt small quantity generators when they meet specific requirements (40 CFR 261.5).
 	
...
	Verify that the following quantity and storage limitations are met: (1)(2)
	
	- no more than 100 kg (220 lb) of hazardous waste is generated in a calendar month
	- total onsite accumulation does not exceed more than 1000 kg (2200 lb) of hazardous waste
	- no more than 1 kg (2.2 lb) of acute hazardous waste (see Appendix 4-5) is generated in a calendar month, or
	- no more than a total of 100 kg (220 lb) of any residue or contaminated soil, waste, or other debris resulting from the cleanup of any acute wastes in a calendar month is generated.
	
	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)
	
	- permitted
	- in interim status
	- authorized to manage hazardous waste by a State with an approved hazardous waste management program
	- permitted, licensed, or registered by a state to manage municipal or industrial solid waste
	- a facility that does one of the following:
	  - beneficially uses or reuses, or legitimately recycles or reclaims its waste
	  - treats it waste prior to beneficial use or reuse, or legitimate recycling or reclamation.
	
	(NOTE: If a hazardous waste generator meets the requirements for being a CESQG, they are not required to meet any of the standards outlined in 40 CFR 262 through 266 (except 262.11, 268, and 270.)
	
	(NOTE: If a facility mixes its waste with used oil, the mixture is subject to the requirements in Subpart G of Part 279 if it is destined to be burned for energy recovery, see *POL Management.*)
	
	(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 Parts 270 and 124.)
	
	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-18. 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).	Verify that for containers or inner liners holding hazardous wastes, all wastes are removed that can be removed using common practices and no more than 2.5 centimeters (cm) (1 inch (in.)) of residue remains. (1)(2) Verify that for containers or inner liners if the container is less than or equal to 417 L (110 gal), no more than 3 percent by weight of total container capacity remains. (1)(2) 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) Verify that for containers that held a compressed gas the pressure in the container approaches atmospheric. (1)(2) 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) - 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.
...	...
4-19. Containers at CESQGs should be managed in accordance with good management practices (GMP).	Verify the following by inspecting storage areas: (1)(2) - containers are not stored more than 2 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 1 meter (m) (3 feet (ft)) of aisle space is provided between rows of containers.
...	...
4-20. Containers of hazardous waste should be kept in designated storage areas at CESQGs (GMP).	Verify that all hazardous waste containers are identified and stored in appropriate areas. (1)(2) (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.)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
SMALL QUANTITY GENERATORS (SQGs) **General**	
4-21. Generators of more than 100 kg (220 lb) but less than 1000 kg (2200 lb) of hazardous waste per month may qualify as a small quantity generator that 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)).	Inspect containers, storage, and records. (1)(2) Verify that no more than 1000 kg (2200 lb) of hazardous waste is generated in any month. (1)(2) Verify that the onsite accumulation time does not exceed 180 days. (1)(2) (NOTE: The 180 day time period is extended to 270 days if the waste must be transported more than 200 mi to a TSDF.) Verify that no more than 6000 kg is allowed to accumulate at the facility. (1)(2) Verify that containers are marked with the date accumulation began and the words HAZARDOUS WASTE. (1)(2) Verify that the containers and the areas where containers are stored meet the requirements outlined in the questions applying to SQGs (Containers, Container Storage, and Tank Systems Storage). (1)(2) (NOTE: When an SQG exceeds the quantity generation or the amount accumulation it becomes subject to either LGQ requirements or all TSDF requirements. When an SQG exceeds storage time limitations, it becomes subject to full TSDF regulation.)
...	...
4-22. SQGs that generate, transport, or handle hazardous wastes must obtain a USEPA ID No. (40 CFR 262.12(a), 262.12(b), and 265.11).	Examine documentation from USEPA for the facilities generator ID No. (1)(2) Verify that correct ID No. is used on all appropriate documentation (i.e., manifests). (1)(2)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-23. SQC 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).	Determine if the following required equipment is easily accessible and in working condition by inspecting the SQG facility: (1)(2) - 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) 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) 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) Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency. (1)(2)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-24. SQGs of hazardous waste are required to use manifests and keep records of hazardous waste activity (40 CFR 262.20 262.42(b) and 262.44).	Verify that signed copies of returned manifests are kept for 3 yr. (1)(2) (NOTE: The requirement to prepare a manifest does not apply if: - 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.) 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. Verify that exception reports are kept for at least 3 yr. (1)(2) Verify that records of test results, waste analyses, and determinations are kept for 3 yr. (1)(2) (NOTE: Period of retention of records is extended automatically during the course of any unresolved enforcement action.)
...	...
4-25. SQGs are required to have an emergency coordinator and emergency response planning (40 CFR 262.34(d)(5)).	Verify that the facility has an emergency coordinator. (1)(2) Verify that emergency information is posted next to the telephone: (1)(2) - 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. Verify that waste handlers are familiar with waste handling and emergency procedures. (1)(2)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Containers	
4-26. 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).	Verify that for containers or inner liners holding hazardous wastes, 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) Verify that for containers or inner liners if the container is less than or equal to 417 L (110 gal), no more than 3 percent by weight of total container capacity remains. (1)(2) 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) Verify that for containers that held a compressed gas the pressure in the container approaches atmospheric. (1)(2) 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) - 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.
...	...
4-27. 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).	Verify that containers are not leaking, bulging, rusting, damaged or dented. (1)(2) Verify that waste is transferred to a new container or managed in another appropriate manner when necessary. (1)(2)
...	...
4-28. 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).	Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in plastic drums. (1)(2)
...	...
4-29. 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).	Verify that containers are closed except when it is necessary to add or remove waste (check bungs on drums, look for funnels). (1)(2) Verify that handling and storage practices do not cause damage to the containers or cause them to leak. (1)(2)

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-30. The handling of incompatible wastes, or incompatible wastes and materials in containers at SQGs must comply with safe mangement practices (40 CFR 262.34(d)(2) and 265.177).	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) - 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. (NOTE: Check for hydrocarbons in acid drums and other incompatible wastes as listed in Appendix 4-6.) Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material. (1)(2) 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)
...	...
4-31. Containers of hazardous waste at SQGs should be managed in accordance with good management practices (GMP).	Inspect containers and storage areas to determine the following: (1)(2) - 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 1 m (3 ft) of aisle space is provided between rows of containers.
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Container Storage Areas	
4-32. Containers of hazardous waste at SQGs should be kept in designated storage areas (GMP).	Verify that all containers are identified and stored in appropriate areas. (1)(2) (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.)
...	...
4-33. 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).	Determine, by inspecting the SQG facility, if the following required equipment is easily accessible and in working condition: (1)(2) - 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) 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) Verify that police, fire departments, emergency response teams are familiar with the layout of the facility, with the properties of the waste being handled, and with general operations. (1)(2) Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency. (1)(2)
...	...
4-34. SQGs must conduct weekly inspections of container storage areas (40 CFR 262.34(d)(2) and 265.174).	Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers. (1)(2)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
LARGE QUANTITY GENERATORS (LQGs) **General**	
4-35. An 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).	Examine documentation from USEPA for the facilities generator ID No. (1)(2) Verify that correct ID No. is used on all appropriate documentation (i.e., manifests). (1)(2)
...	...
4-36. 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)).	Inspect each accumulation point and interview the accumulation point manager. Verify that: (1)(2) - 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. Verify that containers, drip pads and tanks meet the standards outlined in the section titled Large Quantity Generators (Containers, Container Storage Areas, Tank System Storage, and Containment Buildings). (1)(2) (NOTE: A generator who meets these standards is exempt from meeting the closure requirements outlined in 40 CFR 265.110 through 265.150, except 265.112 and 265.114.) (NOTE: A generator who accumulates hazardous waste for more than 90 days (without an extension), is subject to all storage facility and permitting requirements.)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-37. 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). ...	Determine if the following required equipment is easily accessible and in working condition at the facility: (1)(2) - 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) 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) 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) Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency. (1)(2) ...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-38. 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 facilities 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) Verify that the plan includes the following: (1)(2) - 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 that may be called upon to provide emergency services. (1)(2) 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)
...	...
4-39. 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).	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) 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)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-40. 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)).	Review the contingency plan for the LQG facility. (1)(2) Verify that the emergency coordinator is required to follow these emergency procedures: (1)(2) - 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.
...	...
4-41. 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)).	Determine if incidents have been recorded and corrective actions taken through a review of the facility operating records. (1)(2) Verify that written reports have been submitted to the USEPA regional administrator within 15 days after the incident. (1)(2)
...	...
4-42. Facilities that are LQGs are required to use manifests, maintain records, and file manifest exception reports (40 CFR 262.42(a)).	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) Verify that exception reports are kept for 3 yr. (1)(2) (NOTE: Periods of retention for reports may be extended automatically during the course of any unresolved enforcement action.)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT *Centers for Disease Control and Prevention*	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Personnel Training	
4-43. 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)).	Verify that the training program is directed by a person trained in hazardous waste management procedures. (1)(2)(8) Verify that the training program includes the following: (1)(2)(8) - 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. Verify that new employee training is completed within 6 mo of employment. (1)(2)(8) Verify that an annual review of initial training is provided. (1)(2)(8) Verify that employees do not work unsupervised until training is completed. (1)(2)(8) Verify specifically that accumulation point managers and hazardous waste handlers have been trained. (1)(2)(8)
...	...
4-44. Training records must be maintained for all LQG staff who manage hazardous waste (40 CFR 265.1(d) and 265.16(e)).	Examine training records and verify they include the following: (1)(2)(8) - 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. Determine if training records are retained for 3 yr after employment at the facility. (1)(2)(8) Verify that records are transferred with employees. (1)(2)(8)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Containers	
4-45. 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).	Verify that for containers or inner liners holding hazardous wastes, 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)(8) Verify that for containers or inner liners if the container is less than or equal to 417 L (110 gal), no more than 3 percent by weight of total container capacity remains. (1)(2)(8) 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)(8) Verify that for containers that held a compressed gas the pressure in the container approaches atmospheric. (1)(2)(8) 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)(8) - 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.
...	...
4-46. 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).	Verify that containers are not leaking, bulging, rusting, damaged or dented. (1)(2) Verify that waste is transferred to a new container or managed in another appropriate manner when necessary. (1)(2)(8)
...	...
4-47. 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).	Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in plastic drums. (1)(2)
...	...
4-48. Containers must be closed during storage and handled in a safe manner at LQGs (40 CFR 262.34(a)(1)(i) and 265.173).	Verify that containers are closed except when it is necessary to add or remove waste (check bungs on drums, look for funnels). (1)(2) Verify that handling and storage practices do not cause damage to the containers or cause them to leak. (1)(2)(8)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-49. The handling of incompatible wastes, or incompatible wastes and materials in containers at LQGs must comply with safe mangement practices (40 CFR 262.34(a)(1)(i) and 265.177).	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) - 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. (NOTE: Check for hydrocarbons in acid drums and other incompatible wastes as listed in Appendix 4-6.) Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material. (1)(2)(8) 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)(8)
...	...
4-50. Containers used to store hazardous waste at LQGs should be managed in accordance with good management practices (GMP).	Verify the following by inspecting container storage areas: (1)(2) - 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 1 m (3 ft) of aisle space is provided between rows of containers.
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Container Storage Areas	
4-51. At LQGs, containers of hazardous waste should be kept in designated storage areas (GMP).	Verify that all containers are identified and stored in appropriate areas. (1)(2) (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.)
...	...
4-52. Containers holding ignitable or reactive waste must be located 15.5 m (50 ft) from the property line at LQGs (40 CFR 262.34(a)(1)(i) and 265.176).	Determine the distance from storage containers holding ignitable or reactive waste to the property line. (1)(2)
...	...
4-53. LQGs must conduct weekly inspections of container storage areas (40 CFR 262.34(a)(1)(i) and 265.174).	Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers. (1)(2)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

Containment Buildings
 	
4-54. 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)
	
	- 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.
	
	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

4-55. 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)).	Verify that containment buildings meet the following design standards: (1)(2)
	
	- 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.
	
	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)
	
	- 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:
	  - 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

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

4-55. (continued)
 	
...
	- 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:
	  - 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 30.5 cm (12 in.) or more, or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m^2/sec or more
	- 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.
	
	(NOTE: An exception to the structural strength requirement may be made for light-weight doors and windows based on the nature of the waste management operations if the following criteria are met:
	- the doors and windows provide an effective barrier again 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.)
	
	(NOTE: A containment building can serve as secondary containment systems for tanks within the building if:
	- it meets the requirements of 264.193(d)(1) (see checklist item 4-59)
	- it meets the requirements of 264.193(b) and 264.193(c)(1 - 2) (see checklist item 4-59).)
	
	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY:
HAZARDOUS WASTE MANAGEMENT
Centers for Disease Control and Prevention

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
4-56. 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)).	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) Verify that the following operational procedures are done: (1)(2) - 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. 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) 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) Verify that there is documentation that the waste does not remain for more than 90 days. (1)(2)
...	...
4-57. 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)).	Verify that the building has been certified by a registered professional engineer. (1)(2)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-58. 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)).	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) Verify that when a leak is discovered: (1)(2) - 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 registered professional engineer is also submitted.
...	...
4-59. Containment buildings that contain areas both with and without secondary containment must meet specific requirements (40 CFR 262.34(a)(1)(iv), 264.1101(d), and 265.1101(d)).	Verify that each area is designed and operated according to the appropriate requirements. (1)(2) Verify that measures are taken to prevent the release of liquids or wet materials into areas without secondary containment. (1)(2) 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)
...	...
4-60. When a containment building is closed specific requirements must be met (40 CFR 262.34(a)(1)(iv), 264.1102, and 265.1102).	Determine if the facility has closed a containment building recently. (1)(2) 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) Verify that the containment building is closed in accordance with closure and post-closure requirements for TSDFs. (1)(2) (NOTE: Currently, the requirements for TSDFs are not outlined in this manual.) 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)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
TRANSPORTATION	
4-61. Transporters of hazardous waste that are required to be manifested must have a 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(d), 263.21, and 263.22(a)).	(NOTE: These requirements do not apply to the onsite transportation of hazardous waste.) Determine if the facility transports hazardous waste offsite using their own vehicles or a contractor. (1)(2) Verify that the transporter has a USEPA ID No. (1)(2) Verify that all waste accepted for transport is accompanied by a manifest. (1)(2) Verify that prior to transport, the transporter signs and dates the manifest and returns a copy to the generator before leaving the facility. (1)(2) Verify that the transporter retains a copy of the manifest after delivery. (1)(2) Verify that manifests are kept on file for 3 yr. (1)(2) (NOTE: Special issues involved in the transportation of hazardous waste by rail or water are not addressed in this manual.)
...	...
4-62. 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 Department of Transportation (DOT) regulations contained in 49 CFR 172, 173, 178, and 179 (40 CFR 262.30 through 262.33).	Verify, by inspecting a sample of containers awaiting transport, that containers are properly constructed and contain no leaks, corrosion, or bulges. (1)(2) Examine endseams for minor weeping that indicates drum failure. (1)(2) Verify labeling and marking on each container is compatible with the manifests. (1)(2) 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) - 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_____ . Verify that proper DOT placarding is available for the transporter. (1)(2)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-63. Transporters of waste offsite must take immediate notification and clean-up action if a discharge occurs during transport (40 CFR 263.30 and 263.31).	Verify that transport operators have instructions to notify local authorities and take clean-up action so that the discharge does not present a hazard. (1)(2) Verify that transporters give notice to the National Response Center (NRC) and report in writing as required by 49 CFR 171.15 and 171.16. (1)(2)
...	...
4-64. 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).	Determine from the transportation branch if procedures exist to manage movement of hazardous wastes throughout the facility. (1)(2) Determine if drivers are trained in spill control procedures. (1)(2) Determine if provisions have been made for securing wastes in vehicles when transporting. (1)(2)
...	...
4-65. 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).	Determine if the facility has a transfer facility. (1)(2) Verify the following: (1)(2) - 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 good management practice. (NOTE: Storage for more than 10 days will require a TSD permit.)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

LAND DISPOSAL OF RESTRICTED WASTES
 	
4-66. 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).
 	
...
	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)
	
	- 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:
	  - 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:
	  - 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.
	
	(NOTE: The following are exempted from all of the requirements concerning restricted wastes found in 40 CFR 268:
	- waste generated by small quantity generators of less than 100 kg (220 lb) of non-acute hazardous waste or less than 1 kg (2.2 lb) 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
	- De minimis losses to wastewater treatment systems of commercial chemical product or chemical intermediates that are ignitable (D001), or corrosive (D002), and that contain underlying hazardous constituents
	- 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.)
	
	(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.)
	
	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-67. Wastes that are restricted from land disposal or the residual from the treatment of a waste restricted from land disposal must not be diluted as a substitute for adequate treatment (40 CFR 268.3).	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 that treats wastes that are then discharged into a waste of the United States by permit or that treats wastes for the purpose of pretreatment or unless the waste is a D003 reactive cyanide wastewater or nonwastewater. (1)(2)
...	...
4-68. Appendix 4-7 lists restricted wastes and the concentrations of their associated constituents that 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).	Verify that restricted wastes that are disposed of on land meet the criteria in Appendix 4-7. (1)(2) (NOTE: Appendix 4-8 lists extract concentrations for the constituents of wastes F001 through F005 as a supplement to Appendix 4-7.)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-69. 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)).	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) - the USEPA hazardous waste number - treatment standards - the manifest number associated with the shipment - for hazardous debris, the contaminants subject to treatment and the following statement "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45" - the waste analysis data, when available. 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) - the USEPA hazardous waste number - 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. 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) - the USEPA hazardous waste number - 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. (NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste subject to the agreement.)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-70. 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)).	Verify that the plan describes the procedures that the generator will carry out to comply with treatment standards. (1)(2) (NOTE: Generators treating hazardous debris under the alternative treatment standards are not required to conduct waste analysis.) Verify that the plan is kept onsite and: (1)(2) - 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 USEPA Regional Administrator or state authorized official at least 30 days prior to the treatment activity, with delivery verified. (NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste subject to the agreement.)
...	...
4-71. 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)).	Verify that if the facility is using generator knowledge to determine whether a waste meet Land Disposal Restriction (LDR) requirements, the supporting data used in making this determination is retained in the facility operating record. (1)(2) Verify that if the facility has determined whether a waste is restricted using appropriate test methods, the waste analysis data is retained. (1)(2) 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 files stating that the generated waste is excluded. (1)(2) 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 was last sent to onsite or offsite treatment, storage, or disposal. (1)(2) Verify that small quantity generators with tolling agreement retain the agreement and copies of notification and certification for at least 3 yr after the agreement expires. (1)(2)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-72. Treatment facilities are required to follow specific procedures for restricted wastes (40 CFR 268.7(b)).	Verify that treatment facilities are testing their waste according to the procedures outlined in their waste analysis plan. (1)(2) 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) - USEPA hazardous waste number - treatment standards - the manifest number associated with the the shipment of waste - waste analysis data, where available. 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) (NOTE: If waste or treatment residues will be further managed at a different treatment or storage facility, the TSDF sending the waste or treatment residue offsite must comply with notice and certification requirements.) (NOTE: Where the wastes are recyclable materials used in a manner constituting disposal, the facility treatment facility is not required to notify the receiving facility.)
...	...
4-73. 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)).	Verify that copies of the certifications and notification are kept on hand. (1)(2) Verify that the facility is testing waste as specified in the facility's waste analysis plan. (1)(2)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-74. 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)).	Verify that a one-time notification is submitted to the Director or authorized state including the following: (1)(2) - 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 number - for excluded debris, the technology used to treat the debris. Verify that the notification is updated if the debris is shipped to a different facility. (1)(2) 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)
...	...

4-75. The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).	Verify that land disposal restricted waste is not stored at the facility unless: (1)(2)
	
	- the generator is storing the wastes in tanks, containers, or containment buildings onsite only for the purpose of accumulating enough quantity of 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:
	  - 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.
	
	Verify that transporters do not store manifested shipments of land disposal restricted wastes for more than 10 days. (1)(2)
	
	(NOTE: A TSDF may stored the land disposal restricted wastes for up to 1 yr if they can prove that the reason for storage is to accumulate such quantities of hazardous waste as are necessary to facilitate proper storage, treatment and disposal.)
	
	(NOTE: The prohibition on storage does not apply to hazardous wastes that have met treatment standards.)
	
	Verify that liquid hazardous wastes containing PCBs at concentrations greater than 50 ppm are stored at a facility that meets the requirements of 40 CFR 761.65(b) (see *Special Pollutants Management*) and is removed from storage within 1 yr of the date it was first placed into storage. (1)(2)

...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
RADIOACTIVE WASTE	(NOTE: Throughout the regulations, radioactive substances are referred to as "radioactive materials" regardless of their condition as a new product or a waste.)
4-76. Personnel working around radioactive materials are required to be notified of specific information and trained (29 CFR 1910.96(i)).	Verify that all individuals working in or frequenting any portion of a radiation area are: (1)(2) - informed of the existence of radioactive materials - instructed in the safety problems associated with exposure to such materials and radiation, and in precautions or devices to minimize exposure - advised of reports that have to be made concerning exposure. Verify that the facility has conspicuously posted a current copy of its provisions and operating procedures in locations where radioactive materials are found, or keeps the documents in a place where they are available on request. (1)(2)
...	...
4-77. Specific notification requirements must be met for radioactive material incidents (29 CFR 1910.96(l) and 1910.96(m)).	Verify that the facility notifies the Assistant Secretary of Labor or his duly appointed representative by telephone or telegraph of any incident that may have caused or threatens to cause: (1)(2) - exposure of the whole body or any individual to 25 rems or more of radiation - exposure of the skin of the whole body of any individual to 150 rems or more of radiation - exposure of the feet, ankles, hands, or forearms of any individual to 375 rems or more of radiation. Verify that the facility notifies the Assistant Secretary of Labor or his duly appointed representative by telephone or telegraph of any incident that may have caused, or threatens to cause, the release of radioactive material in concentrations that, if averaged over a period of 24 h, would exceed 5000 times the limits specified in Table II of Appendix B of 10 CFR 20. (Due to the extreme length of this table, it is not included in this manual). (1)(2) Verify that notification is made within 24 h of the following: (1)(2) - exposure of the whole body or any individual to 5 rems or more of radiation - exposure of the skin of the whole body of any individual to 30 rems or more of radiation - exposure of the feet, ankles, hand or forearms to 75 rems or more of radiation. Verify that a written report of overexposure is made within 30 days. (1)(2)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-78. Specific signs are required in radiation areas (29 CFR 1910.96(e)(1) through 1910.96(e)(3)(i), 1910.96(e)(4) through 1910.96(e)(5), and 1910.96(g)).	Verify that each radiation area is posted with a conspicuous sign or signs bearing the radiation symbol and the words CAUTION, RADIATION AREA. (1)(2) Verify that each high radiation area is posted with a conspicuous sign or signs bearing the radiation symbol and the words CAUTION, HIGH RADIATION AREA. (1)(2) Verify that each airborne radioactivity area is posted with a conspicuous sign or signs bearing the radiation symbol and the words CAUTION, AIRBORNE RADIOACTIVITY AREA. (1)(2) Verify that each area or room in which radioactive material is used or stored and that contains any radioactive material (other than natural uranium or thorium) in any amount exceeding 10 times the quantity of such material specified in Appendix 4- 9 is conspicuously posted with a sign or signs bearing the radiation caution symbol and the words CAUTION, RADIOACTIVE MATERIALS. (1)(2) (NOTE: The following are exempted from sign posting requirements: - a room or an area with a sealed source where the radiation level 12 in. from the surface of the source container or housing does not exceed 5 millirems per hour - rooms or other areas containing radioactive material for periods of less than 8 h if: - the materials are constantly attended during such periods by an individual who takes appropriate precautions - the room is under the control of the facility.)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-79. Containers of radioactive materials are required to be labeled according to specific standards (29 CFR 1910.96(e)(6) and 1910.96(h)).	Verify that each container in which is transported, stored, or used a quantity of radioactive material (other than natural uranium or thorium) greater than the quantity of the material specified in Appendix 4-9 bears a durable, clearly visible label with radiation caution symbol and the words CAUTION, RADIOACTIVE MATERIAL. (1)(2) (NOTE: A label is not required if: - the concentration of the material in the container does not exceed that specified in Column 2 of Table 1 of Appendix B of 10 CFR 20 (due to its extreme length, the table is not included in this manual) - the containers are laboratory containers such as beakers, flasks, and test tubes used transiently in laboratory procedures, and the user is present.) Verify that when containers are used for storage, the labels also state the quantities and kinds of radioactive materials in the containers and the date of measurement of the quantities. (1)(2) (NOTE: Radioactive materials packaged and labeled according to DOT rules do not have to be labeled according to these requirements if the inside containers are labeled according to these requirements.)
...	...
4-80. High radiation areas are required to be equipped with specific control devices (29 CFR 1910.96(e)(3)(ii)).	Verify that each high radiation area is equipped with a control device that either causes the level of radiation to be reduced below that at which an individual might receive a dose of 100 millirems in 1 h upon entry into the area, or energizes a conspicuous visible or audible alarm signal so that the individual entering and the supervisor of the activity are aware of the entry. (1)(2) (NOTE: This requirement does not apply to high radiation areas established for a period of 30 days or less.)
...	...
4-81. Radioactive materials stored in a non-radiation area must be secured against unauthorized removal from the place of storage (29 CFR 1910.96(j)).	Verify that radioactive materials are stored in a manner that they are secured against unauthorized removal. (1)(2)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-82. Radioactive materials must be disposed of by transfer to an authorized recipient or in a manner approved by Atomic Energy Commission or a state (29 CFR 1910.96(k)).	Verify that hazardous materials slated for disposal are going to approved facilities. (1)(2)

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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*
	Generic	
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 halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,1,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/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.

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-ethoxylethanol, 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.

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.

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 intro 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 chorophenolic 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 cresote formulations. This listing does not include K001 bottom sludge from the treatment of wastewater from wood preserving processes that use creosote and or phentachlorophenol.	(t)
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 chormium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachorophenol.	(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.

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

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F038	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge--Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. 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	(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 reamin 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.

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 reamin 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.

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
	Organic Chemicals	
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 acetronitrile 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

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

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 anydride from erthoxylene.	(t)
K094	Distillation bottoms from the production of phthalic anhydride from orthozylene.	(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 adsorbent 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

USEPA Hazardous Waste Number	Hazardous Waste	Code
K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(t)
	Inorganic Chemicals	
K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.	(t)
K073	Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.	(t)
K106	Wastewater treatment sludge from the mercury cell process in chlorine production.	(t)
	Hazardous Waste from Explosives Manufacturing	
K044	Wastewater treatment sludge from the manufacturing and processing of explosives.	(r)
K045	Spent carbon from the treatment of wastewater containing explosives.	(r)
K046	Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds.	(t)
K047	Pink/red water from TNT operations.	(r)

* 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) (corrocivity); 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-dichloropheoxy)-, 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

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)

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[rst]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[a]pyrene
U197	p-benzoquinone
U023	benzotrichloride (c,r,t)
U085	2,2-bioxirane (i,t)
U021	(1,1-biphenyl)-4,4-diamine
U073	(1,1-biphenyl)-4,4-diamine, 3,3-dichloro
U091	(1,1-biphenyl)-4,4-diamine, 3,3-dimethoxy-
U095	(1,1-biphenyl)4,4-diamine, 3,3-dimethyl-
U225	bromoform
U030	4-bromophenyl phenyl ether
U128	1,3-butadiene, 1,1,2,3,4,4-hexachloro
U172	1-butanamine, N-butyl-N-nitroso-
U031	1-butanol (i)
U159	2-butanone (i,t)
U160	2-butanone peroxide (r,t)
U053	2-butenal
U074	2-butene, 1,4-dichloro- (i,t)
U143	2-butenoic acid, 2-methyl-, 7-

USEPA Hazardous Waste No.	Substance
	[(2,3-dihydroxy-2-(1-methoxyethyl) -3-methyl-1-oxobutoxy)methyl] -2,3,5,7s-yrytshyfto-1- pyrrolizin-1-yl ester, [1S-[alpha(Z),7(2S,3R), 7aalpha]]-
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- ethanediylbis-, 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	chlornaphazine
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 H2CrO4, calcium salt
U050	chrysene
U051	creosote
U052	cresols (cresylic acid)
U053	crotonaldehyde
U055	cumene (i)
U246	cyanogen bromide
U197	2,5-cyclohexadiene-1, 4-dione

USEPA Hazardous Waste No.	Substance
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-dichlorpropene
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
U099	1,2-dimethylhydrazine

USEPA Hazardous Waste No.	Substance
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
U115	ethylene oxide (i,t)

USEPA Hazardous Waste No.	Substance
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
U148	maleic hydrazide

USEPA Hazardous Waste No.	Substance
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,4,5,5,5a,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-
U167	1-naphthalenamine

USEPA Hazardous Waste No.	Substance
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-
U089	phenol, 4,4'-(1,2-diethyl-

USEPA Hazardous Waste No.	Substance
	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)
U083	propylene dichloride

USEPA Hazardous Waste No.	Substance
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
U228	trichloroethylene

USEPA Hazardous Waste No.	Substance
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
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 -trichloroethane)	Wastewater and nonwastewater	8 August 1990

Appendix 4-4 (continued)

Waste Code	Waste Category	Effective Date
F002	SQGs, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids. F002!All others!8 November 1986 F003!T{ 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

Waste Code	Waste Category	Effective Date
K002	All	8 August 1990
K003	All	8 August 1990
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

Waste Code	Waste Category	Effective Date
K038	All	8 June 1989
K039	All	8 June 1989
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

Waste Code	Waste Category	Effective Date
K101 (organics)	Wastewater	8 August 1988
K101 (metals)	Wastewater	8 August 1990
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

Waste Code	Waste Category	Effective Date
P016	All	8 August 1990
P017	All	8 August 1990
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

Waste Code	Waste Category	Effective Date
P072	All	8 August 1990
P073	All	8 August 1990
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

Waste Code	Waste Category	Effective Date
U007	All	8 August 1990
U008	All	8 August 1990
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 June 1989
U029	All	8 August 1990
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 June 1989
U059	All	8 August 1990
U060	All	8 August 1990

Waste Code	Waste Category	Effective Date
U061	All	8 August 1990
U062	All	8 August 1990
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

Waste Code	Waste Category	Effective Date
U114	All	8 August 1990
U115	All	8 August 1990
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

Waste Code	Waste Category	Effective Date
U164	All	8 August 1990
U165	All	8 August 1990
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

Waste Code	Waste Category	Effective Date
U219	All	8 August 1990
U220	All	8 August 1990
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.

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

Appendix 4-5

Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Acute Hazardous Waste

(40 CFR 261.33(a) - 261.33(e))

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

Hazardous Waste 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 As2O3
P011	Arsenic oxide As2O5
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%

Hazardous Waste Number	Substance
P028	Benzyl chloride
P015	Berylium
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-Dimethanonapthalene, 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-Dimethanonapthalene, 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-Dimethanonapth[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-Dimethanonapth[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

Hazardous Waste Number	Substance
P020	Dinoseb
P085	Diphosphoramide,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)carbony] 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-Methyllactonitrile
P071	Methyl parathion
P072	alpha-Naphthylthiourea
P073	Nickel carbonyl

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 NO2
P081	Nitroglycerine
P082	N-Nitrosodimethylamine
P084	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

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(l) salt
P109	Tetraethyldithiopyrophosphate
P110	Tetraethyl lead
P111	Tetraethylpyrophosphate
P112	Tetranitromethane (r)
P062	Tetraphosphoric acid, hexaethyl ester
P113	Thallic oxide
P113	Thallium(lll) oxide
P114	Thallium(l) selenite
P115	Thallium(l) sulfate
P109	Thiodiphosphoric acid, tetraethyl ester
P045	Thiofanox
P049	Thiomidodicarbonic diamide
P014	Thiophenol
P116	Thiosemicarbazide
P026	Thiourea, (2-chlorophenyl)-
P072	Thiourea, 1-naphthalenyl-

Hazardous Waste Number	Substance
P093	Thiourea, phenyl-
P123	Toxaphene
P118	Trichloromethanethiol
P119	Vanadic acid, ammonium salt
P120	Vanadium oxide V2O3
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 Zn3P2, 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.

Group 3-A	Group 3-B
Alcohols Water	Any concentrated waste in Groups 1-A or 1-B Calcium Lithium Metal hydrides Potassium SO_2Cl_2, $SOCl_2$, PCl_3, CH_3SiCl_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 Perioxides 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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	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)	0.030	7.6 (1)
Benzene (CAS 71-43-2)	0.070	3.7 (1)
F001-F005 spent solvents (Pharmaceutical industry wastewater subcategory)		
Methylene chloride (CAS 75-09-2)	0.44	NA
F006*		
Cyanides (Total) (CAS 57-12-5)	1.2	590
Cyanides (Amenable) (CAS 57-12-5)	0.86	30
Cadmium (CAS 7440-43-9)	1.6	NA
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.040	NA
Nickel (CAS 7440-02-0)	0.44	NA
F007*		
Cyanides (total) (CAS 57-12-5)	1.9	590
Cyanides (amenable) (CAS 57-12-5)	0.1	30
Chromium (total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA
F008*		
Cyanides (total) (CAS 57-12-5)	1.9	590
Cyanides (amenable) (CAS 57-12-5)	0.1	30
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7439-92-1)	0.44	NA
F009*		
Cyanides (total) (CAS 57-12-5)	1.9	590
Cyanides (amenable) (CAS 57-12-5)	0.1	30
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	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-)	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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	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 268.37)		
Acetone (CAS 67-64-1)	0.28 (2)	160 (1)
Acenaphtalene (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- (CAS 53-96-3) 0.059 (2)	140 (1)	
Acetylaminofluorene (CAS 107-02-8)	0.29 (2)	NA
Acrolein (CAS 107-13-1)	0.24 (2)	84 (1)
Acrylontrile (CAS 309-00-2)	0.021 (2)	0.066 (1)
Aldrin		
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) (Tribromomethane)	0.63 (2)	15 (1)
Bromomethane (CAS 74-83-9) (methyl bromide)	0.11 (2)	15 (1)
4-Bromophenyl phenyl ether (CAS 101-55-3)	0.055 (2)	15 (1)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	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-Chioro-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-chloropane (CAS 96-12-8)	0.11 (2)	15 (1)
1,2-Dibromoethane (CAS 106-93-4) (Ethylene dibromide	0.028 (2)	15 (1)
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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
1,2-Dichloropropane	0.85 (2)	18 (1)
cis-1,3-Dichloropropene (CAS 10061-01-5)	0.036 (2)	18 (1)
trans-1,3-Dichloropropene (CAS 10061-02-6)	0.036 (2)	18 (1)
Dieldrin (CAS 60-57-1)	0.017 (2)	0.13 (1)
Diethyl phthalate (CAS 84-66-2)	0.20 (2)	28 (1)
2,4-Dimethyl phenol (CAS 105-67-9)	0.036 (2)	14 (1)
Dimethyl phthalate (CAS 131-11-3)	0.047 (2)	28 (1)
Di-n-butyl phthalate (CAS 84-74-2)	0.057 (2)	28 (1)
1,4-Dinitrobenzene (CAS 100-25-4)	0.32 (2)	2.3 (1)
4,6-Dinitro-o-cresol (CAS 534-52-1)	0.28 (2)	160 (1)
2,4-Dinitrophenol (CAS 51-28-5)	0.12 (2)	160 (1)
2,4-Dinitrotoluene (CAS 121-14-2)	0.32 (2)	140 (1)
2,6-Dinitrotoluene (CAS 606-20-2)	0.55 (2)	28 (1)
Di-n-octyl phthalate (CAS 117-84-0)	0.017 (2)	28 (1)
Di-n-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)
Hexachlorocycpentadiene (CAS 77-47-4)	0.057 (2)	3.6 (1)
Hexachlorodibenzo-furans	0.000063 (2)	0.001 (1)
Hexchlorodibenzo-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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	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)	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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	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-Trichoro-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 (CAS 85-01-8)	0.031 (1)	1.5 (1)
Pyrene (CAS 129-99-0)	0.028 (1)	1.5 (1)
Toluene (CAS 108-88-3)	0.028 (1)	28 (1)
Xylenes (total)	0.032 (1)	33 (1)
Lead (CAS 7439-92-1)	0.037	NA

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
K002*, K003*, and K004*		
Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
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)
Acrylonirile (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 Benso(b) fluoranthene (CAS 205-99-2) and Benzo(k)fluoranthene (CAS 207-08-9)	0.029	3.4 (1)
Phenanthrene (CAS 85-01-8)	0.27	3.4 (1)
Toluene (CAS 108-88-3)	0.15	6.0 (1)
Chromium (total) (CAS 7440-47-32)	0.32	NA
Nickel (CAS 7440-02-0)	0.44	NA

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
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)
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-Dichloronbenzene (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)
Phenantrene (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)
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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
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-Trichlorethane (CAS 71-55-6)	0.007 (1)	6.0 (1)
1,1,2-Trichlorethane (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-Trichoroethane (CAS 71-55-6)	0.054	6.0 (1)
Vinyl chloride (CAS 75-01-4)	0.27	6.0 (1)
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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
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		
Hexachlorocylopentadiene (CAS 77-47-4).	0.057 (2)	2.4 (1)
K035		
Acenapthene (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
Phenantrene (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)
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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
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 (CAS 100-41-4)	0.011 (1)	14 (1)
Fluorene (CAS 86-73-7)	0.005 (1)	NA
Naphthalene (CAS 91-20-3)	0.033 (1)	42 (1)
Phenanthrene (CAS 85-01-8)	0.039 (1)	34 (1)
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Pyrene (CAS 129-00-0)	0.045 (1)	36 (1)
Toluene (CAS 108-88-3)	0.011 (1)	14 (1)
Xylene(s)	0.011 (1)	22 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037	NA

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
K049*		
Anthracene (CAS 120-12-7)	0.039 (1)	28 (1)
Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)pyrene (CAS 5-32-8)	0.047 (1)	12 (1)
Bis(2-ethylhexyl)phthalate (CAS 117-81-7	0.043 (1)	7.3 (1)
Carbon disulfide (CAS 75-15-0)	0.011 (1)	NA
Chrysene (CAS 2218-01-9)	0.043 (1)	15 (1)
2,4-Dimethylphenol (CAS 105-67-9)	0.033 (1)	NA
Ethylbenzene (CAS 100-41-4)	0.011 (1)	14 (1)
Naphthalene (CAS 91-20-3)	0.033 (1)	42 (1)
Phenanthrene (CAS 85-01-8)	0.039 (1)	34 (1)
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Pyrene (CAS 129-00-0)	0.045 (1)	36 (1)
Toluene (CAS 108-88-3)	0.011 (1)	14 (1)
Xylene(s)	0.011 (1)	22 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037 (1)	NA
K050*		
Benzo(a)pyrene (CAS 50-32-8)	0.047 (1)	12
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037	NA
K051*		
Acenaphthene (CAS 208-96-8)	0.05 (1)	NA
Anthracene (CAS 120-12-7)	0.039 (1)	28 (1)
Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)anthracene (CAS 50-32-8)	0.043 (1)	20 (1)
Benzo(a)pyrene (CAS 117-81-7)	0.047 (1)	12 (1)
Bis(2-ethylhexyl)phthalate (CAS 75-15-0)	0.043 (1)	7.3 (1)
Chrysene (CAS 2218-01-09)		
Di-n-butyl phthalate (CAS 105-67-9)	0.06 (1)	3.6 (1)
Ethylbenzene (CAS 100-41-4)		
Fluorence (CAS 86-73-7)	0.011 (1)	14 (1)
Naphthalene (CAS 91-20-3)	0.05 (1)	
Phenanthrene (CAS 85-01-8)	0.033 (1)	42 (1)
Phenol (CAS 108-95-2)	0.039 (1)	34 (1)
Pyrene (CAS 129-00-0)	0.047 (1)	3.6 (1)
Toluene (CAS 108-88-3)	0.045 (1)	36 (1)
Xylene(s)	0.011 (1)	14 (1)
Cyanides(total) (CAS 57-12-5)	0.011 (1)	22 (1)
Chromium(total) (CAS 7440-47-32)	0.028 (1)	1.8 (1)
Lead (CAS 7439-92-1)	0.2	NA

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
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 (CAS 100-41-4)	0.011 (1)	14 (1)
Naphthalene (CAS 91-20-3)	0.033 (1)	42 (1)
Phenanthrene (CAS 85-01-8)	0.039 (1)	34 (1)
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Toluene (CAS 108-88-3)	0.011 (1)	14 (1)
Xylenes	0.011 (1)	22 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037	NA
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)
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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
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
Diphenynitrosamine (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	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)
Cycloghexanone (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-buthylphthalate (CAS 84-74-2)	0.057 (2)	28 (1)
Di-n-octylphthalate (CAS 117-84-0)	0.017 (20	28 (1)
Ethyl acetate (CAS 141-78-6)	0.34 (2)	33 (1)
Ethylbenzene (CAS 100-41-4)	0.057 (2)	6.0
Methanol (CAS 67-56-1)	5.6 (2)	NA

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
Methyl isobutyl ketone (CAS 108-10-1)	0.14	33 (1)
Methyl ethyl ketone (CAS 78-93-3)	0.28	36 (1)
Methylene chloride (CAS 75-09-2)	0.089 (2)	33 (1)
Naphthalene (CAS 91-20-3)	0.059 (2)	3.1 (1)
Nitrobenzene (CAS 98-95-3)	0.068 (2)	14 (1)
Toluene (CAS 108-88-3)	0.080 (2)	28 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.054 (2)	5.6 (1)
Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
Xylenes (Total)	0.32 (2)	28 (1)
Cyanides (Total) (CAS 57-12-5)	1.9	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 (CAS 91-20-3)	0.028 (1)	3.4 (1)
Phenanthrene (CAS 85-01-8)	0.028 (10	3.4 (1)
Toluene (CAS 85-01-8)	0.008 (1)	0.65 (1)
Xylenes	0.014 (1)	0.07 (1)
Lead (CAS 7439-92-1)	0.037	NA
K093 and K094		
Phthalic anhydride (CAS 85-44-9) (measured as Phthalic acid)	0.54 (1)	28 (1)
K095		
1,1,1,2-Tetrachloroethane (CAS 630-20-6). 0.057	5.6 (1)	
1,1,2,2-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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
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)
Hexachlorodibenxo-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
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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
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)		
Arsenic (CAS 7440-38-2)	0.79	NA
P013* (Barium cyanide)		
Cyanides (Total)	1.9	110
Cyanides (Amenable)	0.1	9.1
P020 (Dinoseb)		
2-sec-Butyl-4,6-dinitrophenol (CAS 88-85-7)	0.066	2.5 (1)
P021 (Calcium cyanide)		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.1	9.1
P022** (Carbon disulfide)		
Carbon disulfide (CAS 75-15-0)	0.014	NA
P024 (p-Chloroaniline)		
p-Chloroaniline (CAS 106-47-8)	0.46	16 (1)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
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)
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

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
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*** (Phenyimercury acetate)		
Mercury (CAS 7439-97-6)	0.030	NA
P094		
Phorate (CAS 298-02-2)	0.025	0.1 (1)
P097		
Famphur (CAS 52-85-7)	0.025	0.1 (1)
P098 (Potassium cyanide)		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	9.1
P099* (Potassium silver cyanide)		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.1	9.1
Silver (CAS 7440-22-4)	0.29	NA
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)		

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amendable) (CAS 57-12-5)	0.10	9.1
Silver (CAS 7440-22-4)	0.29	NA
P106 (Sodium cyanide)		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	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
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)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	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		

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
Aniline (CAS 62-53-3)	0.81	14 (1)
U018 Benz(a)anthracene (CAS 56-55-3)	0.059 (2)	8.2 (1)
U019 Benzene (CAS 71-34-2)	0.14 (2)	36 (1)
U022 Benzo(a)pyrene (CAS 50-32-8)	0.061 (2)	8.2 (1)
U024 Bis(2-chloroethoxy)methane (CAS 111-91-1).	0.036	7.2 (1)
U025 Bis(2-chloroethyl)ether (CAS 111-44-4)	0.033	7.2 (1)
U027 Bis(2-chloroisopropyl)ether (CAS 39638-32-9)	0.055 (2)	7.2 (1)
U028 Bis(2-ethylhexyl)phthalate (CAS 117-81-7)	0.54 (1)	28 (1)
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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
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)
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 (CAS 85-01-8)	0.031	1.5 (1)
Pyrene (CAS 129-00-0)	0.028	1.5 (1)
Toluene (CAS 108-88-3)	0.028	28 (1)
Xylenes (Total)	0.032	33 (1)
Lead (CAS 7439-92-1)	0.037	NA
U052 (Cresols--Cresylic acid)		
o-Cresol (CAS 95-48-7)	0.11 (2)	5.6 (1)
Cresols (m- and p- isomers)	0.77 (2)	3.2 (1)
U057**		
Cyclohexanone (CAS 108-94-1)	0.36	NA
U060 (DDD)		
o,p'-DDD (CAS 53-19-0)	0.023	0.087 (1)
o,p'-DDD (CAS 72-54-8)	0.023	0.087 (1)
U061 (DDT)		
o,p'-DDT (CAS 780-02-6)	0.0039 (2)	0.087 (1)
p,p'-DDT (CAS 50-29-3)	0.0039 (2)	0.087 (1)
o,p'-DDD (CAS 53-19-0)	0.023 (2)	0.087 (1)
p,p'-DDD (CAS 72-54-8)	0.023 (2)	0.087 (1)
o,p'-DDE (CAS 3424-82-6)	0.031 (2)	0.087 (1)
p,p'-DDE (CAS 72-55-9)	0.031 (2)	0.087 (1)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
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 Dibromethane (CAS 74-95-3)	0.11 (2)	15 (1)
U069 Di-n-butyl phathalate (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-Dichloeoethane (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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
U083 1,2-Dichlorophnol (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
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 (20	14 (1)
U112 Ethyl acetate (CAS 141-78-6)	0.34 (2)	33 (1)
U117 Ethyl ether (CAS 60-29-7)	0.12 (2)	160 (1)
U118 Ethyl methacrylate (CAS 97-63-2)	0.14 (2)	160 (1)
U120 Floranthene (CAS 206-44-0)	0.068 (2)	8.2 (1)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
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) beta-BHC (CAS 319-85-7) Delta-BHC (CAS 319-86-8) gamma-BHC (Lindane) (CAS 58-89-9)	 0.00014 (2) 0.00014 (2) 0.023 (2) 0.0017 (2)	 0.66 (1) 0.66 (1) 0.66 (1) 0.66 (1)
U130 Hexachlorocyclopentadiene (CAS 77-47-7)	0.057 (2)	3.6 (1)
U131 Hexachloroethane (CAS 67-72-1)	0.055 (2)	28 (1)
U134** (Hydrogen floride) Floride (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 alchol (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

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
U146* (Lead subacetate) Lead (CAS 7439-92-1)	0.040	NA
U151*** Mercury (CAS 7439-97-6)	0.030	NA
U152 Methacylonitrile (CAS 126-98-7)	0.24 (2)	84 (1)
U154 Methanol (CAS 67-56-1)	5.6	NA
U155 Methapyrilene (CAS 91-80-5)	0.081	1.5 (1)
U157 3-Methylchlolanthrene (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)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
U179 n-Nitrosopipendien (CAS 100-75-4)	0.013 (2)	35 (1)
U180 n-Nitropyrrolidine (CAS 930-55-2)	0.013 (2)	35 (1)
U181 5-Nitro-o-toluidine (CAS 99-55-8)	0.32 (2)	28 (1)
U183 Pentachlorobenzene (CAS 608-93-5)	0.055 (2)	37 (1)
U185 Pentachloronitrobenzene (CAS 82-68-8)	0.055 (2)	4.8 (1)
U187 Phenacetin (CAS 62-44-2)	0.081	16 (1)
U188 Phenol (CAS 108-95-2)	0.039	6.2 (1)
U190 Phthalic anhydride (CAS 85-44-9) (measured as Phthalic acid)	0.54 (1)	28 (1)
U192 Pronamide (CAS 23950-58-5)	0.093	1.5 (1)
U196 Pyridine (CAS 110-86-1)	0.014 (2)	16 (1)
U203 Safrole (CAS 94-59-7)	0.081	22 (1)
U204* (Selenium dioxide) Selenium (CAS 7782-49-2)	1.0	NA
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-Tetrachoroethane (CAS 630-20-6)	0.057	42
U209 1,1,2,2-Tetrachloroethane (CAS 79-34-5)	0.057 (2)	42 (1)

Waste Codes Regulated Hazardous Constituent with applicable CAS numbers	Concentrations Wastewaters (mg/L) Notes	 Nonwastewaters (mg/kg) Notes
U210 Tetrachloroethylene (CAS 127-18-4)	0.056 (2)	5.6 (1)
U211 Carbon tetrachoride (CAS 56-23-5)	0.057 (2)	5.6 (1)
U214** (Thallium(l)acetate) Thallium (CAS 7440-28-0)	0.14 (2)	NA
U215** (Thallium(l)carbonate) Thallium (CAS 7440-28-0)	0.14 (2)	NA
U216** (Thallium(l)chloride) Thallium (CAS 7440-28-0)	0.14 (2)	NA
U217** (Thallium(l)nitrate) Thallium (CAS 7440-28-0)	0.14 (2)	NA
U220 Toluene (CAS 108-88-3)	0.080 (2)	28 (1)
U225 Tribomomethane (Bromoform) (CAS 75-25-2)	0.63 (2)	15 (1)
U226 1,1,1-Trichlorethane (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-Dibromopropy) phosphate	0.025	0.10 (1)
U239 Xylenes	0.32 (2)	28 (1)
U240 2,4-Dichlorophenoxyacetic acid (CAS 94-75-7)	0.72	10 (1)
U243 Hexachloropropene (CAS 1888-71-7)	0.035 (2)	28
U247 Methoxyxhlor (CAS 72-43-5)	0.25 (2)	0.18 (1)

*See also Table CCWE in 40 CFR 268.41

**See also Table 2 in 40 CFR 268.42

***See also Table CCWE in 40 CFR 268.41 and Table 2 in 40 CFR 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 CFR 264 Subpart O or 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 CFR 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: one h and fifteen minutes (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 mg 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

1. 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.

2. 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).

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

Appendix 4-9

Quantities of Material that Require Labeling (Appendix C to 20.1001 through 20.2401)

Radionuclide	Quantity (mu Ci)
Hydrogen-3	1000
Beryllium-7	1000
Beryllium-10	1
Carbon-11	1000
Carbon-14	1000
Fluorine-18	1000
Sodium-22	10
Sodium-24	100
Magnesium-28	100
Aluminum-26	10
Silicon-31	1000
Silicon-32	1
Phosphorus-32	10
Phosphorus-33	100
Sulfur-35	100
Chlorine-36	10
Chlorine-38	1000
Chlorine-39	1000
Argon-39	1000
Argon-41	1000
Potassium-40	100
Potassium-42	1000
Potassium-43	1000
Potassium-44	1000
Potassium-45	1000
Calcium-41	100
Calcium-45	100
Calcium-47	100
Scandium-43	1000
Scandium-44m	100
Scandium-44	100
Scandium-46	10
Scandium-47	100
Scandium-48	100
Scandium-49	1000
Titanium-44	1
Titanium-45	1000
Vanadium-47	1000
Vanadium-48	100
Vanadium-49	1000
Chromium-48	1000
Chromium-49	1000
Chromium-51	1000

Radionuclide	Quantity (mu Ci)
Manganese-51	1000
Manganese-52m	1000
Manganese-52	100
Manganese-53	1000
Manganese-54	100
Manganese-56	1000
Iron-52	100
Iron-55	100
Iron-59	10
Iron-60	1
Cobalt-55	100
Cobalt-56	10
Cobalt-57	100
Cobalt-58m	1000
Cobalt-58	100
Cobalt-60m	1000
Cobalt-60	1
Cobalt-61	1000
Cobalt-62m	1000
Nickel-56	100
Nickel-57	100
Nickel-59	100
Nickel-63	100
Nickel-65	1000
Nickel-66	10
Copper-60	1000
Copper-61	1000
Copper-64	1000
Copper-67	1000
Zinc-62	100
Zinc-63	1000
Zinc-65	10
Zinc-69m	100
Zinc-69	1000
Zinc-71m	1000
Zinc-72	100
Gallium-65	1000
Gallium-66	100
Gallium-67	1000
Gallium-68	1000
Gallium-70	1000
Gallium-72	100
Gallium-73	1000
Germanium-66	1000
Germanium-67	1000
Germanium-68	10
Germanium-69	1000
Germanium-71	1000
Germanium-75	1000
Germanium-77	1000
Germanium-78	1000

Radionuclide	Quantity (mu Ci)
Arsenic-69	1000
Arsenic-70	1000
Arsenic-71	100
Arsenic-72	100
Arsenic-73	100
Arsenic-74	100
Arsenic-76	100
Arsenic-77	100
Arsenic-78	1000
Selenium-70	1000
Selenium-73m	1000
Selenium-73	100
Selenium-75	100
Selenium-79	100
Selenium-81m	1000
Selenium-81	1000
Selenium-83	1000
Bromine-74m	1000
Bromine-74	1000
Bromine-75	1000
Bromine-76	100
Bromine-77	1000
Bromine-80m	1000
Bromine-80	1000
Bromine-82	100
Bromine-83	1000
Bromine-84	1000
Krypton-74	1000
Krypton-76	1000
Krypton-77	1000
Krypton-79	1000
Krypton-81	1000
Krypton-83m	1000
Krypton-85m	1000
Krypton-85	1000
Krypton-87	1000
Krypton-88	1000
Rubidium-79	1000
Rubidium-81m	1000
Rubidium-81	1000
Rubidium-82m	1000
Rubidium-83	100
Rubidium-84	100
Rubidium-86	100
Rubidium-87	100
Rubidium-88	1000
Rubidium-89	1000
Strontium-80	100
Strontium-81	1000
Strontium-83	100
Strontium-85m	1000

Radionuclide	Quantity (mu Ci)
Strontium-85	100
Strontium-87m	1000
Strontium-89	10
Strontium-90	0.1
Strontium-91	100
Strontium-92	100
Yttrium-86m	1000
Yttrium-86	100
Yttrium-87	100
Yttrium-88	10
Yttrium-90m	1000
Yttrium-90	10
Yttrium-91m	1000
Yttrium-91	10
Yttrium-92	100
Yttrium-93	100
Yttrium-94	1000
Yttrium-95	1000
Zirconium-86	100
Zirconium-88	10
Zirconium-89	100
Zirconium-93	1
Zirconium-95	10
Zirconium-97	100
Niobium-88	1000
Niobium-89m (66 min)	1000
Niobium-89 (122 min)	1000
Niobium-90	100
Niobium-93m	10
Niobium-94	1
Niobium-95m	100
Niobium-95	100
Niobium-96	100
Niobium-97	1000
Niobium-98	1000
Molybdenum-90	100
Molybdenum-93m	100
Molybdenum-93	10
Molybdenum-99	100
Molybdenum-101	1000
Technetium-93m	1000
Technetium-93	1000
Technetium-94m	1000
Technetium-94	1000
Technetium-96m	1000
Technetium-96	100
Technetium-97m	100
Technetium-97	1000
Technetium-98	10
Technetium-99m	1000
Technetium-99	100

Radionuclide	Quantity (mu Ci)
Technetium-101	1000
Technetium-104	1000
Ruthenium-94	1000
Ruthenium-97	1000
Ruthenium-103	100
Ruthenium-105	1000
Ruthenium-106	1
Rhodium-99m	1000
Rhodium-99	100
Rhodium-100	100
Rhodium-101m	1000
Rhodium-101	10
Rhodium-102m	10
Rhodium-102	10
Rhodium-103m	1000
Rhodium-105	100
Rhodium-106m	1000
Rhodium-107	1000
Palladium-100	100
Palladium-101	1000
Palladium-103	100
Palladium-107	10
Palladium-109	100
Silver-102	1000
Silver-103	1000
Silver-104m	1000
Silver-104	1000
Silver-105	100
Silver-106m	100
Silver-106	1000
Silver-108m	1
Silver-110m	10
Silver-111	100
Silver-112	100
Silver-115	1000
Cadmium-104	1000
Cadmium-107	1000
Cadmium-109	1
Cadmium-113m	0.1
Cadmium-113	100
Cadmium-115m	10
Cadmium-115	100
Cadmium-117m	1000
Cadmium-117	1000
Indium-109	1000
Indium-110 (69.1min.)	1000
Indium-110 (4.9h)	1000
Indium-111	100
Indium-112	1000
Indium-113m	1000

Radionuclide	Quantity (mu Ci)
Indium-114m	10
Indium-115m	1000
Indium-115	100
Indium-116m	1000
Indium-117m	1000
Indium-117	1000
Indium-119m	1000
Tin-110	100
Tin-111	1000
Tin-113	100
Tin-117m	100
Tin-119m	100
Tin-121m	100
Tin-121	1000
Tin-123m	1000
Tin-123	10
Tin-125	10
Tin-126	10
Tin-127	1000
Tin-128	1000
Antimony-115	1000
Antimony-116m	1000
Antimony-116	1000
Antimony-117	1000
Antimony-118m	1000
Antimony-119	1000
Antimony-120 (16min.)	1000
Antimony-120 (5.76d)	100
Antimony-122	100
Antimony-124m	1000
Antimony-124	10
Antimony-125	100
Antimony-126m	1000
Antimony-126	100
Antimony-127	100
Antimony-128 (10.4min.)	1000
Antimony-128 (9.01h)	100
Antimony-129	100
Antimony-130	1000
Antimony-131	1000
Tellurium-116	1000
Tellurium-121m	10
Tellurium-121	100
Tellurium-123m	10
Tellurium-123	100
Tellurium-125m	10
Tellurium-127m	10
Tellurium-127	1000
Tellurium-129m	10
Tellurium-129	1000
Tellurium-131m	10

Radionuclide	Quantity (mu Ci)
Tellurium-131	100
Tellurium-132	10
Tellurium-133m	100
Tellurium-133	1000
Tellurium-134	1000
Iodine-120m	1000
Iodine-120	100
Iodine-121	1000
Iodine-123	100
Iodine-124	10
Iodine-125	1
Iodine-126	1
Iodine-128	1000
Iodine-129	1
Iodine-130	10
Iodine-131	1
Iodine-132m	100
Iodine-132	100
Iodine-133	10
Iodine-134	1000
Iodine-135	100
Xenon-120	1000
Xenon-121	1000
Xenon-122	1000
Xenon-123	1000
Xenon-125	1000
Xenon-127	1000
Xenon-129m	1000
Xenon-131m	1000
Xenon-133m	1000
Xenon-133	1000
Xenon-135m	1000
Xenon-135	1000
Xenon-138	1000
Cesium-125	1000
Cesium-127	1000
Cesium-129	1000
Cesium-130	1000
Cesium-131	1000
Cesium-132	100
Cesium-134m	1000
Cesium-134	10
Cesium-135m	1000
Cesium-135	100
Cesium-136	10
Cesium-137	10
Cesium-138	1000
Barium-126	1000
Barium-128	100
Barium-131m	1000
Barium-131	100

Radionuclide	Quantity (mu Ci)
Barium-133m	100
Barium-133	100
Barium-135m	100
Barium-139	1000
Barium-140	100
Barium-141	1000
Barium-142	1000
Lanthanum-131	1000
Lanthanum-132	100
Lanthanum-135	1000
Lanthanum-137	10
Lanthanum-138	100
Lanthanum-140	100
Lanthanum-141	100
Lanthanum-142	1000
Lanthanum-143	1000
Cerium-134	100
Cerium-135	100
Cerium-137m	100
Cerium-137	1000
Cerium-139	100
Cerium-141	100
Cerium-143	100
Cerium-144	1
Praseodymium-136	1000
Praseodymium-137	1000
Praseodymium-138m	1000
Praseodymium-139	1000
Praseodymium-142m	1000
Praseodymium-142	100
Praseodymium-143	100
Praseodymium-144	1000
Praseodymium-145	100
Praseodymium-147	1000
Neodymium-136	1000
Neodymium-138	100
Neodymium-139m	1000
Neodymium-139	1000
Neodymium-141	1000
Neodymium-147	100
Neodymium-149	1000
Neodymium-151	1000
Promethium-141	1000
Promethium-143	100
Promethium-144	10
Promethium-145	10
Promethium-146	1
Promethium-147	10
Promethium-148m	10
Promethium-148	10
Promethium-149	100

Radionuclide	Quantity (mu Ci)
Promethium-150	1000
Promethium-151	100
Samarium-141m	1000
Samarium-141	1000
Samarium-142	1000
Samarium-145	100
Samarium-146	1
Samarium-147	100
Samarium-151	10
Samarium-153	100
Samarium-155	1000
Samarium-156	1000
Europium-145	100
Europium-146	100
Europium-147	100
Europium-148	10
Europium-149	100
Europium-150 (12.62h)	100
Europium-150 (34.2y)	1
Europium-152m	100
Europium-152	1
Europium-154	1
Europium-155	10
Europium-156	100
Europium-157	100
Europium-158	1000
Gadolinium-145	1000
Gadolinium-146	10
Gadolinium-147	100
Gadolinium-148	0.001
Gadolinium-149	100
Gadolinium-151	10
Gadolinium-152	100
Gadolinium-153	10
Gadolinium-159	100
Terbium-147	1000
Terbium-149	100
Terbium-150	1000
Terbium-151	100
Terbium-153	1000
Terbium-154	100
Terbium-155	1000
Terbium-156m (5.0h)	1000
Terbium-156m (24.4h)	1000
Terbium-156	100
Terbium-157	10
Terbium-158	1
Terbium-160	10
Terbium-161	100
Dysprosium-155	1000
Dysprosium-157	1000

Radionuclide	Quantity (mu Ci)
Dysprosium-159	100
Dysprosium-165	1000
Dysprosium-166	100
Holmium-155	1000
Holmium-157	1000
Holmium-159	1000
Holmium-161	1000
Holmium-162m	1000
Holmium-162	1000
Holmium-164m	1000
Holmium-164	1000
Holmium-166m	1
Holmium-166	100
Holmium-167	1000
Erbium-161	1000
Erbium-165	1000
Erbium-169	100
Erbium-171	100
Erbium-172	100
Thulium-162	1000
Thulium-166	100
Thulium-167	100
Thulium-170	10
Thulium-171	10
Thulium-172	100
Thulium-173	100
Thulium-175	1000
Ytterbium-162	1000
Ytterbium-166	100
Ytterbium-167	1000
Ytterbium-169	100
Ytterbium-175	100
Ytterbium-177	1000
Ytterbium-178	1000
Lutetium-169	100
Lutetium-170	100
Lutetium-171	100
Lutetium-172	100
Lutetium-173	10
Lutetium-174m	10
Lutetium-174	10
Lutetium-176m	1000
Lutetium-176	100
Lutetium-177m	10
Lutetium-177	100
Lutetium-178m	1000
Lutetium-178	1000
Lutetium-179	1000
Hafnium-170	100
Hafnium-172	1
Hafnium-173	1000

Radionuclide	Quantity (mu Ci)
Hafnium-175	100
Hafnium-177m	1000
Hafnium-178m	0.1
Hafnium-179m	10
Hafnium-180m	1000
Hafnium-181	10
Hafnium-182m	1000
Hafnium-182	0.1
Hafnium-183	1000
Hafnium-184	100
Tantalum-172	1000
Tantalum-173	1000
Tantalum-174	1000
Tantalum-175	1000
Tantalum-176	100
Tantalum-177	1000
Tantalum-178	1000
Tantalum-179	100
Tantalum-180m	1000
Tantalum-180	100
Tantalum-182m	1000
Tantalum-182	10
Tantalum-183	100
Tantalum-184	100
Tantalum-185	1000
Tantalum-186	1000
Tungsten-176	1000
Tungsten-177	1000
Tungsten-178	1000
Tungsten-179	1000
Tungsten-181	1000
Tungsten-185	100
Tungsten-187	100
Tungsten-188	10
Rhenium-177	1000
Rhenium-178	1000
Rhenium-181	1000
Rhenium-182 (12.7h)	1000
Rhenium-182 (64.0h)	100
Rhenium-184m	10
Rhenium-184	100
Rhenium-186m	10
Rhenium-186	100
Rhenium-187	1000
Rhenium-188m	1000
Rhenium-188	100
Rhenium-189	100
Osmium-180	1000
Osmium-181	1000
Osmium-182	100
Osmium-185	100

Radionuclide	Quantity (mu Ci)
Osmium-189m	1000
Osmium-191m	1000
Osmium-191	100
Osmium-193	100
Osmium-194	1
Iridium-182	1000
Iridium-184	1000
Iridium-185	1000
Iridium-186	100
Iridium-187	1000
Iridium-188	100
Iridium-189	100
Iridium-190m	1000
Iridium-190	100
Iridium-192 (73.8d)	1
Iridium-192m (1.4min.)	10
Iridium-194m	10
Iridium-194	100
Iridium-195m	1000
Iridium-195	1000
Platinum-186	1000
Platinum-188	100
Platinum-189	1000
Platinum-191	100
Platinum-193m	100
Platinum-193	1000
Platinum-195m	100
Platinum-197m	1000
Platinum-197	100
Platinum-199	1000
Platinum-200	100
Gold-193	1000
Gold-194	100
Gold-195	10
Gold-198m	100
Gold-198	100
Gold-199	100
Gold-200m	100
Gold-200	1000
Gold-201	1000
Mercury-193m	100
Mercury-193	1000
Mercury-194	1
Mercury-195m	100
Mercury-195	1000
Mercury-197m	100
Mercury-197	1000
Mercury-199m	1000
Mercury-203	100
Thallium-194m	1000
Thallium-194	1000

Radionuclide	Quantity (mu Ci)
Thallium-195	1000
Thallium-197	1000
Thallium-198m	1000
Thallium-198	1000
Thallium-199	1000
Thallium-200	1000
Thallium-201	1000
Thallium-202	100
Thallium-204	100
Lead-195m	1000
Lead-198	1000
Lead-199	1000
Lead-200	100
Lead-201	1000
Lead-202m	1000
Lead-202	10
Lead-203	1000
Lead-205	100
Lead-209	1000
Lead-210	0.01
Lead-211	100
Lead-212	1
Lead-214	10
Bismuth-200	1000
Bismuth-201	1000
Bismuth-202	1000
Bismuth-203	100
Bismuth-205	100
Bismuth-206	100
Bismuth-207	10
Bismuth-210m	0.1
Bismuth-210	1
Bismuth-212	10
Bismuth-213	10
Bismuth-214	100
Polonium-203	1000
Polonium-205	1000
Polonium-207	1000
Polonium-210	0.1
Astatine-207	100
Astatine-211	10
Radon-220	1
Radon-222	1
Francium-222	100
Francium-223	100
Radium-223	0.1
Radium-224	0.1
Radium-225	0.1
Radium-226	0.1
Radium-227	1000
Radium-228	0.1

Appendix 4-9 (continued)

Radionuclide	Quantity (mu Ci)
Actinium-224	1
Actinium-225	0.01
Actinium-226	0.1
Actinium-227	0.001
Actinium-228	1
Thorium-226	10
Thorium-227	0.01
Thorium-228	0.001
Thorium-229	0.001
Thorium-230	0.001
Thorium-231	100
Thorium-232	100
Thorium-234	10
Thorium-natural	100
Protactinium-227	10
Protactinium-228	1
Protactinium-230	0.1
Protactinium-231	0.001
Protactinium-232	1
Protactinium-233	100
Protactinium-234	100
Uranium-230	0.01
Uranium-231	100
Uranium-232	0.001
Uranium-233	0.001
Uranium-234	0.001
Uranium-235	0.001
Uranium-236	0.001
Uranium-237	100
Uranium-238	100
Uranium-239	1000
Uranium-240	100
Uranium-natural	100
Neptunium-232	100
Neptunium-233	1000
Neptunium-234	100
Neptunium-235	100
Neptunium-236 (1.15x105y)	0.001
Neptunium-236 (22.5h)	1
Neptunium-237	1.001
Neptunium-238	10
Neptunium-239	100
Neptunium-240	1000
Plutonium-234	10
Plutonium-235	1000
Plutonium-236	0.001
Plutonium-237	100
Plutonium-238	0.001
Plutonium-239	0.001
Plutonium-240	0.001
Plutonium-241	0.01

Radionuclide	Quantity (mu Ci)
Plutonium-242	0.001
Plutonium-243	1000
Plutonium-244	0.001
Plutonium-245	100
Americium-237	1000
Americium-238	100
Americium-239	1000
Americium-240	100
Americium-241	0.001
Americium-242m	0.001
Americium-242	10
Americium-243	0.001
Americium-244m	100
Americium-244	10
Americium-245	1000
Americium-246m	1000
Americium-246	1000
Curium-238	100
Curium-240	0.1
Curium-241	1
Curium-242	0.01
Curium-243	0.001
Curium-244	0.001
Curium-245	0.001
Curium-246	0.001
Curium-247	0.001
Curium-248	0.001
Curium-249	1000
Berkelium-245	100
Berkelium-246	100
Berkelium-247	0.001
Berkelium-249	0.1
Berkelium-250	10
Californium-244	100
Californium-246	1
Californium-248	0.01
Californium-249	0.001
Californium-250	0.001
Californium-251	0.001
Californium-252	0.001
Californium-253	0.1
Californium-254	0.001
Any alpha emitting radionuclide not listed above or mixtures of alpha emitters of unknown composition	0.001 .001
Einsteinium-250	100
Einsteinium-251	100
Einsteinium-253	0.1
Einsteinium-254m	1
Einsteinium-254	0.01
Fermium-252	1
Fermium-253	1

Radionuclide	Quantity (mu Ci)
Fermium-254	10
Fermium-255	1
Fermium-257	0.01
Mendelevium-257	10
Mendelevium-258	0.01
Any radionuclide other than alpha emitting	0.01
radionuclides not listed above, or mixtures of beta	.01
emitters of unknown composition	.01

INSTALLATION:	COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Centers for Disease Control and Prevention	DATE:	REVIEWER(S):

STATUS NA C RMA	REVIEWER COMMENTS:

(1) Environmental Program Manager (2) Facility Supervisor/Director (8) Training Activity

Section 5

Natural and Cultural Resources Management

SECTION 5

NATURAL AND CULTURAL RESOURCES MANAGEMENT

A. Applicability

This section applies to all CDC facilities. This section integrates the requirements of regulations pertaining to the protection of cultural and natural resources and normally will apply to any facility with land or property management programs.

B. Federal Regulations

- **Natural Resources**

- *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 that will encourage productive and enjoyable harmony between man and his environment. Additionally it provides for the promotion of efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man (42 USC 4321).

  Under NEPA, the continuing policy of the Federal government is to use all practicable means and measures in a manner calculated to foster and promote the general welfare, and to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (42 USC 4331(a)). It is the continuing responsibility of the Federal government to use practicable means and resources to the end so that the Nation may preserve important historic, cultural, and natural aspects of our national heritage (42 USC 4331(b)(4)).

- *Endangered Species Act (ESA) of 1973.* The purpose of this Act, (16 USC 1531-1547, et al, last amended in October 1988), is to provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved, to provide a program for the conservation of such endangered and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions for protection of endangered species (16 USC 1531(b)).

Under ESA, the policy of Congress is that all Federal departments and agencies must seek to conserve endangered species and threatened species and must use their authority in furtherance of the purposes of this Act. Further, Federal agencies must cooperate with state and local agencies to resolve water resource issues in concert with conservation of endangered species (16 USC 1531(c)).

- *The Fish and Wildlife Coordination Act (FWCA) of 1946.* This Act, last ameneded in July 1965, 16 USC 666c, is the Federal legislation that coordinates programs and activities regarding the conservation and rehabilitation of fish and wildlife in the United States. For the purpose of conserving and rehabilitating fish and wildlife resources, the Secretary of the Interior is authorized to:

    1. provide assistance to, and cooperate with, Federal, state, and public or private agencies and organizations in the development, protection, rearing, and stocking of all species of wildlife, resources, and their habitat, in controlling loses of the same from disease or other causes, in minimizing damages from overabundant species, in providing public shooting and fishing areas, including easements across public lands for access to, and in carrying out other measures necessary to effectuate the purposes of this Act
    2. make surveys and investigations of the wildlife of the public domain, including lands and waters or interests acquired or controlled by any Federal agency
    3. accept donations of land and contributions of funds in furtherance of the purposes of this Act (16 USC 661).

    Unless provided for otherwise, whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatsoever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license, such department or agency first must consult with the U.S. Fish and Wildlife Service (FWS), Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular state where the impoundment, diversion, or other control facility is to be constructed, with a view to the conservation of wildlife resources by preventing loss of and damage to such resources as well as providing for the development and improvement thereof in connection with such water-resource development (16 USC 662(a)).

Federal agencies authorized to construct or operate water-control projects are authorized to modify or add to the structures and operations of such projects, the construction of which has not been substantially completed on the date of enactment of this Act, and to acquire lands in accordance with this Act, in order to accommodate the means and measures for such conservation of wildlife resources as an integral part of such projects; provided, that for projects authorized by a specific Act of Congress before the date of enactment of this Act, such modification or land acquisition must be compatible with the purposes for which the project was authorized (16 USC 662(c)).

The Act requires that any report submitted to Congress by a Federal agency in support of a recommendation for authorization of any new project for the control or use of water, including any new division of such project or new supplemental works on such project, must include an estimation of the wildlife benefits or losses to be derived from such, including benefits to be derived from measures recommended specifically for the development and improvement of wildlife resources, the cost of providing wildlife benefits, the part of the cost of joint-use facilities allocated to wildlife, and the part of such costs, if any, to be reimbursed by non-Federal interests (16 USC 662(f)).

Unless exempted, whenever the waters of any stream or other body of water are impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatsoever, including navigation and drainage, by any department or agency of the United States, adequate provision must be made for the use, together with any areas of land, water, or interests therein, acquired or administered by a Federal agency in connection with, for the conservation, maintenance, and management of wildlife resources thereof, and its habitat thereon, including the development and improvement of such wildlife resources under section 662 of this Act (16 USC 663(a)). The use of such waters, land, or interests therein for wildlife conservation purposes must be in accordance with general plans approved jointly by:

1. the head of the particular agency exercising primary administration in each instance
2. the Secretary of the Interior
3. the head of the agency exercising the administration of the wildlife resources of the particular state where the waters and ares lie (16 USC 663(b)).

- *The Migratory Bird Treaty Act of 1918.* This Act, last amended in December 1989, 16 USC 703-711, is a Federal law that enforces international conventions for the protection of migratory birds and game animals to which the United States is a party. Unless permitted by regulations, it is unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, that consists, or is composed in whole or in part, of any such bird or any part, nest, or egg thereof, included in the terms of the conventions for the protection and conservation of migratory birds and game mammals between the United States and the USSR, the United States and Mexico, and the United States and Japan (16 USC 703).

  Under the Act, it is also unlawful to ship, transport, or carry, by any means whatsoever, from one state, territory, or district to or through another state, territory, or district, or to or through a foreign country, any bird, or any part, nest, or egg thereof, captured, killed, taken, shipped, transported, or carried at any time contrary to the laws of the state, territory, or district in which it was captured, killed, or taken, or from which it was shipped, transported, or carried (16 USC 705).

- *The Executive Order (EO) No. 11990.* This EO, *The Protection of Wetlands*, 24 May 1977, 42 Code of Federal Regulations (CFR) 26961, as amended by EO 12608, 9 September 1987, 52 F.R. 34617, is a presidential order that implements the NEPA of 1969. Under this EO each Federal agency must provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for:

  1. acquiring, managing, and disposing of Federal lands and facilities
  2. providing Federally undertaken, financed, or assisted construction and improvements
  3. conducting Federal activities and programs affecting land use, including, but not limited to, water and related land resources planning, regulating, and licensing activities (Section 1(a)).

Each agency, to the extent permitted by law, must avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds that:

1. there is no practical alternative to such construction
2. the proposed action includes all practical measures to minimize harm to wetlands that may result from such use. In making this finding the head of the agency may take into account economic, environmental and other pertinent factors (Section 2(a)).

Each agency must also provide opportunity for early public review of any plans or proposals for new construction in wetlands (Section 2(b)).

- *The Convention on Wetlands of International Importance Especially as Waterfowl Habitat.* This Convention was created on 2 February 1971, in Ramsar, amended by Paris Protocol of 12 March 1982, and entered into force for the United States on 18 December 1986. Those countries that are Contracting Parties to the convention agreed:

  1. wetlands constitute a resource of great economic, cultural, scientific and recreational value, the loss of which would be irreparable
  2. the progressive encroachment on and loss of wetlands now and in the future should be stemmed
  3. waterfowl in their seasonal migration should be regarded as an international resource
  4. conservation of wetlands and their flora and fauna can be ensured by combining farsighted national policies with coordinated international action.

  Each country must designate suitable wetlands within its territory for inclusion in a *List of Wetlands of International Importance* (hereafter "the List") that is maintained by the bureau established under this Convention. The boundaries of each wetland must be precisely described and also delimited on a map and they may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than 6 meters (m) at low tide lying within the wetlands, especially where these have importance as a waterfowl habitat (Article 2, para 1).

  Each country must promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands, whether they are included in the List or not, and adequately provide for their wardening (Article 4, para 1).

  The contracting countries must promote the training of personnel competent in the fields of wetland research, management, and wardening (Article 4, para 4).

- EO 11988. This EO, *Floodplain Management*, 24 May 1977, 42 F.R. 26951, as amended by EO 12148, 20 July 1979, 44 F.R. 43239, is a presidential order that implements the Environmental Policy Act of 1969, the National Flood Insurance Act of 1968, and the Flood Disaster Protection Act of 1973.

  Each agency must provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for:

  1. acquiring, managing, and disposing of Federal lands and facilities
  2. providing Federally undertaken, financed, or assisted construction and improvements
  3. conducting Federal activities and programs affecting land use, including, but not limited to, water and related land resources planning, regulating, and licensing activities (Section 1).

  Each agency must evaluate the potential effects of any actions it may take in a floodplain to:

  1. ensure that its planning programs and budget requests reflect consideration of flood hazards and floodplain management
  2. prescribe procedures to implement the policies and requirements of this EO.

  Each agency must take floodplain management into account when formulating or evaluating any water and land use plans, and must require land and water resources use appropriate to the degree of hazard involved. Agencies must include adequate provision for the evaluation and consideration of flood hazards in the regulations and operating procedures for the license, permits, loan or grants-in-aid programs that they administer (Section 2(c)).

  Agencies responsible for Federal real property and facilities must take the following additional actions:

  1. The regulations and procedures established under Section 2(d) of this EO require, at a minimum, the construction of Federal structures and facilities to be consistent with standards, criteria, and the intent of those issued under the National Flood Insurance Program. They may deviate only to the extent that the standards of the Flood Insurance Program are demonstrably inappropriate for a given type of structure or facility.

2. If, after compliance with the requirements of this EO, new construction of structures or facilities are to be located in a floodplain, accepted flood-proofing and other flood protection measures must be applied to new construction or rehabilitation. To achieve flood protection, agencies must, wherever practicable, elevate structures above the base flood level rather than filling in land (Section 3(a)(b)).

- *The Coastal Zone Management Act of 1972.* This Act, last amended in November 1990, 16 USC 1451-1464, is the Federal legislation that governs the preservation and management of coastal waters in the nation. In relation to coastal zones, the national policy is to:

  1. preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations
  2. encourage and assist the states in effectively exercising their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and aesthetic values as well as the needs for compatible economic development
  3. encourage the preparation of special area management plans that provide for increased specificity in protecting significant natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, including those areas likely to be affected by land subsidence, sea level rise, or fluctuating water levels of the Great Lakes, and improved predictability in governmental decision-making
  4. encourage the participation and cooperation of the public, state and local governments, and interstate and other regional agencies, as well as of the Federal agencies with programs affecting the coastal zone, in carrying out the purposes of this Act
  5. encourage coordination and cooperation with and among the appropriate Federal, state, and local agencies, and international organizations where appropriate, in collection, analysis, synthesis, and dissemination of coastal management information, research results, and technical assistance, to support state and Federal regulation of land use practices affecting the coastal land ocean resources of the United States
  6. respond to changing circumstances affecting the coastal environment and coastal resource mangement by encouraging states to consider such issues as ocean uses potentially affecting the coastal zone (16 USC 1452).

- *The Federal Noxious Weed Act of 1970.* This Act, last amended in September 1988, 7 USC 2803 and 2809, states that no person is permitted to move any noxious weed identified in a regulation into or through the United States or interstate, unless such movement is:

    1. from Canada, or authorized under general or specific permit from the Secretary of Agriculture
    2. made in accordance with such conditions as the Secretary may prescribe in a permit and in regulations to prevent the dissemination into the United States, or interstate, of such noxious weeds (42 USC 2803).

- Section 404 of the *Clean Water Act (CWA)* (33 USC 1344) requires that all discharges of dredged and fill material in the waters of the United States, including wetlands, must meet the requirements of the U.S. Environmental Protection Agency's (USEPA's) 404(b)(1) guidelines (40 CFR 230) and obtain water quality certification from the state (33 USC 1341) unless exempted by Congress through implementation of Section 404(r).

- **Cultural Resources**

  There are many Federal statutes and regulations concerning the preservation of historic and prehistoric properties. The provisions of the following statutes and their implementing regulations outline a comprehensive assertion of national preservation policy and the means to reach the goal of that policy.

- *Antiquities Act of 1906.* Within this Act, 16 USC 431-433, the President of the United States is authorized to declare historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Federal government to be national monuments (16 USC 431). Permits for the examination of ruins, the excavation of archaeological sites, and the gathering of objects of antiquity upon the lands under their respective jurisdictions may be granted by the Secretaries of the Interior, Agriculture, and Army to institutions that may be deemed properly qualified to conduct such examination, excavation, or gathering, subject to such rules and regulations as they may prescribe (16 USC 432).

- *Historic Sites Act of 1935.* This Act, 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, and establishes a maximum fine of $500 for violations of the Act.

- *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:

1. use measures, including financial and technical assistance, to foster conditions under which our modern society and our prehistoric and historic resources can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations
2. provide leadership in the preservation of the prehistoric and historic resources of the United States and of the international community of nations
3. administer Federally owned, administered, or controlled prehistoric and historic resources in a spirit of stewardship for the inspiration and benefit of present and future generations
4. contribute to the preservation of nonfederally owned prehistoric and historic resources and give maximum encouragement to organizations and individuals undertaking preservation by private means
5. encourage the public and private preservation and utilization of all usable elements of the Nation's historic built environment
6. assist state and local governments and the National Trust for Historic Preservation in the United States to expand and accelerate their historic preservation programs and activities (16 USC 470-1).

- *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 to declare a national policy that will encourage productive and enjoyable harmony between man and his environment. Additionally, it provides for the promotion of efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man (42 USC 4321).

  Under NEPA, the continuing policy of the Federal government is to use all practicable means and measures in a manner calculated to foster and promote the general welfare, and to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (42 USC 4331(a)). It is the continuing responsibility of the Federal government is to use practicable means and resources to the end that the Nation may preserve important historic, cultural, and natural aspects of our national heritage (42 USC 4331(b)(4)).

- EO 11593, *Protection and Enhancement of the Cultural Environment*, 13 May 1971. This EO directs Federal agencies to provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the Nation; to ensure the preservation of historic 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 historic resources are not inadvertently damaged, destroyed, or transferred before the completion of inventories and evaluation for the National Register.

- *Archeological and Historic Preservation Act of 1974.* This Act, PL 93-291 (amends PL 86-523); (16 USC 469-469c), directs Federal agencies to notify the 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 archeological data. It also provides criteria for funding historical and archeological protection for such projects.

- *Public Buildings Cooperative Use Act of 1976.* This Act, 40 USC 490, 601 note, et seq., was last amended in November 1988. Under this Act, the Administrator of General Services must, among other duties, acquire and use space in suitable buildings of historic, architectural, or cultural significance, unless use of such space would not prove feasible and prudent compared with available alternatives (40 USC 601a(a)(1)).

  Whenever the Administrator of General Services takes a survey of the public building needs of the Federal government within a geographical area, he must request that, within 60 days, the Advisory Council on Historic Preservation (ACHP) identify any existing buildings within such geographical area that:

  1. are of historic, architectural, or cultural significance
  2. would be suitable, whether or not in need of repair, alteration, or addition, for acquisition or purchase to meet the public building needs of the Federal government (40 USC 611(c)).

- *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 that are on public and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals with collections of archaeological resources and data that were obtained before 19 October 1979 (16 USC 470aa(b)).

- *Native American Graves Protection and Repatriation Act of October 1990.* This Act, 25 USC 3001-3013, permits the intentional removal from or excavation of Native American cultural items from Federal or tribal lands for purposes of discovery, study, or removal of such items only if:

    1. such items are excavated or removed pursuant to a permit issued that must be consistent with this Act
    2. such items are excavated or removed after consultation with or, in the case of tribal lands, consent of the appropriate, if any, Indian tribe or Native Hawaiian organization
    3. the ownership and right of control of the disposition of such items must be as provided in subsections A and B of this section
    4. proof of consultation or consent under paragraph 2 is shown (25 USC 3002(c)).

    Each Federal agency and museum that 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 items (25 USC 3003(a)).

    Each Federal agency or museum that 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:

    1. 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
    2. 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

- **Natural Resources**

  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.

  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.

- **Cultural Resources**

  At the state level, the State Historic Preservation Officer (SHPO) provides assistance in determining cultural significance and eligibility for the National Register, but may also nominate properties, irrespective of ownership. The SHPO must be consulted during all cultural resources planning.

  States may also issue regulations designating state historical sites.

D. CDC Regulations/Requirements

- This section includes a description of the environmental regulations, policies, and requirements of the CDC. At this time, the CDC has not issued environmental regulations for its components.

E. Key Compliance Requirements

- **Natural Resources**

- EA/EIS - Management actions that will significantly impact the quality of the human environment may require an Environmental Impact Statement (EIS) or an Environmental Assessment (EA).

- Cooperative Agreements - Facilities will maintain liaisons with agencies through cooperative agreements. These agreements assist in developing and implementing well-coordinated, multiple-use natural resources programs.

- Endangered Species - The Department of the Interior officially designates the Federal list of endangered species of those species that he determines to be in danger of extinction throughout all or a significant portion of its range.

- **Cultural Resources**

- Historic Preservation - CDC facilities are required to protect, restore, and maintain cultural 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.

F. Responsibility for Compliance

- Environmental Program Manager - is responsible for coordinating the NEPA review of all plans and activities for CDC facilities.

- Grounds Maintenance Section - is responsible for land management activities at CDC facilities.

- Engineering Services Office - through its sections, is responsible for incorporating NEPA requirements into the planning and design process.

G. Key Compliance Definitions

- *Action* - all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to (50 CFR 402.02):
    1. actions intended to conserve listed species or their habitat
    2. the promulgation of regulations
    3. the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid, or
    4. actions directly or indirectly causing modifications to the land, water, or air.

- *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).

- *Archeological Resource* - any material remains of prehistoric or historic human life or activities. Such resources include, but are not limited to: pottery, basketry, bottles, weapons, weapon 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 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 or assembled, and document efforts to locate, evaluate, record, study, preserve, or recover a prehistoric or historic resource (36 CFR 79.4).

- *Building* - a structure created to shelter any form of human activity, such as a house, barn, church, hotel, or similar structure. Building may refer to a historically related complex such as a courthouse and jail, or a house and barn (36 CFR 60.3).

- *Burial Site* - any natural or prepared physical location, whether originally below, on, or above the surface of the earth, into which as a part of the death rite or ceremony of a culture, individual human remains are deposited (PL 101-601, Section 2).

- *Candidate Species* - any species being considered by the Secretary of the Interior for listing as an threatened or endangered species (50 CFR 404.02).

- *Collection* - materials remains that are excavated or removed during a survey, excavation or other study of a prehistoric or historic resource, and associated records that are prepared or assembled in connection with the survey, excavation or other study (36 CFR 79.4).

- *Cultural Affiliation* - a relationship of shared group identity that 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 with 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 that, 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).

- *Destruction or Adverse Modification* - a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical (50 CFR 402.02).

- *Determination of Eligibility* - a decision by the Department of the Interior that a district, site, building, structure, or object meets the National Register criteria for evaluation although the property is not formally listed in the National Register (36 CFR 60.3).

- *District* - a geographically definable area, urban or rural, that possesses a significant concentration, linkage or continuity of sites, structures, buildings, or objects united by past events or aesthetically by plan or physical development. A district may also compromise individual elements separated geographically but linked by association or history (36 CFR 60.3).

- *Effect* - direct effects are caused by the undertaking and occur at the place and time of the undertaking. Indirect effects are those caused by the undertaking that are later in time or further removed in distance, but are still reasonably foreseeable (50 CFR 1508.8).

- *Endangered Property* - a historic property that is, or is about to be, subjected to a major impact that will destroy or seriously damage the qualities of significance that make it eligible for National Historic Landmark or National Register of Historic Places designation (36 CFR 65.3).

- *Endangered Species* - any species that is in danger of extinction throughout all or a significant portion of its range (other than a species of the Class Insect determined to constitute a pest). Federally listed endangered species are officially designated by the Department of Interior (50 CFR 81.1).

- *Environmental Assessment (EA)* - a concise public document for which a Federal agency is responsible that serves to briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a finding of no significant impact (FNSI) (40 CFR 1508.9).

- *Environmental Impact Statement (EIS)* - a detailed statement by the responsible official on (40 CFR 1508.11):
    1. the environmental impact of the proposed action
    2. any adverse environmental effects that cannot be avoided should the proposal be implemented
    3. alternatives to the proposed action
    4. the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
    5. any irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented.

- *Federal Agency Official* - any officer, employer, or agent officially representing the secretary of the department or the head of any other agency or instrumentality of the United States having primary management authority over a collection that is subject to 36 CFR 79 (36 CFR 79.4).

- *Federal Lands* - any land other than tribal lands that are controlled or owned by the United States, including lands selected by, but not yet conveyed to, Alaska Native Corporations and groups pursuant to the Alaska Native Claims Settlement Act of 1971 (PL 101-601, Section 2).

- *Federal Preservation Officer* - the person who is responsible for coordinating the agency's activities under the NHPA and EO 11593, including nominating properties under the agency's ownership or control to the National Register (36 CFR 60.3).

- *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).

- *Historic Preservation* - identification, evaluation, documentation, curation, acquisition, protection, rehabilitation, restoration, management, stabilization, maintenance, recording, and reconstruction of cultural resources, and any combination of the foregoing (16 USC 470w(8)).

- *Historic Property or Resource* - any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register; such term includes artifacts, records, and remains that are related to such a district, site, building, structure, or object (16 USC 470W).

- *Indian Tribe* - any tribe, band, nation, or other organized group or community of Indians, including any Alaska Native village that is recognized as eligible for the special programs and services provided by the United States to the Indians because of their status as Indians (PL 101-601, Section 2).

- *Inventory* - an itemized list of human remains and funerary objects along with their geographical and cultural affiliations (PL 101-601, Section 5 (a) and (e)).

- *Jeopardize the Continued Existence of* - to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02).

- *Landmark* - a district, site, building, structure or object, in public or private ownership, judged by the Secretary of the Interior to possess national significance in American history, archeology, architecture, engineering, and culture, and is 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):
    1. components of structures and features (such as houses, mills, piers, fortifications, earthworks, and mounds)
    2. intact or fragmentary artifacts of human manufacture
    3. intact or fragmentary natural objects used by humans (such as rock crystals, feathers and pigments)
    4. by-products, waste products, or debris resulting from manufacture or use of man-made or natural materials
    5. organic materials (such as vegetable and animal remains)
    6. human remains
    7. components of petroglyphs, pictographs, intaglios or other works of artistic or symbolic representation
    8. components of shipwrecks
    9. environmental and chronometric specimens
    10. paleontological specimens that are found in direct physical relationship with a prehistoric or historic resource.

- *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 Register of Historic Places (National Register)* - the listing of districts, sites, buildings, structures, and objects of national, state, or local significance in American history, architecture, archeology, or culture that is maintained by the 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 101-106, Section 2).

- *Native Hawaiian* - any individual who is a descendent of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the state of Hawaii (PL 101-106, Section 2).

- *Nominate* - to complete and submit National Register of Historic Places form proposing that a resource be included in the National register. Nominations can be made for individual resources, multiple resources, or thematic groups (36 CFR 60.4).

- *Notice Of Intent (NOI)* - means a notice that an EIS will be prepared and considered. It should contain (40 CFR 1508.22):
    1. a description of the proposed action and possible alternatives
    2. the proposed scoping process and schedule
    3. the name and address of the person who can give more information.

- *Property* - a site, building, object, structure, or a collection of the above that forms a district (36 CFR 65.3).

- *Public Lands* - lands owned and administered by the United States including the national park system, national wildlife refuge system, and national forest system. Additional public lands are those whose fee title is held by the United States, the Outer Continental Shelf, and lands under the jurisdiction of the Smithsonian Institute (PL 96-95, Section 3(3)).

- *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 Objects* - specific ceremonial objects that are needed by traditional Native American religious leaders for the practice of their traditional Native American religions by their present day adherents (PL 101-601, Section 2).

- *Section 106 Consultation* - a compliance procedure in which an agency requests the comments of the SHPO and/or the ACHP when an undertaking may affect a property on, or eligible for, the National Register (36 CFR 800.3 through 800.9).

- *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, who is responsible for administering the Act within the state of jurisdiction, or a designated representative authorized to act for the SHPO (36 CFR 60.3).

- *Threatened Species* - any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Federally listed threatened species are officially designated by the Department of Interior (50 CFR 81.21).

- *Tribal Official* - the chief executive officer or any officer employee or agent officially representing the Indian tribe (36 CFR 79.4).

- *Unassociated Funerary Objects* - objects that, as a part of the death rites or ceremony of a culture are reasonably believed to have been placed with individual human remains either at the time of death or later, where the remains are not in the possession or control of the Federal agency or museum and the objects can be identified by a preponderance of the evidence as related to specific individuals or families or to known human remains or, by a preponderance of the evidence, as having been removed from a specific burial site of an individual culturally affiliated with a particular Indian tribe (PL 101-106, Section 2).

- *Undertaking* - any project, activity, or program that can result in changes in the character or use of historic properties, if any such historic properties are located in the area of potential effects (36 CFR 800.2).

NATURAL AND CULTURAL RESOURCES MANAGEMENT PROTOCOL

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Facilities	5-1 through 5-5	(1)(2)(3)(13)
Land Management		
General	5-6 and 5-7	(1)(14)
Floodplains/Wetlands	5-8 and 5-9	(1)(15)
Endangered/Threatened Species	5-10 and 5-11	(1)(6)(13)(15)
Migratory Birds	5-12	(1)(14)
Environmental Impacts	5-13 through 5-25	(1)(2)(16)
Cultural Resources	5-26 through 5-29	(1)(14)(15)(16)
Documentation	5-30 and 5-31	(1)
Native American Graves Protection	5-32	(1)

(a)CONTACT/LOCATION CODE:

(1) Environmental Program Manager
(2) Facility Supervisor/Director
(3) Facilities Operations Branch
(13) Facilities Design Branch
(14) Grounds Maintenance Section
(15) Engineering Services Office
(16) Real Property & Space Management Branch

NATURAL AND CULTURAL RESOURCES MANAGEMENT

Records to Review

- Environmental Impact Documentation
- Installation Master Plan
- Land Management Plan
- Fish and Wildlife Cooperative Agreement
- Outdoor Recreation Cooperative Agreement
- Forest Management Plan
- Grounds Maintenance Contracts
- Agricultural and Grazing Lease Contracts

Physical Features to Inspect

- 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)
- Grounds Maintenance areas (beautification and condition)
- Forest Management areas (condition and management)
- Agricultural and Grazing Lease areas (condition and management)
- Stormwater drainage areas and improvements (condition)
- Erosion sites (condition and erosion)
- Shorelines

People to Interview

- Environmental Program Manager
- Facility Supervisor/Director
- Facilities Operations Branch
- Facilities Design Branch
- Grounds Maintenance Section
- Engineering Services Office
- Real Property & Space Management Branch

COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL FACILITIES	
5-1. Determine actions or changes since previous review of natural and cultural resources management (GMP).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report. (1)
...	...
5-2. Copies of all relevant Federal, CDC, state, and local regulations and guidance documents on natural resources management should be available at the facility (GMP).	Verify that copies of the following regulations are available and kept current, as needed: (1)(2) **Natural Resources** - 40 CFR 1500-1508, *Council on Environmental Quality.* - 50 CFR 17, *Endangered and Threatened Wildlife and Plants.* - 50 CFR 402, *Interagency Cooperation-Endangered Species Act 1973, as amended.* - EO 12088, *Federal Compliance with Pollution Control Standards.* **Cultural Resources** - 25 CFR 261, *Preservation of Antiquities.* - 32 CFR 229, *Protection of Archeological Resources: Uniform Regulations.* - 36 CFR 60, *National Register of Historic Places.* - 36 CFR 62, *National Landmarks Program.* - 36 CFR 63, *Determinations of Eligibility for Inclusion in the National Register of Historic Places.* - 36 CFR 65, *National Historic Landmarks Program.* - 36 CFR 79, *Curation of Federally-owned and Administered Archeological Collections.* - 36 CFR 296, *Protection of Archeological Resources: Uniform Regulations.* - 36 CFR 800, *Protection of Historic and Cultural Properties.* - 43 CFR 3, *Preservation of American Antiquities.* - 43 CFR 7, *Protection of Archeological Resources.* - state and local regulations.
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (13) Facilities Design Branch (14) Grounds Maintenance Section (15) Engineering Services Office (16) Real Property & Space Management Branch

COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
5-3. Facilities are required to comply with state and local regulations concerning natural and cultural resources (EO 12088, Section 1-1).	Verify that the facility is complying with state and local requirements. (1)(3)(13) Verify that the facility is operating according to permits issued by the state or local agencies. (1)(3)(13) (NOTE: Issues typically regulated by state and local agencies include: - endangered and threatened species lists - hunting and trapping restrictions - erosion control requirements - wetlands management - floodplains designation and management - coastal zones management - designation of historic sites - protection of historic sites.)
...	...
5-4. Facilities must meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning natural and cultural resources have been issued since the finalization of the manual. (1)(3)(13) Verify that the facility is in compliance with newly issued regulations. (1)(3)(13)
...	...
5-5. Personnel should be designated and trained for environmental responsibilities (GMP).	Verify that the Environmental Program Manager responsible for NEPA compliance has received appropriate training in NEPA requirements. (1)(3)(13) Verify that the person responsible for NEPA compliance is included in all master planning meetings. (1)(3)(13) Verify that the person responsible for NEPA compliance is an early reviewer of all plans for construction, renovation, or significant changes in operations, that might impact the environment. (1)(3)(13)
...	...

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COMPLIANCE CATEGORY:
NATURAL AND CULTURAL RESOURCES MANAGEMENT
Centers for Disease Control and Prevention

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
LAND MANAGEMENT	
General	
5-6. A protective vegetative cover or other measures should be provided to control dust and erosion damage to land (GMP).	Determine if the facility has been surveyed to locate areas where bare soil is exposed and current or potential erosion requires correction. (1)(14) Verify that remedial actions have been initiated. (1)(14)
...	...
5-7. Noxious weeds must not be moved through the U.S. unless the movement is allowed by a permit (7 CFR 360.100 through 360.300).	Verify that the installation is not moving noxious weeds without a permit. (1)(14)
Floodplains/Wetlands	
5-8. Floodplains and wetlands should be identified and protected (GMP).	Verify that floodplains and wetlands are identified and protected by reviewing the Master Plan. (1)(15) Verify that activities in floodplains are conducted in accordance with the National Permit. (1)(15) Verify that proper permits are obtained for activities in floodplains. (1)(15)
...	...
5-9. Department of the Army permits are required for the discharge of dredged or fill material into waters of the United States (33 CFR 323.3 (a)(b)).	Determine if the installation has wetlands. (1)(15) Verify that any activities involving dredging and filling wetlands are permitted by the U.S. Army Corps of Engineers (USACE). (1)(15) (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.)
...	...

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COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ENDANGERED/ THREATENED SPECIES	
5-10. Facilities with Federally designated endangered and threatened species must carry out programs for their conservation (50 CFR 402.01(a), 402.10, and 402.12).	Verify that a survey has been done to determine if the facility has any threatened or endangered species and is reflected in the Master Plan or equivalent management plans. (1) Verify that consultations have been held with FWS and state conservation agency. (1) Verify that measures have been initiated to maintain threatened and endangered species by checking records of FWS consultations/opinions received. (6)(13)(15) Verify that action has been taken to comply with FWS requirements if a jeopardy biological opinion has been given. (6)(13)(15)
...	...
5-11. All facilities must review proposed actions and activities to ensure that they are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat (50 CFR 402.01(a) and 40 CFR 1500).	Verify that the following documents are considered in the review process: (1) - 40 CFR 1500-1508, *Council on Environmental Quality.* - 50 CFR 17, *Endangered and Threatened Wildlife and Plants.* - 50 CFR 402, *Interagency Cooperation-Endangered Species Act 1973, as amended.* - 50 CFR 450, *Endangered Species Exemption Process: General Provisions.* - 50 CFR 451, *Endangered Species Exemption Process: Application Procedures.*
...	...
MIGRATORY BIRDS	
5-12. 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).	Determine if the installation is on a migratory bird path. (1)(14) Verify that prior to killing birds for any reason, it is determined if they are migratory birds. (1)(14) Verify that if actions are taken with regard to migratory birds, the facility has a permit to do so. (1)(14) (NOTE: Exemptions from the permit requirement are available for the following: - captive-reared and properly marked mallard ducks - captive-reared and properly marked migratory waterfowl.)
...	...

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COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ENVIRONMENTAL IMPACTS	
5-13. 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).	Verify that the NEPA process is routinely reviewed as a part of new project development and potentially significant issues identified. (1)(2)(16) Verify that early cooperative consultation among agencies is also a part of new project development. (1)(2)(16) Verify that the facility identifies environmental effects and values in adequate detail so they can be compared to economic and technical analysis. (1)(2)(16) Verify that the facility develops and describes appropriate alternatives to recommended actions in any proposal that involves unresolved conflicts concerning alternative uses of available resources. (1)(2)(16)
...	...
5-14. An EA must be produced, under certain circumstances, to determine if an EIS is necessary (40 CFR 1501.1(b) and 1508.9).	Determine if an EA has been completed and submitted to the Director for review before any contract for action is entered into or action is begun unless the action: (1)(2)(16) - normally requires an EIS - does not normally require either an EIS or an EA (a categorical exclusion (CX)). Verify that the assessment was prepared according to agency policies. (1)(2)(16) (NOTE: Title 40 CFR 1501.3 states that Agencies will adopt procedures to indicate when an EA is required to be done.)
...	...
5-15. 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).	Verify that the facility produces an EIS for any activity that normally requires an environmental impact statement including: (1)(2)(16) - the adoption of new CDC programs or regulations - technological developments - broad actions - an indication by the EA that it is necessary. (NOTE: Federal Agencies are required to develop policies indicating what types of actions require an EIS.)
...	...

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COMPLIANCE CATEGORY:
NATURAL AND CULTURAL RESOURCES MANAGEMENT
Centers for Disease Control and Prevention

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
5-16. 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) and 1508.13).	Verify that FNSIs include the following information: (1)(2)(16) - 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. Verify that in general the FNSI is made available for public review. (1)(2)(16) 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: (1)(2)(16) - the proposed action is, or is closely similar to, one that normally requires the preparation of an EIS by the CDC - the nature of the proposed action is without precedence.
...	...
5-17. 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 must supervise the preparation of the EIS (40 CFR 1501.5 and 1501.6).	Determine if the facility is involved in an EIS the includes Agencies other than their own. (1)(2)(16) Determine who the lead agency is. (1)(2)(16) (NOTE: Federal, state, or local agencies, including at least one Federal agency, may act as joint lead agencies to prepare an EIS.) Verify that there is a letter or memorandum indicating which Agency is the Federal agency and which are the cooperating agencies. (1)(2)(16) Verify that if the facility is a lead agency it: (1)(2)(16) - requests the participation of each cooperating agency in the NEPA process at the earliest possible time - uses 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.
...	...

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COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
5-18. 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).	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. (1)(2)(16) Verify that after the NOI has been published, "scoping" procedures have begun, to determine the relative significance of issues and to what depth they must be addressed in the EIS. (1)(2)(16) Verify that for projects directly undertaken by the CDC, the EIS is prepared at the feasibility analysis stage. (1)(2)(16) Verify that a preliminary draft is prepared from the "scoping" procedure with the following format: (1)(2)(16) - 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 - 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. Verify that the EIS is prepared using an interdisciplinary approach. (1)(2)(16)
...	...

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COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
5-19. As a part of the EIS process, scoping must be done according to specific requirements (40 CFR 1501.7(a)).	Verify that in the scoping process the lead agency: (1)(2)(16) - invited the participation of affected Federal, state, and local agencies, any affected Indian tribe, the proponent of the action and other interested persons unless there is a limited exception as defined by CDC regulations - determines the scope and the significant issues to be analyzed in depth in the EIS - identifies and eliminates from detailed study the issues that are not significant or that 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 environmental assessments and other environmental impact statements that 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.
...	...

5-20. Public involvement is a required part of the EIS process (40 CFR 1506.6).	Verify that the CDC made a diligent effort to involve the public including: (1)(2)(16)
	- providing public notice of NEPA-related hearings, public meetings, and the availability of environmental documentation such as:
	  - 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:
	  - 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.

...	...

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COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS	**REVIEWER CHECKS:**
5-21. After preparing the draft EIS, the CDC is required to obtain and request comments from specific individuals (40 CFR 1502.19 and 1503.1).	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 that is authorized to develop and enforce environmental standards. (1)(2)(16) Verify that prior to preparing the final EIS, comments were requested from the following: (1)(2)(16) - appropriate state and local agencies that are authorized to develop and enforce environmental standards - Indian tribes, when the effects may be on a reservation - any agency that has requested that it receive statements on actions of the kind proposed. Verify that comments were requested from the applicant. (1)(2)(16) Verify that comments were requested from the public. (1)(2)(16)
...	...
5-22. When preparing the final EIS specific actions are required (40 CFR 1503.4).	Verify that when preparing the final EIS, all comments are assessed and considered and responded to in one of the following ways: (1)(2)(16) - 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. Verify that all substantive comments received on the draft (or a summary of the comments) is attached to the final statement whether or not the comment is thought to merit individual discussion. (1)(2)(16)
...	...
5-23. Under certain circumstances, supplements to the draft or final EIS must be prepared (40 CFR 1502.9(c)(1) and 1502.9(c)(4)).	Verify that a supplement is prepared if one of the following occurs: (1)(2)(16) - 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. Verify that the supplement is prepared, circulated, and files in the same way that a draft and final statement unless alternate procedures have been approved by the Council on Environmental Quality (CEQ). (1)(2)(16)
...	...

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COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
5-24. At the time of a decision, Agencies are required to prepare a concise public record of decision (40 CFR 1505.2).	Verify that the record states what the decision was and: (1)(2)(16) - 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.
...	...
5-25. When implementing the decision, the CDC must meet specific requirements (40 CFR 1505.3).	Verify that mitigation and other conditions established in the EIS or during its review and committed as a part of the decision are implemented. (1)(2)(16) Verify that appropriate conditions are included in grants, permits, or other approvals. (1)(2)(16) Verify that funding is based on actions of mitigation. (1)(2)(16) Verify that results of relevant monitoring are made available upon request. (1)(2)(16)
...	...
CULTURAL RESOURCES	
5-26. All Federal Agencies are required to establish a program to locate, inventory, and nominate to the Secretary of the Interior all properties under the agency's ownership or control that appear to qualify for inclusion on the National Register of Historic Places (36 CFR 60.9).	Determine if the facility has a program to locate, inventory and nominate properties that includes the following: (1)(16) - assignment of responsibility for recognizing and maintaining cultural resources - an inventory and evaluation of all known cultural resources - identification of the likelihood (based on scientific study) of the presence of other significant cultural resources - description of the facility's strategies for maintaining cultural resources and the methods used for compliance with this regulation - clear identification of the impacts on historic resources of ongoing projects and the resolutions to those impacts. Determine if the SHPO is given the opportunity to review and comment on all aspects of the program. (1)(16) Verify that known historic properties have been nominated. (1)(16)
...	...

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COMPLIANCE CATEGORY:
NATURAL AND CULTURAL RESOURCES MANAGEMENT
Centers for Disease Control and Prevention

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
5-27. Archaeological resources located on public lands or Indian lands cannot be excavated, removed, damaged, or otherwise altered, defaced without a permit (32 CFR 229.4(a), 229.5(b), and 229.18).	Determine if there is currently any excavation, removal, or disturbing of archaeological resources on the facility. (1)(14) Verify that any actions taken in relationship to archaeological resources have been permitted. (1)(14) Verify that the facility is following the parameters of the permit. (1)(14) (NOTE: A permit is not required in the following circumstances: - for activities being conducted on public lands under other permits, leases, licenses, or entitlements for use when those activities are exclusively for activities other than excavation and/or removal of archaeological resources even if those activities might disturb the archaeological resources - for the collection for private purposes any rock, coin, bullet, or mineral that is not an archaeological resource if the collection of the item does not result in the disturbance of an archaeological resource - excavations done by an Indian tribe or member of an Indian tribe on the lands of that tribe.) (NOTE: Federal land managers will not make available information about the nature and location of any archeological resources except under the following circumstances: - the disclosure furthers the purposes of the NHPA without risking harm to the archeological resource or the site at which it is located - when the governor of any state submits a request for the information if the request includes: - the specific archeological resource or area about which information is sought - the reason the information is requested - the Governor's written commitment to adequately protect the confidentiality of the information.)
...	...
5-28. Prior to the start of a new undertaking, facilities are required to take into account the effects of the undertaking on property included in or eligible for the National Register of Historic Places (36 CFR 800.1).	Verify that prior to the start of a new undertaking, the impact of that undertaking on property included in or eligible for the National Register of Historic places has been investigated through the Section 106 process of consultation and documentation. (1)(15) Verify that the facility determines the area of potential effect for every undertaking. (1)(15) Determine if a Memorandum of Agreement (MOA) has been drafted and review a copy for compliance. (1)(15)
...	...

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COMPLIANCE CATEGORY:
NATURAL AND CULTURAL RESOURCES MANAGEMENT
Centers for Disease Control and Prevention

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
5-29. The facility is required to consult with the SHPO during the identification, location, and evaluation of historic properties and in assessing the effect of any undertaking on historic property (36 CFR 800.4 and 800.5).	Determine if the SHPO and staff have been consulted during all cultural resources planning including: (1) - identification of cultural properties - research design - applying criteria of National Register - requesting a determination of eligibility from the Keeper (Chief of Registration) of the National Register when an agency and a SHPO disagree on eligibility - interaction with ACHP - determination-of-effect in a single property compliance procedure.
...	...
DOCUMENTATION	
5-30. The Environmental Program Manager should be involved with the master planning and the preparation, updating, and implementation of plans (GMP).	Verify that the individual responsible for cultural resources is involved in the planning process. (1)
...	...

5-31. Facilities with historic properties should have a Historic Properties Management Plan (GMP).	Determine if the facility has any historic properties. (1)
	
	Verify that the Historic Properties Management Plan has been or is being prepared with the following components: (1)
	
	- overview
	- initial inventory
	  - identification of documented properties
	  - establishment of historic context
	  - identification of missing data
	- inventory process to locate missing data
	  - missing data goals
	  - field survey methods
	  - prioritizing investigation topics
	- protection strategies.

...	...

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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
NATIVE AMERICAN GRAVES PROTECTION	
5-32. Native American graves and artifacts are protected under Federal law. Facilities are required to take measures to identify them, protect them, and cooperate with Native American groups in returning them to their rightful owners (*Native American Graves Protection and Repatriation Act of 1990* (PL 101-601); Sections 3(d), 5, and 6).	Verify that if Native American human remains, funerary objects, or other cultural items are discovered at the facility, that the Department of Health and Human Services is notified through command channels, and the appropriate Indian tribe, Native Hawaiian organization, or Alaskan Native Corporation or group is notified. (1) Verify that if the discovery is the result of an activity such as construction, mining, logging, or agriculture, the activity is stopped and a reasonable effort is made to protect the item discovered. (1) (NOTE: The activity may resume 30 days after receipt of certification that notification has been received.) Verify that if the facility museum has possession or control over holdings or collections of Native American human remains and associated funerary objects an inventory of such items is being prepared, and that it: (1) - includes information on the geographical origin and cultural information of the items - is completed in consultation with tribal government and Native Hawaiian organization officials and traditional religious leaders - is scheduled for completion no later than 16 November 1995 - is made available for review at all times and stages of completion to the reviewing Committee established by the Secretary of the Interior. Verify that the facility museum supplies, upon request by an Indian tribe or Native Hawaiian organization, additional available documentation in the form of a summary of existing museum records, including inventories and catalogues, for the limited purpose of determining the geographical origin, cultural affiliation, and basic facts surrounding acquisition and accession of Native American or Native Hawaiian human remains and associated funerary objects. (1) Verify that if a determination of cultural affiliation of any particular Native American human remains or associated funerary objects is made, that the affected Native American group is notified within 6 months (mo) of the completion of the inventory and a copy of the notice is sent to the Secretary of the Interior. Each notice shall contain information that: (1) - identifies each Native American human remains or associated funerary objects and the circumstances surrounding its acquisition - lists the human remains or associated funerary objects that are clearly identifiable as to tribal origin - lists the Native American human remains and associated funerary objects that are not clearly identifiable as to cultural affiliation, but which are likely to be affiliated with that Indian tribe or Native Hawaiian organization.

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COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
5-32. (continued)	Determine if facility museum has possession or control over unassociated funerary objects, sacred objects, or objects of cultural patrimony. If so, confirm that a written summary of such objects is prepared that contains: (1) - a description of the scope of the collection - kinds of objects included in the collection - reference to geographical origin of the objects - description of the means and time period of acquisition - cultural affiliation of the object. Verify that completion of the summary is scheduled for no later than 16 November 1993, and is followed by consultation with tribal officials and traditional religious leaders. (1)

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INSTALLATION:	COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Centers for Disease Control and Prevention	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (13) Facilities Design Branch (14) Grounds Maintenance Section (15) Engineering Services Office (16) Real Property & Space Management Branch

Section 6

Pesticide Management

SECTION 6

PESTICIDE MANAGEMENT

A. Applicability

This section applies to CDC facilities that use, store or handle pesticides. Pesticides are regulated on the Federal level by the U.S. Environmental Protection Agency (USEPA) and on the state level.

B. Federal Legislation

- *The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).* This Act, as last amended in December 1991, 7 U.S. Code (USC) 136-136y, deals with the sale, distribution, transportation, storage, and use of pesticides. 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)).

Although specific state regulations are not included in this section, all major areas that are typically regulated on the state level are included here in a generic manner.

C. State/Local Requirements

State pesticide regulatory programs are to be at least as stringent as FIFRA. State and local programs typically contain regulations that are tailored to an industry or activity that is prevalent or particularly sensitive in a state. State

and local pesticide regulations in many cases provide more stringent standards or specifically identify a requirement that may be qualitatively regulated under the Federal program.

State and local pesticide programs generally include regulations that address 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, or storage facilities
- operational requirements for selected application methods
- recordkeeping and applicator certification requirements.

D. CDC Regulations/Requirements

- This section includes a description of the environmental regulations, policies, and requirements of the CDC. At this time, the CDC has not issued pesticide regulations for its components.

E. Key Compliance Requirements

- Certification - A trained applicator should be on each facility. Certification must be obtained for specific pest management activities (40 Code of Federal Regulations (CFR) 171.3). Contractors used for pest management must have current state certification for the types of applications to be performed.

- Recordkeeping and Reporting - The certification status of applicators should be compiled in a list showing certification expiration dates.

- Health Monitoring - Facilities must schedule, perform, and record the results of physical examinations for all persons involved in pesticide storage or applications.

- Mixing and Personnel Facilities - Facilities are required to provide some separation for select components of the pest management program. Pest management chemicals must be stored separate from other operations areas. Facilities must 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).

F. Responsibility for Compliance

- Grounds Maintenance - responsible for applying pesticides on facility grounds, and storing, mixing, and disposing of pesticides in a safe manner.

- Training Activity - responsible for ensuring that employees of CDC who engage in pesticide application receive the proper training.

- Medical Services - responsible for monitoring the health of all CDC employees applying pesticides.

G. Key Compliance Definitions

These definitions were obtained from Federal regulations previously cited in this section.

- *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 on the front panel the signal word CAUTION (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* - 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 on the front panel the signal word DANGER (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 would 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" - all pesticides that cannot be legally sold pursuant to the Act or that are to be discarded
  - "Organic pesticides" - carbon-containing substances used as pesticides, excluding metallo-organic compounds
  - "Inorganic pesticides" - noncarbon-containing substances used as pesticides
  - "Metallo-organic pesticides" - 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* - 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* - may be authorized in an emergency condition to control the introduction or spread of any pest new to or not 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* - may be authorized in an emergency condition to avert:
  - a significant economic loss
  - a significant risk to endangered species, threatened species, beneficial organisms, or the environment (40 CFR 166.2).

- *Toxicity Category* - required warnings and precautionary statements are based on the Toxicity Category of the pesticide. The category is assigned on the basis of the highest hazard shown in the table listed in 40 CFR 156.10 (40 CFR 156.10(h)).

- *Warning* - the human hazard signal word required on the front panel of a pesticide container determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category II shall bear on the front panel the signal word WARNING (see 40 CFR 156.10 for listing of indicators necessary to meet specific criteria of toxicity categories) (40 CFR 156.10(h)).

PESTICIDE MANAGEMENT PROTOCOL

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Facilities	6-1 through 6-6	(1)(14)
Pesticide Applications	6-7 through 6-15	(1)(5)(9)(14)
Storage	6-16 through 6-26	(1)(5)(6)(14)
Mixing/Formulation	6-27	(1)(14)
Disposal	6-28 through 6-34	(1)(14)(20)

(a)CONTACT/LOCATION CODE:

(1) Environmental Program Manager
(5) Industrial Hygiene Section
(6) Radiation Protection & Fire Safety Section
(9) Medical Services
(14) Grounds Maintenance Section
(20) Food Service Manager

PESTICIDE MANAGEMENT

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

Physical Features to Inspect

- Personnel Protection Equipment
- Pesticide Application Equipment
- Pesticide Storage areas, including storage containers

People to Interview

- Environmental Program Manager
- Industrial Hygiene Section
- Radiation Protection & Fire Safety Section
- Medical Services
- Grounds Maintenance Section
- Food Service Personnel

COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL FACILITIES	
6-1. Determine actions or changes since previous review of pesticides management (GMP).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report. (1) (NOTE: The term PESTICIDES in this protocol refers to Insecticides, Rodenticides, Herbicides, and other pest control chemicals (See the definition in the introduction).)
...	...
6-2. Copies of all relevant Federal, CDC, state, and local regulations and guidance documents on pesticide management should be available at the facility (GMP).	Verify that the following documents are maintained and kept current at the facility, as needed: (1) - 29 CFR 1910, *Occupational Safety and Health Standards.* - 40 CFR 152, *Pesticide Registration and Classification Procedures.* - 40 CFR 165, *Regulations for the Acceptance of Certain Pesticides and Recommended Procedures for the Storage and Disposal of Pesticides and Pesticide Containers.* - 40 CFR 166, *Exemption of Federal and State Agencies for Use of Pesticides Under Emergency Conditions.* - 40 CFR 171, *Certification of Pesticide Applicators.* - 50 CFR 402, *Interagency cooperation - Endangered Species Act of 1973, as amended.* - Executive Order (EO) 12088, *Federal Compliance with Pollution Control Standards.* - State pesticide regulations.
...	...
6-3. Facilities are required to comply with state and local pesticide regulations (EO 12088, Section 1-1).	Verify that the facility is complying with state and local requirements. (1)(14) Verify that the facility is operating according to permits issued by the state or local agencies. (1)(14) (NOTE: Issues typically regulated by state and local agencies include: - applicator certification - restricted use pesticides - application procedures - banned pesticides - disposal methods.)
...	...

(1) Environmental Program Manager (5) Industrial Hygiene Section (6) Radiation Protection & Fire Safety Section (9) Medical Services (14) Grounds Maintenance Section (20) Food Service Manager

COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-4. Facilities must meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning pesticides have been issued since the finalization of the manual. (1)(14) Verify that the facility is in compliance with newly issued regulations. (1)(14)
...	...
6-5. All pesticides present on the facility must be registered or ruled exempt from the registration requirements (40 CFR 152.15 through 152.30).	Verify that pesticide products at the facility are registered unless the facility or product is considered exempt, such as the following: (1)(14) - 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.
...	...

(1) Environmental Program Manager (5) Industrial Hygiene Section (6) Radiation Protection & Fire Safety Section
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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

6-6. All facilities must comply with pesticide use requirements unless an emergency exemption has been granted by the USEPA (40 CFR 166.1, 166.2, 166.20, 166.28, 166.32, 166.45, and 166.50).	Verify that pesticide use requirements are followed unless one or more of the following emergency conditions exist: (1)(14)
	
	- SPECIFIC EXEMPTIONS may be authorized to avoid conditions of:
	  - significant economic loss
	  - significant risk to threatened or endangered species
	  - significant risk to beneficial organisms
	  - significant risk to the environment.
	- QUARANTINE EXEMPTIONS may be authorized to control the introduction or spread of any pest new to or unknown to be widespread throughout the United States and its territories
	- PUBLIC HEALTH EXEMPTIONS may be authorized to control a pest that imposes significant risk to human health
	- CRISIS EXEMPTIONS may be utilized when the time constraint between discovery and implementation of pesticide use will not allow a Specific, Quarantine, or Public Health Exemption to be issued.
	
	Verify that applications for exemptions are submitted to the Regional Administrator in writing and include: (1)(14)
	
	- a description of the pesticide
	- the proposed use
	- any alternative means of control and why those means are not feasible.
	
	Verify that exemptions are issued for a specific length of time, as follows: (1)(14)
	
	- no more than 1 year (yr) for Specific and Public Health exemptions
	- for no longer than 3 yr for a Quarantine Exemption, but it may be renewed
	- no longer than 15 days (unless an application for another type of exemption has been submitted) for a crisis exemption.
	
	Verify that any unexpected adverse affects from the use of a pesticide under exemption conditions are reported to the Agency. (1)(14)
	
	Verify that a report summarizing the use of a pesticide under an exemption was submitted within 6 months (mo) after the expiration of the exemption to the agency (3 mo for a Crisis Exemption). (1)(14)

...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
PESTICIDE APPLICATIONS	
6-7. Personnel applying restricted use pesticides must be certified to apply restricted-use pesticides (40 CFR 171.9).	Determine if pesticide applicators are trained and/or certified. (1)(14) 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)(14) Verify the certification status of contractors used for pest management. (1)(14) (NOTE: Check the list of restricted-use pesticides in Appendix 6-1.)
...	...
6-8. Personnel routinely applying any pesticides should be trained in safety procedures and application procedures (GMP).	Determine if personnel at the facility routinely apply pesticides. (1)(14) Verify that personnel is trained in appropriate handling and use procedures. (1)(14)
...	...
6-9. Health monitoring should provided for government personnel applying pesticides other than bug bombs, space sprays, and no-pest strips (GMP).	Verify that all pest management personnel have received baseline physical examinations within 30 days of starting pest management work. (1)(9)(14) Verify that pest management personnel receive physical examinations in addition to the baseline examination once each year. (1)(9)(14) Verify that cholinesterase tests are given to pest management personnel who work regularly with pesticides that contain organophosphates or N-alkyl-carbamates. (1)(9)(14)
...	...
6-10. Public safety should be ensured when applying or using pesticides (GMP).	Verify the elimination of hazardous exposure to the general public by checking for the following: (1)(5)(14) - 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.
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-11. Records should be maintained of each application of a pesticide, whether performed by hired labor or contract, and retained at the facility (GMP).	Verify that records are kept on file for a minimum of 2 yr. (1)(14)
...	...
6-12. Facilities must ensure that the use of pesticides does not jeopardize the existence of threatened or endangered species (50 CFR 402.01).	Determine if surveys have been conducted to identify the presence of threatened or endangered species in areas where pesticides are used. (1)(14) Determine what measures are taken to ensure that threatened or endangered species are not impacted. (1)(14) Verify that applications are made according to label instructions regarding the protection of endangered species. (1)(14) (NOTE: Refer to the section on endangered species in *Natural Resources Management*.)
...	...
6-13. Spills of pesticides should be contained and reported in accordance with the Spill Plan (GMP).	Determine if the facility has had any spills of pesticides. (1)(14) Verify that pesticide spills are addressed in the Oil and Hazardous Materials Spill Plan. (1)(14)
...	...
6-14. Security measures should assure that only authorized personnel can access pesticide storage, mixing, and preparation areas (GMP).	Verify that a climb-resistant fence completely encloses the facility. (1)(14) Verify that vehicles used to transport pesticides have locking compartments. (1)(14)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-15. Pesticide storage, mixing and preparation facilities must provide facilities and procedures to ensure safety of personnel (29 CFR 1910.133).	Determine if ventilation system is specifically provided for all indoor pesticide mixing/preparation areas. (1)(14) Verify that an emergency deluge shower and eyewash station are located to provide immediate access to all personnel performing mixing. (1)(14) Verify that personal protective clothing and equipment is provided and used by pest management personnel. The following equipment depends upon magnitude and type of operations: (1)(14) - respirators - masks - gloves - safety shoes - coveralls - specialized personal protective equipment for fumigation. Verify that operations include health and safety procedures emphasizing good work habits, reduction or elimination of hazards, and use of personal protective equipment. (1)(14)
...	...
STORAGE	(NOTE: Storage areas must also meet the general requirements for the storage of hazardous materials found in 29 CFR 1910.106, see *Hazardous Materials Management*).
6-16. A spill containment system constructed of impervious materials should provide containment for pesticide storage, mixing, preparation and management areas (GMP).	Verify that there is curbing around the required areas. (1)(14) Determine if there are drains and cracks in floors. (1)(14) Determine if pest management shop personnel are familiar with spill response procedures. (1)(14) Verify that spill response procedures are written and understood by staff. (1)(14)
...	...
6-17. Storage facilities for pesticides should have ventilation at a rate of 10 air changes/hour (GMP).	Verify that storage facilities for pesticides have ventilation at a rate of 10 air changes per hour. (1)(5)(14)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-18. Storage facilities for pesticides should have separate drainage systems and fire extinguishers (GMP).	Verify that fire extinguishers are installed near the door of pesticide storage rooms. (1)(6)(14) Verify that the drainage systems are separated from the regular systems. (1)(6)(14)
...	...
6-19. Storage facilities for pesticides and excess pesticides classes as highly toxic or moderately toxic that are required to be labeled with DANGER, POISON, WARNING, or the skull and crossbones symbol should meet specific structural requirements (GMP).	Verify that storage is in a dry, separate room, building, or covered area where fire protection is provided. (1)(14) Verify, that when relevant and practicable, the entire storage facility is secured by a climb-proof fence and the doors and gates are kept locked. (1)(14) Verify that pesticides are not stored near food or feed. (1)(14) (NOTE: These GMPs are based on recommendations found in 40 CFR 165.10(c)(1).)
...	...
6-20. The storage of pesticides and excess pesticides classed as highly toxic or moderately toxic that are required to be labeled with DANGER, POISON, WARNING, or the skull and crossbones symbol should meet specific operational requirements (GMP).	Verify that pesticide containers are stored with the label plainly visible. (14) Verify that all containers are in good condition. (14) Verify that the lids and bungs on metal or rigid plastic containers are tight. (14) Verify that the pesticides are segregated. (14) Verify that a complete inventory is kept indicating the number and identity of containers in a storage unit. (14) Verify that containers are regularly inspected for corrosion and leaks and that absorbent material is available for spill cleanup. (14) Verify that diluted oil based pesticides are stored separately from other materials since they are flammable. (14) Verify that excess pesticides and containers are segregated. (14) (NOTE: These GMPs are based on recommendations found in 40 CFR 165.10(d).)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-21. Pesticide storage areas should be inspected quarterly by certified applicator personnel and safety and fire prevention officer (GMP).	Verify that pesticide storage areas are inspected quarterly. (6)(14)
...	...
6-22. Pest management programs that use pesticides classed as highly toxic or moderately toxic and are required to bear the signal words DANGER, POISON, WARNING, or the skull and crossbones symbol on the label should have decontamination facilities (GMP).	Determine if facilities are available for personnel decontamination and where they are located. (1)(5)(14) Determine if facilities are available for the decontamination of equipment, including vehicles that have been used for pesticide applications. (1)(5)(14) Verify that berms, curbing, surfaces and catchment drains that are used to impound washwater resulting from decontamination are impervious. (1)(5)(14) Verify that drains impound washwater and do not connect to sanitary sewer or stormwater systems. (1)(5)(14) Verify that the procedure for disposal of washwater resulting from decontamination activities is the same as for excess pesticides. (1)(5)(14) (NOTE: These GMPs are based on recommendations found in 40 CFR 165.10(c)(3) and 165.10(c)(4).)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-23. Storage of pesticides and excess pesticides that are classed as highly toxic or moderately toxic and are required to be labeled DANGER, POISON, WARNING, or the skull and crossbones should meet specific requirements (GMP).	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: (1)(14) - 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 - verifying that the spill management system is in existence. Verify that an environmental monitoring system exists for facilities that do not have spill management system when the facility handles large quantities of pesticides and is located near sensitive environmental receptor. Reviewer should: (1)(14) - note approximate quantity of pesticides and location of sensitive environmental receptors - check whether groundwater, or surface water, or air monitoring program exists to determine any effects caused by pesticide storage, mixing and preparation - inspect facility operations and layout to determine if operations are likely to allow runoff of water that may have contacted pesticides. Verify that, when needed, drainage from the site is contained by natural or artificial barriers or dikes. (1)(14) (NOTE: These GMPs are based on recommendations found in 40 CFR 165.10(b).)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-24. Facilities that store/use pesticides that are classed as highly toxic or moderately toxic and are required to bear the signal words DANGER, POISON, WARNING, or the skull and crossbones symbol should provide facilities and procedures to ensure the safety of personnel (GMP).	Verify that no food consumption, drinking, smoking, or tobacco use is undertaken in any area where pesticides are present. (1)(14) Verify that the following practices are performed in pest management operations:(1)(14) - 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 that is removed if found to be contaminated - a stock of protective clothing is available - self-contained breathing apparatus and impermeable suits are available when handling pesticides that present the potential of being absorbed through the skin - inspections are made once a month to determine if any pesticide containers are leaking - pesticide containers are inspected for leakage prior to handling - unauthorized persons are not allowed in storage areas. (NOTE: These GMPs are based on recommendations found in 40 CFR 165.10(e) and 165.10(f).)
...	...
6-25. Pesticide storage facilities and equipment that contain or use pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or the skull and crossbones symbol should have signs and safety procedures posted (GMP).	Verify that signs that read DANGER, POISON, and PESTICIDE STORAGE, are placed in or near entries to storage facilities. (1)(14) Verify that safety precautions and accident prevention measures are posted. (1)(14) Verify that mobile equipment is not removed unless thoroughly decontaminated. (1)(14) Verify that an inventory of pesticides is displayed outside of the storage facility identifying all chemicals in storage. (1)(14) Verify that mobile equipment used for pesticide applications is labeled CONTAMINATED WITH PESTICIDES and is not removed from the site unless thoroughly decontaminated. (1)(14) (NOTE: These GMPs are based on recommendations found in 40 CFR 165.10(c)(2) through 165.10(c)(3), 165.10(e) and 165.10(g)(7).)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-26. Where large quantities of pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or the skull and crossbones symbol are being stored, or other conditions warrant, the local fire department, hospitals, public health officials, and police department should be notified in writing that pesticides are being stored in the event of a fire (GMP). ...	Verify that notification has been submitted and includes a statement of the hazards that pesticides may present during a fire. (1)(6)(14) Verify that a floor plan of the storage facility indicating the location of the different pesticide classifications has been submitted to the fire department. (1)(6)(14) Verify that the fire chief has the home telephone numbers of the person(s) responsible for the pesticide storage facility. (1)(6)(14) (NOTE: These GMPs are based on recommendations found in 40 CFR 165.10(g)(i).) ...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
MIXING/ FORMULATION	
6-27. Mixing/ formulation areas should meet specific standards (GMP).	Determine if the facility has any mixing or formulation areas. (1)(14) Verify that enclosed mixing areas have a local exhaust ventilation with a minimum face velocity of 100 linear feet per minute (ft/min) to control toxic vapors. (1)(14) Verify that drainage systems are separate from the regular system. (1)(14)
...	...
DISPOSAL	
6-28. Facilities are required to dispose of or store any pesticide, pesticide container, or pesticide residue according to specific restrictions (40 CFR 165.7).	Verify that pesticides, pesticide containers, and/or pesticide residues are stored and/or disposed of such that: (1)(14) - 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 - water dumping or ocean dumping does not occur.
...	...
6-29. Organic pesticides, except organic mercury, lead, cadmium, and arsenic compounds should be disposed of according to specific procedures (GMP).	Determine if the facility uses organic pesticides. (1)(14) Verify that the organic pesticides are disposed of through incineration at an incinerator that meets the air quality standards for for gaseous emissions or in a specially designated landfill if incineration is not available or by another approved method. (1)(14) (NOTES: Municipal solid waste incinerators may be allowed to be used to incinerate pesticides and pesticide containers if they meet criteria of the state.) (NOTE: These GMPs are based on guidelines found in 40 CFR 165.8 and 165.9.)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-30. Metallo-organic pesticides, except organic mercury, lead, cadmium, or arsenic compounds should be disposed of according to specific procedures (GMP).	Determine if the facility uses metallo-organic pesticides. (1)(14) Verify that metallo-organic pesticides are subjected to an appropriate chemical or physical treatment to recover the heavy metals from the hydrocarbon structure prior to disposal. (1)(14) Verify that metallo-organic pesticides are disposed of through incineration at an approved incinerators or in a specially designated landfill or by another approved method. (1)(14) (NOTE: These GMPs are based on guidelines found in 40 CFR 165.8 and 165.9.)
...	...
6-31. Organic mercury, lead, cadmium, arsenic, and all inorganic pesticides should be disposed of according to specific procedures (GMP).	Determine if the facility uses organic mercury, lead, cadmium, arsenic, or any inorganic pesticides. (1)(14) Verify that these pesticides are converted to a nonhazardous compound and the heavy metal resources are recovered. (1)(14) Verify that if chemical deactivation facilities are not available, these pesticides are encapsulated and buried in a specially designated landfill and records sufficient to permit location and retrieval are maintained. (1)(14) Determine if an alternate method of disposal has been approved. (1)(14) (NOTE: These GMPs are based on guidelines found in 40 CFR 165.8 and 165.9.)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-32. Containers should be disposed of according to their classification as either a Group I, Group II, or Group III container (GMP).	Determine which of the following types of containers the facility has onsite: (1)(14) - Group I Containers: combustible containers that formerly contained organic or metallo-organic pesticides - Group II Containers: noncombustible containers that formerly held organic or metallo-organic pesticides - Group III Containers: containers (both combustible and noncombustible) that formerly held organic mercury, lead, cadmium, or arsenic or inorganic pesticides. Verify that Group I containers are disposed of in an incinerator or buried in a specially designated landfill. (1)(14) (NOTE: Small quantities of Group I containers may be burned in open fields by the user of the pesticide when allowed by the state.) Verify that Group II containers are triple rinsed. (1)(14) Verify that Group II containers in good condition are returned to the manufacturer, formulator, or drum reconditioner to reuse with the same chemical class of pesticides. (1)(14) Verify that Group II containers that are going to be transported to a facility for recycle as scrap metal or for disposal are punctured. (1)(14) Determine if rinsed Group II containers are crushed and disposed of in a landfill according to state or local requirements. (1)(14) Verify that unrinsed Group II containers are disposed of in a specially designated landfill or incinerated. (1)(14) Verify that Group III containers that are not rinsed are encapsulated and disposed of in a specially designated landfill. (1)(14) (NOTE: Group III containers that are rinsed may be disposed of in a sanitary landfill.) (NOTE: These GMPs are based on guidelines found in 40 CFR 165.8 and 165.9.)
...	...
6-33. Pesticide residues and rinse liquids should be added to spray mixtures or disposed of according to their pesticide type (GMP).	Verify that pesticide residues or rinse liquids are reused. (1)(14) Verify that if they are not reused they are disposed of according to their pesticide type. (1)(14) (NOTE: These GMPs are based on guidelines found in 40 CFR 165.8 and 165.9.)
...	...

(1) Environmental Program Manager (5) Industrial Hygiene Section (6) Radiation Protection & Fire Safety Section (9) Medical Services (14) Grounds Maintenance Section (20) Food Service Manager

COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-34. Dining facilities should be notified at least 24 hours (h) in advance of pesticide application (GMP).	Verify that food services personnel are notified of scheduled applications. (14)(20)

(1) Environmental Program Manager (5) Industrial Hygiene Section (6) Radiation Protection & Fire Safety Section
(9) Medical Services (14) Grounds Maintenance Section (20) Food Service Manager

Appendix 6-1

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.

**do* means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Azinphos methyl	All liquids with a concentration greater than 13.5%	do	do	do
	All other formulations.	do	Under further evaluation.	
Calcium cyanide	As sole active ingredient. No mixture registered.	do	Restricted	do
Carbofuran	All concrete suspensions and wettable powders 40% and greater.	do	do	Acute inhalation toxicity.
	All granular formulations.	Rice	Under evaluation.	
	All granular and fertilizer formulations.	All uses except rice.	do	
Chlorfenvinphos	All concentrate solutions or emulsifiable concentrates 21% and greater.	All uses (domestic and non-domestic).	Restricted	Acute dermal toxicity.
Chloropicrin	All formulations greater than 2%.	All uses	Restricted	Acute inhalation toxicity
	All formulations.	Rodent control	Restricted	Hazard to non-target organisms.
	All formulations 2% and less.	Outdoor uses (other than rodent control).	Unclassified	

**do* means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Clonitralid	All wettable powders 70% and greater.	All uses	do	Acute inhalation toxicity.
	All granulars and wettable powders.	Molluscide uses.	do	Effects on aquatic organisms.
	Pressurized sprays 0.55% and less.	Hospital antiseptics.	Unclassified	
Cyclo-heximide	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 pct 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	Acute dermal toxicity. Residue effects on mammalian and avian species.
Dicrotophos	All liquid formulations 8% and greater.	All uses.	Restricted	Acute dermal toxicity; residue effects on avian species (except for tree injections).

**do* means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Dioxathion	All concentrate solutions or emulsifiable concentrates[2] greater than 30%.	All uses	Restricted	Acute dermal toxicity.
	Concentrate solutions or emulsi-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	do
	2.5% solutions[2] with toxaphene and malathion.	All uses.	Under evaluation.	
Disulfoton	All emulsifiable concentrates 65% and greater, all emulsifiable concentrates and concentrate solutions 21% and greater with fensulfothion 43% and greater, all emulsifiable concentrates 32% and greater in combination with 32% fensulfothion and greater.	do	Restricted	do Acute inhalation toxicity.
	Non-aqueous solution 95% and greater.	Commercial seed treatment.	Restricted	Acute dermal toxicity.
	Granular formulations 10% and greater.	Indoor uses (greenhouse).	do	Acute inhalation toxicity.

**do* means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Endrin	All emulsions, dusts, wettable powders, pastes, and granular formulations 2% and above.	All uses.	Restricted.	Acute dermal toxicity. Hazard to nontarget organisms.
	All concentrations less than 2%.	do	do	Hazard to nontarget organisms.
EPN	All liquid and dry formulations greater than 4%.	All uses.	Restricted	Acute dermal toxicity; acute inhalation toxicity; residue effects on avian species.
		Aquatic uses.	Restricted	Effects on aquatic organisms.
Ethoprop	Emulsifiable concentrates 40% and greater.	do	do	Acute dermal toxicity.
	All granular and fertilizer formulations.	do	Under evaluation.	
Ethyl parathion	All granular and dust formulations greater than 2%, fertilizer formulations, wettable powders, emulsifiable concentrates, concentrated suspensions, concentrated solutions.	do	Restricted	Inhalation hazard to humans. Acute dermal toxicity. Residue effects or mammalian, aquatic, avian species.
	Smoke fumigants.	do	do	Inhalation hazard to humans.

**do* means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Ethyl parathion (Continued)	Dust and granular formulations 2% and below.	do	do	Other hazards-accident history.
Fenamiphos	Emulsifiable concentrates 35% and greater.	do	do	Acute dermal toxicity.
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.

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.
	Dust formulations 2.5% and greater.	All uses	Restricted	Residue effects on avian species.
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

**do* means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Methomyl (continued)	90% wettable powder formulation in water soluble bags.	do	Unclassified	
	All granular formulations.	do	do	
	25% wettable powder formulations.	do	do	
	In 1.24% to 2.5% dusts as sole active ingredient and in mixtures with fungicides and chlorinated hydrocarbon, inorganic phosphate and biological insecticides.	do	do	
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

*do means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Methyl parathion	All dust and granular formulations less than 5%.	do	do	Other hazards-accident history. All foliar applications restricted based on residue effects on mammalian and avian species.
	Microencapsulated. All dust and granular formulations 5% and greater and all wettable powders and liquids.	do	do	Residue effects on avian species. Hazard to bees. Acute dermal toxicity. Residue effects on mammalian and avian species.
Mevinphos	All emulsifiable concentrates and liquid concentrates.	do	do	do
	Psycodid filter fly liquid formulations.	do	do	Acute dermal toxicity.
	2% dusts.	do	do	Residue effects on mammalian and avian species.
Monocrotophos	Liquid formulations 19% and greater.	do	do	Residue effects on avian species. Residue effects on mammalian species.
	Liquid formulations 55% and greater.	do	do	Acute dermal toxicity. Residue effects on avian species. Residue effects on mammalian species.

*do means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
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.
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.	All uses.	Restricted	Other hazards. Use and accident history, human toxicological data.
	Pressurized spray formulations containing 0.44% Paraquat bis(methyl sulfate) and 15% petroleum distillates as active ingredients.	Spot weed and grass control.	do	
	Liquid fertilizers containing concentrations of 0.025% paraquat dichloride and 0.03 percent atrazine; 0.03% paraquat dichloride and 0.37% atrazine, 0.04% paraquat dichloride and 0.49% atrazine.	All uses.	Unclassified	

*_do_ means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Phorate	Liquid formulations 65% and greater.	do	Restricted	Acute dermal toxicity. Residue effects on avian species (applies to foliar applications only). Residue effects on mammalian species (applies to foliar application only).
	All granular formulations.	Rice	Restricted	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 6-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Picloram	All formulations and concentrations except tordon 101R.	do	do	Hazard to nontarget organisms (specifically nontarget plants both crop and noncrop).
	Tordon 101 R forestry herbicide containing 5.4% picloram and 20.9% 2,4-D.	Control of unwanted trees by cut surface treatment.	Unclassified	
Sodium cyanide[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 nontarget avain species. Use and accident history.
	All dry baits, pellets and powder formulations.	All uses calling for burrow builders.	do	Hazard to nontarget organisms.
	All dry baits, and pellets and powder formulations 0.5% and below.	All uses except subsoil.	do	do
	do	All subsoil uses.	Unclassified	do

*do means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	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: PESTICIDE MANAGEMENT Centers for Disease Control and Prevention	DATE:	REVIEWER(S):

STATUS NA C RMA	REVIEWER COMMENTS:

(1) Environmental Program Manager (5) Industrial Hygiene Section (6) Radiation Protection & Fire Safety Section (9) Medical Services (14) Grounds Maintenance Section (20) Food Service Manager

Section 7

Petroleum, Oil, and Lubricant (POL) Management

SECTION 7

POL MANAGEMENT

A. Applicability

This section applies to CDC facilities that store, transport, dispose of, or utilize petroleum, oil, and lubricants (POL). The section presents review action items that respond to regulations, procedures, and organizational mechanisms designed to prevent or limit the accidental release of POL materials to surface water, groundwater, or soils. Procedures designed to review the control of Volatile Organic Compounds (VOCs) from POL sources are addressed in *Air Emissions Management.* Management of bulk storage tanks and pipeline delivery systems are addressed in *Aboveground/Underground Storage Tanks (AST/UST).*

B. Federal Legislation

- *The Water Quality Improvement Act of 1974.* This law was the primary Federal law governing the discharge of oil into navigable waters. This regulation prohibits the discharge of "harmful" quantities of oil into navigable waters. 40 Code of Federal Regulations (CFR) 110, *Protection of Environment - Discharge of Oil,* defines "harmful" quantities as those discharges that will cause a sheen or discoloration of the surface of the water or a sludge or emulsion to be deposited beneath the surface of the water.

- *The Oil Pollution Act (OPA) of 1990.* This law, Public Law (PL) 301-308 (33 U.S. Code (USC) 2701-2761, et al.) as amended, requires the prevention of oil pollution into navigable waters by tank vessels.

C. State/Local Requirements

- Many states, and some major metropolitan and regional planning agencies have developed legislation and implemented regulations that closely parallel the Federal requirements. Some, however, may differ in important ways, and the evaluator should obtain copies of the state or local requirements for Oil and Hazardous Substance Pollution Contingency (OHSPC) and Spill Prevention Control and Countermeasures (SPCC) plans, where appropriate, and review them for those differences before conducting the evaluations. In particular, the evaluator should check for differences in the definitions of reportable quantities and the specific procedures for reporting spills that may exist in state/local regulations.

D. CDC Regulations/Requirements

- This section includes a description of the environmental regulations, policies, and requirements of the CDC. At this time the CDC has not issued environmental regulations for its components.

E. Key Compliance Requirements

- Spill Prevention Planning - 40 CFR 112 requires the preparation of an SPCC plan. This plan must address the use of pollution prevention equipment, spill response training of operating personnel, the use of secondary containment, and an oil spill contingency plan.

- Spill Response Training - All Corps personnel involved with the management and handling of oil must take part in periodic spill prevention and response training programs (40 CFR, 112.7).

- Facility Design and Inspection Procedures - 40 CFR 112.7 sets forth minimum design criteria and inspection procedures for aboveground POL facilities and operations that must be addressed in the SPCC plan.

- Used Oil - 40 CFR 279 addresses the storage, handling, transportation, and burning of used oil.

F. Responsibility for Compliance

- Facilities Operations Branch (Engineering Services Office) - is responsible for receiving and utilizing petroleum products in a safe and efficient manner, and for operating and maintaining operational storage tanks.

G. Key Compliance Definitions

These definitions were obtained from the regulations cited previously in this section.

- *Container* - any portable device in which material is stored, transported, treated, disposed of, or otherwise handled (40 CFR 279.1).

- *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).

- *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:
  - discharges in compliance with a permit
  - 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
  - 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).

- *Existing Tank* - a tank that is used for the storage or processing of used oil and that is in operation, or a tank for which installation has commenced on, or before the effective date of the authorized used oil program of the state where the tank is located (40 CFR 279.1).

- *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.

- *Navigable Waters* - the waters of the United States, including the territorial seas. The terms includes (40 CFR 110.2):
  - 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
  - interstate waters, including interstate wetlands
  - all other waters such as intrastate 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 of 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
  - all impoundments of waters otherwise defined as navigable waters under this section
  - tributaries of waters identified above, including adjacent wetlands
  - wetlands adjacent to waters identified above.

- *New Tank* - a tank that will be used to store or process used oil and for which installation has started after the effective date of the authorized used oil program of the state where the tank is located (40 CFR 279.1).

- *Offshore Facility* - any facility of any kind located in, on, or under any of the navigable waters of the United States, and any facility of any kind that is subject to the jurisdiction of the United States and is located in, on, or under any other waters, other than a vessel or a public vessel (40 CFR 110.2 and 33 CFR 153.103).

- *Oil* - when used in relation to section 311 of the Act, means oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil (40 CFR 110.2 and 33 CFR 153.103).

- *Onshore Facility* - any facility (including but not limited to, motor vehicles and rolling stock) of any kind located in, on, or under any land within the United States, other than submerged land (40 CFR 110.2 and 33 CFR 153.103).

- *Processing* - chemical or physical operations designed to produce products from used oil or to make used oil more amenable for production of fuel oils, lubricants, or other used oil-derived product. Processing includes, but is not limited to, blending used oil with Virgin petroleum products, blending used oils to meet the fuel specification, filtration, simple distillation, chemical or physical separation, and re-refining (40 CFR 279.1).

- *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, with a combined specific gravity equivalent to or greater than water (40 CFR 110.2).

- *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).

- *Spill Prevention, Control, and Countermeasure (SPCC) Plan* - the SPCC Plan shall be a carefully thought-out plan, prepared in accordance with good engineering practices, that has the full approval of management at a level with authority to commit the necessary resources (40 CFR 112.3).

- *Tank* - any stationary device, designed to contain an accumulation of used oil, that is constructed primarily of nonearthen materials that provide structural support (40 CFR 279.1).

- *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 209 liters (L) (55 gallons (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 209 L (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:
  - directs a shipment of off-specification used oil from the facility to a used oil burner
  - 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 no 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, used-oil-derived products or used oil fuel (40 CFR 279.1).

- *Vessel* - every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water, other than a public vessel (40 CFR 110.2).

- *Wetlands* - those areas that are inundated or saturated by surface water 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).

POL MANAGEMENT PROTOCOL

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Facilities	7-1 through 7-4	(1)(2)(3)
Spill Plan	7-5 through 7-10	(1)(2)(3)
Training	7-11	(1)(2)(3)(8)
Discharges/Spills	7-12 and 7-13	(1)(2)(3)
Storage/Containment	7-14	(1)(2)(3)
Used Oil	7-15	(1)(2)(3)(5)
Used Oil Generators		
General	7-16 through 7-20	(1)(2)(3)
Containers and Tanks	7-21 through 7-32	(1)(2)(3)
Used Oil Transportation	7-33 through 7-39	(1)(2)(3)
Used Oil Burners	7-40 through 7-46	(1)(2)(3)
Used Oil Dust Suppression	7-47	(1)(2)(3)

(a)CONTACT/LOCATION CODE:

(1) Environmental Program Manager
(2) Facility Supervisor/Director
(3) Facilities Operations Branch
(5) Industrial Hygiene Section
(8) Training Activity

POL MANAGEMENT

Records to Review

- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 years (yr))
- Official correspondence with state implementing agency
- Spill Prevention and Response (SPR) Plan
- Records of spill response training programs
- Facility response plans required by the OPA
- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)

Physical Features to Inspect

- Refueling facilities, including:
    - Aboveground and belowground storage tanks and dikes
    - Venting
    - Fill pipes
    - Gauges
- Washrack areas
- Vehicle maintenance areas
- Oil separators
- Oil and hazardous substance site

People to Interview

- Environmental Program Manager
- Facility Supervisor/Director
- Facilities Operation Branch
- Industrial Hygiene Section
- Training Activity
- Grounds Maintenance Section

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL FACILITIES	
7-1. Determine actions or changes since previous review of POL management (GMP).	Examine copy of previous review report to determine if noncompliance issues have been resolved. (1)
...	...
7-2. Copies of all relevant Federal, CDC, state, and local regulations and guidance documents should be available at the facility (GMP).	Verify that copies of the following regulations are available and kept current as needed: (1)(2) - 40 CFR 110, *Discharge of Oil.* - 40 CFR 112, *Oil Pollution Prevention.* - 40 CFR 279, *Standards for the Management of Used Oil.* - Executive Order (EO) 12088, *Federal Compliance with Pollution Standards.* - Appropriate state and local regulations.
...	...
7-3. Facilities are required to comply with all applicable state and local requirements (EO 12088, Section 1-1).	Verify that the facility is complying with state 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 that are typically regulated by state and local agencies include: - spill management - use of product recovery systems - containment - used oil.)
...	...
7-4. Facilities should have a plan for the management of reclaimed recoverable and waste liquid petroleum products (GMP).	Verify that a Management of Recoverable and Waste Liquid Petroleum Products plan has been prepared. (1)(2)(3)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
SPILL PLAN	
7-5. Facilities that store, transport, or dispense petroleum products are required to prepare an SPCC plan (40 CFR 112.3).	Verify that the facility has an SPCC plan. (1)(2)(3) (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 that, 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 that 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 159,000 L (42,000 gal) or less of oil - the storage capacity that is not buried at the facility is 5003 L (1320 gal) of oil or less and no single container exceeds a capacity of 2501 L (660 gal) (40 CFR 112.1(d)(2).) (NOTE: This apples 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.)
...	...
7-6. The SPCC plan is required to contain specific information (40 CFR 112.7).	Determine if the SPCC plan has been prepared and reviewed for the following: (1)(2)(3) - command approval - spill reporting procedures - prespill 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. Verify that the SPCC plan contains: (1)(2)(3) - general information about the facility including: - 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: - prediction of direction and rate of flow - total quality of oil that could be spilled as a result of major failure.

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-7. Each SPCC plan must be reviewed at least once every 3 yr (40 CFR 112.5(b)).	Verify that the SPCC plan has been reviewed at least once every 3 yr. (1)(2)(3) (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 that, 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 that are subject to the authority of the DOT - both of the following criteria are met: - the underground buried storage capacity of the facility is 159,180 L (42,000 gal) or less of oil - the storage capacity that is not buried at the facility is 5003 L (1320 gal) of oil or less and no single container exceeds a capacity of 2501 L (660 gal) (40 CFR 112.1(d)(2).)
...	...
7-8. The SPCC plan 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)(3) Verify that the plan was sent to the USEPA for review if: (1)(2)(3) - there was a discharge of more than 3790 L (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)(3) (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 that, 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 that are subject to the authority of the DOT - both of the following criteria are met: - the underground buried storage capacity of the facility is 159,180 L (42,000 gal) or less of oil - the storage capacity that is not buried at the facility is 5003 L (1320 gal) of oil or less and no single container exceeds a capacity of 2501 L (660 gal) (40 CFR 112.1(d)(2).)

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY:
PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT
Centers for Disease Control and Prevention

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
7-9. 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)).	Verify that the SPCC plan has been certified. (1)(2)(3) (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 that, 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 that are subject to the authority of the DOT - both of the following criteria are met: - the underground buried storage capacity of the facility is 159,180 L (42,000 gal) or less of oil - the storage capacity that is not buried at the facility is 5003 L (1320 gal) of oil or less and no single container exceeds a capacity of 2501 L (660 gal) (40 CFR 112.1(d)(2).)
...	...
7-10. A copy of the SPCC plan is required to be available at sites that are normally have personnel onsite at least 8 h per day, and where there is a potential for a discharge (40 CFR 112.3(e)).	Verify that a copy of the SPCC is available at facilities that have personnel onsite at least 8 h per day. (1)(2)(3) (NOTE: If personnel are not onsite for 8 h per day the plan may be kept at the nearest field office and the plan should be made available to the Regional Administrator.)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
TRAINING	
7-11. All facility personnel involved with the management and handling of oil must take part in periodic training in spill prevention and response (40 CFR 112.7(e)(10)).	Verify that proper training has been conducted by reviewing training records and interviewing the staff. (1)(2)(3)(8) Verify that training addresses the procedures to follow when a spill occurs, such as: (1)(2)(3)(8) - notification - containment - safety practices. (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 that, 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 that are subject to the authority of the DOT - both of the following criteria are met: - the underground buried storage capacity of the facility is 159,180 L (42,000 gal) or less of oil - the storage capacity that is not buried at the facility is 5003 L (1320 gal) of oil or less and no single container exceeds a capacity of 2501 L (660 gal) (40 CFR 112.1(d)(2).)
...	...
DISCHARGES/SPILLS	
7-12. Discharges of oil into or upon the navigable waters of the United States or adjoining shorelines or intro 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).	Determine if the facility has had any discharges of oils. (1)(2)(3) (NOTE: Discharges of oil are defined as those that 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.) Verify that the National Response Center (NRC) was notified as soon as possible after discovery of a discharge as defined in the above NOTE. (1)(2)(3) (NOTE: If direct reporting to the NRC is not practicable, reports may be made to the Coast Guard or USEPA predesignated OSC.) (NOTE: Discharges of oil from a properly functioning vessel engine are not considered harmful but, discharges from vessel's bilge are not allowed.) (NOTE: See definition "navigable waters.")

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-13. Facilities are not allowed to add dispersants or emulsifiers to oil to be discharged (40 CFR 110.8).	Verify that facilities do not add dispersants or emulsifiers to discharges. (1)(2)(3)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY:
PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT
Centers for Disease Control and Prevention

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
STORAGE/ CONTAINMENT	
7-14. 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 if at onshore facilities one of the following preventive systems or an equivalent is used: (1)(2)(3) - 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)(3) - 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 that, 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 that are subject to the authority of the DOT - both of the following criteria are met: - the underground buried storage capacity of the facility is 159,180 L (42,000 gal) or less of oil - the storage capacity that is not buried at the facility is 5003 L (1320 gal) of oil or less and no single container exceeds a capacity of 2501 L (660 gal) (40 CFR 112.1(d)(2).)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
USED OIL	
7-15. Depending on the constituents of the used oil, (see Appendix 7-1), facilities are required to handle used oil as a hazardous waste or according to specific used oil requirements (40 CFR 279.10).	Determine which types of the used oils listed in Appendix 7-1 are generated at the facility. (1)(2)(3)(5) Verify that used oil is handled according to its classification as one of the following: (1)(2)(3)(5) - a hazardous waste - used oil that falls under the requirements of 40 CFR 279 - used oil that is not subject to the requirements of 40 CFR 279 and neither is it a hazardous waste unless testing indicates it does contain hazardous constituents.
...	...
USED OIL GENERATORS	(NOTE: The requirements for used oil generators do not apply to the following: - household do-it-yourself (DIY) 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 year.) (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.)
General	
7-16. Used oil generators that detect a release (other than a 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)).	Verify that when a release is detected the following is done: (1)(2)(3) - 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.
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-17. Generators are allowed to burn used oil in used oil-fired space heaters if specific parameters are met (40 CFR 279.23).	Determine if the facility operates any used oil-fired space heaters. (1)(2)(3) Verify that the following parameters are met: (1)(2)(3) - 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 million British thermal units (MBtu)/h - the combustion gases from the heater are vented to the ambient air.
...	...
7-18. Except in specific circumstances, used oil generators must ensure that their used oil is transported only by transporters who have a USEPA ID No. (40 CFR 279.24).	Determine if the facility is transporting used oil or contracting the transportation of used oil. (1)(2)(3) Verify that the transporter has a USEPA ID No. except when: (1)(2)(3) - 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: - 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.
...	...
7-19. Used oil generators are not allowed to mix hazardous waste with used oil unless specific parameters are met (40 CFR 279.21(a)).	Verify that the facility does not mix hazardous waste with used oil unless: (1)(2)(3) - 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.
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-20. The label USED OIL 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)).	Verify that containers, aboveground storage tanks (ASTs)and fill pipes used to transfer used oil are clearly marked with the phrase USED OIL. (1)(2)(3)
...	...
Containers and Tanks	
7-21. 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)).	Verify that containers and tanks are not leaking, bulging, rusting, damaged or dented. (1)(2)(3) Verify that used oil is transferred to a new container or managed in another appropriate manner when necessary. (1)(2)(3)
...	...
7-22. 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)).	Verify that containers are compatible with used oil. (1)(2)(3)
...	...
7-23. 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)).	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) Verify that handling and storage practices do not cause damage to the containers or cause them to leak. (1)(2)(3)
...	...
7-24. Containers of used oil at used oil generators should be managed appropriately (GMP).	Inspect containers and storage areas to determine the following: (1)(2)(3) - 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.
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-25. 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), and 279.22(a)).	Verify that the following types of tanks used to store or treat used oil have secondary containment: (1)(2)(3) - all new tank systems or components - existing tank systems of known documented age that are 15 yr of age. 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)
...	...
7-26. 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)).	Verify that secondary containment meets the following criteria: (1)(2)(3) - 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. Verify that spilled or leaked used oil are removed from secondary containment within 24 h or as timely as possible. (1)(2)(3) Verify that secondary containment for tanks includes one or more of the following: (1)(2)(3) - a liner (external to the tank) - a vault - a double-walled tank - an equivalent approved device.
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-27. 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)).	Verify that external liner systems meet the following requirements: (1)(2)(3) - 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. Verify that vault systems meet the following criteria: (1)(2)(3) - 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. Verify that double-walled tanks meet the following criteria: (1)(2)(3) - 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.
...	...
7-28. 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)).	Verify that ancillary equipment, except for the following, has secondary containment: (1)(2)(3) - 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 above ground piping systems with automatic shutoff valves that are visually inspected for leaks on a daily basis.
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-29. 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), 265.193(i), and 279.22(a)).	Verify that tank systems without secondary containment meet the following: (1)(2)(3) - 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. Verify that the facility maintains a record of the results of testing and assessments. (1)(2)(3)
...	...
7-30. 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)).	Determine if the used oil generator has any new tank systems. (1)(2)(3) 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) 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)
...	...
7-31. 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)).	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) Verify that appropriate measures are taken to prevent overfill, including: (1)(2)(3) - spill prevention controls - overfill prevention controls - maintenance of sufficient freeboard to prevent overtopping by wave, wind action, or precipitation for uncovered tanks.
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-32. 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) - 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 National Fire Protection Association's (NFPA) *Flammable and Combustible Liquids Code* are maintained. (1)(2)(3) 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) 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)
...	...
USED OIL TRANSPORTATION	(NOTE: These requirements concerning transportation and transfer of used oil do not apply to the following: - 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 the initial generator to a regulated generator, collection center, aggregation point, processor/refiner, or burner.)
7-33. 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)).	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) (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 States.)

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
7-34. Used oil transporters can consolidate or aggregate loads of used oil (40 CFR 279.41).	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)
...	...
7-35. Used oil transporters are required to have a USEPA ID No. (40 CFR 279.42).	Verify that if the facility is transporting used oil, it has a USEPA ID No. (1)(2)(3)
...	...
7-36. Transporters must meet specific requirements for deliveries and shipments of used oil (40 CFR 279.43(a) through 279.43(b)).	Verify that all used oil is delivered to: (1)(2)(3) - another used oil transporter if the transporter has a USEPA ID No. - a used oil processing/re-refining facilities with a USEPA ID No. - an off-specification used oil burner facility with a USEPA ID No. - an on-specification used oil burner facility. Verify that DOT labeling, packaging, and placarding requirements are met. (1)(2)(3)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-37. Transporters are required to take specific actions if there is a discharge of used oil during transportation (40 CFR 279.43(c)).	Verify that if there is a discharge the following are done: (1)(2)(3) - notification of authorities (NRC) - containment of the discharge - submit a written report to the DOT - cleanup.
...	...
7-38. 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).	Verify that the transporter determines the total halogen content of the used oil by one of the following methods: (1)(2)(3) - testing the used oil - applying knowledge of halogen content of the used oil in light of the materials or processes used. Verify that records of analyses are kept for 3 yr. (1)(2)(3)
...	...
7-39. Used oil transporters are required to keep records for used oil shipments and deliveries (40 CFR 279.46).	Verify that the following records are kept for each shipment accepted for transport: (1)(2)(3) - name and address of the generator, transporter, or processor/re-refiner who provided the used oil for transport - USEPA ID No. - the quantity of oil accepted - the day of acceptance - signature of receipt. 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) - 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. Verify that records are maintained for 3 yr. (1)(2)(3)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
USED OIL BURNERS	
7-40. Off-specification used oil fuel may be burned for energy recovery in industrial furnaces and boilers (40 CFR 279.12(c), 279.60(a), and 279.61(a)).	Determine if the facility burns use oil fuel for the purpose of energy recovery. (1)(2)(3) Verify that off-specification used oil fuel is only burned for energy recovery in one of the following: (1)(2)(3) - an industrial furnace - a boiler that is identified as one of the following: - industrial boilers that are located on the site of a facility engaged in a manufacturing process where substances are transformed into new products by mechanical or chemical processes - utility boilers used to produce electric power steam, heated or cooled air, or other gases or fluids for sale - used oil-fired space heaters - hazardous waste incinerators. (NOTE: The following are exempt from meeting these requirements: - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.)
...	...
7-41. Used oil burners are required to have a USEPA ID No. (40 CFR 279.60(a) and 279.62).	Verify that the facility has a USEPA ID No. (1)(2)(3) (NOTE: The following are exempt from meeting these requirements: - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.)
...	...
7-42. Used oil burners are required to determine if used oil is a hazardous waste (40 CFR 279.60(a) and 279.63).	Verify that the used oil is either tested or the used oil burner applies their knowledge of the halogen content of the used oil in light of the materials or processes used, or using information from another source. (1)(2)(3) Verify that copies of analyses are maintained for 3 yr. (1)(2)(3)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-43. Used oil burners are required to store used oil in tanks and containers that meet specific requirements (40 CFR 279.60(a) and 279.64(a) through 279.64(f)).	Verify that the tanks and containers at used oil burners meet the requirements outlined in the checklist section titled USED OIL GENERATORS - Containers and Tanks. (1)(2)(3) Verify that containers and ASTs used to store used oil have secondary containment that meets the following minimum requirements: (1)(2)(3) - dikes, berms, or retaining walls - a floor that covers the entire area within the dikes, berms, or retaining walls - the system is impervious. Verify that containers and ASTs are labeled with the phrase USED OIL. (1)(2)(3) Verify that fill pipes used to transfer used oil into underground storage tanks at used oil burners are labeled USED OIL. (1)(2)(3) (NOTE: The following are exempt from meeting these requirements: - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.)
...	...
7-44. Specific steps must be followed in response to a release at a used oil burner facility (40 CFR 279.60(a) and 279.64(g)).	Verify that the following steps are taken: (1)(2)(3) - the release is stopped - the release is contained - the release is cleaned up and properly managed - necessary repairs and replacements are done. (NOTE: The following are exempt from meeting these requirements: - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-45. Used oil burners are required to keep a record of each used oil shipment accepted for burning (40 CFR 279.60(a) and 279.65).	Verify that some form of records are kept that documents the following: (1)(2)(3) - the name and address of the transporter who delivered the used oil - the name and address of the generator or processor or re-refiner from whom the used oil was sent to the burner - the USEPA ID No. of the transporter or if applicable the generator or processor/re-refiner - the quantity of used oil accepted - the date of acceptance. Verify that records are maintained for at least 3 yr. (1)(2)(3) (NOTE: The following are exempt from meeting these requirements: - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.)
7-46. Before a burner can accept the first shipment of off-specification used oil fuel from a generator, transporter, or processor/re-refiner, the burner must provide a one-time written notice (40 CFR 279.60(a) and 279.66).	Verify that the burner issued a notice to the USEPA stating the location and description of the activity and certifying that the used oil will only be burned in an industrial furnace or boiler. (1)(2)(3) Verify that the certification is maintained for 3 yr from the date of the last shipment received. (1)(2)(3) (NOTE: The following are exempt from meeting these requirements: - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.)
USED OIL DUST SUPPRESSION	
7-47. Used oil cannot be used for dust suppression unless allowed by the state (40 CFR 279.82).	Verify that used oil is not used for dust suppression at the facility. (1)(2)(3)

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (5) Industrial Hygiene Section (8) Training Activity

Appendix 7-1

Used Oil Classifications
(40 CFR 279.10 and 279.11)

Used Oils Which Are Required to be Handled According to the Requirements in 40 CFR 279 (40 CFR 279.10(b)(2)(ii), 279.10(b)(2)(iii), 279.10(b)(3), 279.10(c)(2), 279.10(d), 279.10(e)(2), and 279.10(i)).

1. Used oil containing more than 1000 ppm of total halogens when the generator has demonstrated that the used oil does not contain hazardous waste.

2. Used metalworking oils/fluids containing chlorinated paraffins when they are recycled or disposed of and the generator has demonstrated that the used oil does not contain hazardous waste.

3. Used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units and the generator has demonstrated that the used oil does not contain hazardous waste.

4. Materials produced from used oil that are burned for energy recovery.

5. Mixtures of used oil and hazardous waste if the resultant mixture does not exhibit any characteristics of hazardous waste.

6. Mixtures of used oil and a waste that is hazardous solely because it exhibits the characteristic of ignitability 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	4,000 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).

Used Oil that is Required to be Handled as a Hazardous Waste (40 CFR 279.10(b)).

1. Mixtures of used oil and listed hazardous waste.
2. Used oil containing more than 1000 ppm total halogens.
3. Used metalworking oils/fluids containing chlorinated paraffins if processed through a tolling agreement.
4. Used oil contaminated with CFCs removed from refrigeration units where the CFCs are destined for reclamation.
5. Mixtures of used oil and hazardous waste if the resultant mixture exhibits characteristics of a hazardous waste.

Used Oil that is not Subject to the Requirements of 40 CFR 279, Nor is it to be Handled as a Hazardous Waste Unless Testing Indicates Hazardous Constituents (40 CFR 279.10(c)(1), 279.10(d)(2), 279.10(e)(1), 279.10(e)(3), 279.10(e)(4), and 279.10(f) through 279.10(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: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Centers for Disease Control and Prevention	DATE:	REVIEWER(S):

STATUS NA C RMA	REVIEWER COMMENTS:

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch
(5) Industrial Hygiene Section (8) Training Activity

Section 8

Solid Waste Management

SECTION 8

SOLID WASTE MANAGEMENT

A. Applicability

This section addresses the collection, storage, and disposal of solid waste at CDC facilities.

Solid waste is considered to be nonhazardous trash, rubbish, garbage, bulky wastes, liquids or sludges generated by any facility's operations and activities. The handling and disposal of asbestos waste materials are addressed in *Special Pollutants Management.*

Recycling and resource recovery activities are also included in this section because they are considered a form of solid waste management

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 state standards, a previsit analysis of specific state and local solid waste regulations is required to conduct a thorough review of this area.

B. Federal Legislation

- *Resource Conservation and Recovery Act (RCRA) of 1976*, as amended. This is the Federal law that 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 that are environmentally sound and that maximize the utilitzation of valuable resources recoverable from solid waste. These objectives are to be achieved through Federal technical and financial assistance to states and regional authorities for comprehensive planning (42 USC 6941).

- *The Solid Waste Disposal Act (SWDA) of 1965*, as amended. This Act requires that Federal facilities comply with all Federal, state, interstate, and local requirements concerning the disposal and management of solid wastes. These requirements include permitting, licensing, and reporting. 40 Code of Federal Regulations (CFR) 240 regulates incinerators processing a minimum of 50 tons/day. 40 CFR 241 covers the land disposal of solid wastes. 40 CFR 243 addresses the requirements for the storage and collection of solid waste materials. 40 CFR 244, 245, and 246 deal with beverage containers, resource recovery, and source separation, respectively.

- *The Hazardous and Solid Waste Amendments of 1984* are the most recent addition to the bank of Federal laws regulating the disposal of solid wastes. These Amendments added a number of previously unlisted materials to the growing list of materials defined as hazardous. Some of these included chlorinated dioxins and dibenzofurans, solvents, refining wastes, chlorinated aromatics, lithium batteries, paint production wastes, and a large number of similar compounds and waste materials.

C. State/Local Requirements

The Federal government sets minimum national standards for municipal solid waste disposal in 40 CFR 258, but state and local governments are responsible for implementing and enforcing waste programs. States are required to develop their own programs based on the Federal regulations. Most states and municipalities have already developed their own regulations governing the permitting, licensing, and operations of landfills, incinerators, and source separation/recycling programs.

States are required to incorporate revised criteria for municipal solid waste landfills (MSWLFs) into their permit programs and to gain approval from the U.S. Environmental Protection Agency (USEPA). States that apply for and receive USEPA approval of their programs have the opportunity to provide significant flexibility in implementing the regulations. This flexibility allows states to take local conditions into account and gives them the authority to alter some of the requirements. Evaluators will need to determine if a state has been granted approval for the 40 CFR 258 Program in order to accurately assess an installation's compliance with the criteria.

Many states have also instigated categories of special wastes that cannot be placed in landfills or dumps, or may only be disposed of under specific circumstances.

D. CDC Regulations/Requirements

- This section includes a description of the environmental regulations, policies, and requirements of the CDC. At this time, the CDC has not issued environmental regulations for its components.

E. Key Compliance Requirements

- Permits and Licenses for Landfills - CDC facilities must obtain applicable state or local permits and licenses for the site location and operation of landfills.

- Waste Source Separation and Recycling - CDC facilities are required to comply with state and local regulations and requirements governing the separation of wastes into residual value and the recycling of those materials.

- Use of Properly Permitted Offsite Landfills - CDC facilities have the responsibility for the proper disposal of solid waste generated by CDC operations. This responsibility includes assurance that offsite landfills that receive CDC solid wastes are licensed and operated in compliance with the conditions of those permits.

F. Responsibility for Compliance

- Sanitation Maintenance (Facilities Operations Branch) - responsible for the disposal of solid waste. No CDC facility runs its own solid waste collection system; contracted firms come to the facility and collect the waste for disposal.

G. Key Compliance Definitions

- *Aquifer* - a geological formation, group of formations, or a portion of a formation capable of yielding significant quantities of ground water 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 size precludes or complicates their handling by normal solid waste collection, processing, or disposal methods (40 CFR 243.101).

- *Collection* - the act of removing solid waste (or materials that 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 nonmanufacturing 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 presences of 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).

- *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)).

- *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 water 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* grades 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).

- *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).

- *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).

- *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 utilized 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)).

- *Separate Collection* - collection of recyclable materials that 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).

- *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).

- *Universal Precautions* - an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body 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)).

- *Vector* - a carrier, usually an arthropod, capable of transmitting a pathogen from one organism to another (40 CFR 240.202).

SOLID WASTE MANAGEMENT PROTOCOL

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Facilities	8-1 through 8-4	(1)(2)
Storage/Collection	8-5 through 8-12	(1)(2)(5)(10)(17)
Recycling	8-13 through 8-15	(1)(2)(17)
Medical Waste	8-16 through 8-21	(1)(2)(9)(10)(17)

(a)CONTACT/LOCATION CODE:

(1) Environmental Program Manager
(2) Facility Supervisor/Director
(5) Industrial Hygiene Section
(9) Medical Services
(10) Biosafety Branch
(17) Sanitation Maintenance Section (Facilities Operations Branch)

SOLID WASTE MANAGEMENT

Records to Review

- Record of current nonhazardous solid waste management practices
- Records of operational history of all active and inactive Treatment Storage Disposal Facilities (TSDFs)
- State and Federal inspection reports
- Environmental monitoring procedures or plans
- Records of resource recovery practices, including the sale of materials for the purpose of recycling
- Solid waste removal contracts and inspection records

Physical Features to Inspect

- Resource recovery facilities
- Incineration and land disposal facilities (active and inactive)
- Areas where nonhazardous waste is disposed of
- Construction debris areas
- Waste receptacles
- Solid waste vehicle storage and washing areas
- Compost Facilities

People to Interview

- Environmental Program Manager
- Facility Supervisor/Director
- Industrial Hygiene Section
- Medical Services
- Biosafety Branch
- Sanitation Maintenance Section (Facilities Operations Branch)

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL FACILITIES	
8-1. Determine actions or changes since previous review of solid waste management (GMP).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report. (1)
...	...
8-2. Copies of all relevant Federal, CDC, state, and local regulations and guidance documents on solid waste management should be available at the facility (GMP).	Verify that copies of the following regulations are available and kept current, as needed: (1)(2) - 7 CFR 330, *Federal Plant Pest Regulations, General, Plant Pests, Soil, Stone and Quarry Products, Garbage.* - 29 CFR 1910.1030, *Bloodborne Pathogens.* - 40 CFR 243, *Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste.* - Executive Order (EO) 12088, *Federal Compliance With Pollution Control Standards.* (NOTE: A consolidated listing of approved test methods should also be maintained at the facility: - *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* USEPA Publication SW-846, Document No. PB87-120-291.)
...	...
8-3. Facilities are required to abide by state and local solid waste regulations (EO 12088, Section 1-1).	Verify that the facility is abiding by state and local solid waste requirements. (1)(2) Verify that the facility is operating according to permits issued by the state or local agencies. (1)(2) (NOTE: Issues typically regulated by state and local agencies include: - license or permit requirements for existing onsite landfills - requirements for filing a closure plan for onsite landfills specifying monitoring and inspection procedures - design and operation specifications for solid waste receptacles - disposal of solid waste offsite only at licensed or permitted facilities - 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 waste - recycling requirements - disposal of household wastes - yard waste - used tires.)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (5) Industrial Hygiene Section (9) Medical Services (10) Biosafety Branch (17) Sanitation Maintenance Section (Facilities Operations Branch)

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-4. Facilities will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning solid waste have been issued since the finalization of the manual. (1)(2) Verify that the facility is in compliance with newly issued regulations. (1)(2)
...	...
STORAGE/ COLLECTION	
8-5. Facilities are required to store all solid wastes and materials separated for recycling according to specific guidelines (40 CFR 243.200-1).	(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.) Verify that all solid wastes are stored so as not cause a fire, health or safety hazard. (1)(2)(17) Verify that all solid waste containing food wastes are stored in covered or closed containers that are nonabsorbent, leakproof, durable, easily cleaned, and designed for safe handling. (1)(2)(17) Verify that solid waste containers are of an adequate size and number to contain all waste generated between collections. (1)(2)(17) 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)(17) Verify that reusable containers are capable of being serviced without the collector coming into contact with the waste. (1)(2)(17)
...	...
8-6. 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).	Verify that collection system is operated safely. (1)(2)(17)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (5) Industrial Hygiene Section (9) Medical Services (10) Biosafety Branch (17) Sanitation Maintenance Section (Facilities Operations Branch)

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-7. Facilities are required to maintain collection equipment according to certain standards if such equipment is considered to be operating in interstate or foreign commerce (40 CFR 243.202-1(a)).	Verify that all vehicles used for the collection and transportation of of solid waste meet all applicable standards established by the Federal Government including: (1)(2)(17) - *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).
...	...
8-8. All collection equipment is required to meet specific criteria (40 CFR 243.202-1(b) and 243.202-1(c)).	Verify that all vehicles used for collection and transportation of solid wastes or materials separated for recycling are enclosed and have suitable cover to prevent spillage. (1)(2)(17) Verify that equipment used in the compaction, collection, and transportation of solid waste or materials separated for recycling are constructed, operated, and maintained adequately. (1)(2)(17) Verify that the following types of equipment meet that standards established by the American National Standards Institute (ANSI): (1)(2)(17) - 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.
...	...
8-9. All facilities are required to collect solid wastes or materials separated for recycling according to a certain schedule (40 CFR 243.203-1).	Verify that solid wastes that contain food wastes are collected at a minimum of once during each week. (1)(2)(17) Verify that bulky wastes are collected at a minimum of once every 3 months (mo). (1)(2)(17) Verify that all wastes are collected with sufficient frequency to inhibit the propagation or attraction of vectors and the creation of nuisances. (1)(2)(17)
...	...
8-10. Facilities are required to collect solid wastes in a safe, efficient manner (40 CFR 243.204-1).	Verify that solid wastes or materials separated for recycling are collected in a safe efficient manner. (1)(2)(17) Verify that the collection vehicle operator immediately cleans up any spillage caused by his/her operations. (1)(2)(17)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (5) Industrial Hygiene Section (9) Medical Services (10) Biosafety Branch (17) Sanitation Maintenance Section (Facilities Operations Branch)

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-11. Facility industrial shop waste receptacles should be inspected quarterly to verify that hazardous wastes are not being deposited (GMP).	Verify that receptacles were inspected by reviewing records and interviewing personnel. (1)(2)(5)(10)(17) Verify that corrective actions were taken where indicated. (1)(2)(5)(10)(17) Verify by a visual check that hazardous waste is not present in the solid waste receptacles at shops. (1)(2)(5)(10)(17)
...	...
8-12. Facility personnel should be periodically informed about materials that are prohibited from disposal in solid waste receptacles (GMP).	Verify that a program exists at the facility to keep personnel informed about proper waste disposal practices. (1)(2)(5)(10)(17)
...	...
RECYCLING	
8-13. Facilities should participate in any state or local recycling programs and reduce the volume of solid waste materials at the source whenever practical (GMP).	Verify that a solid waste reduction program exists. (1)(2) Verify that recycling programs are in compliance with applicable state or local requirements. (1)(2) Verify that reusable or marketable materials are collected at regular intervals. (1)(2)
...	...
8-14. Facilities with office facilities of more than 100 office workers are required to recover high-grade paper (40 CFR 246.200-1).	Determine if the facility has more than 100 office workers. (1)(2) Verify that high-grade paper is separated at the source of generation. (1)(2) Verify that high-grade paper is separately collected. (1)(2) Verify that high-grade paper is recycled. (1)(2)
...	...
8-15. Any facility generating 10 or more tons of waste corrugated containers per month are required to segregate/separately collect them for recycling or alternative energy use (40 CFR 246.202-1).	Determine if the facility generates 10 or more tons of waste corrugated containers per month. (1)(2)(17) Verify that waste corrugated containers are collected separately. (1)(2)(17) Verify that waste corrugated containers are recycled or used as an alternative energy resource. (1)(2)(17)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (5) Industrial Hygiene Section (9) Medical Services (10) Biosafety Branch (17) Sanitation Maintenance Section (Facilities Operations Branch)

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
MEDICAL WASTE	
8-16. Contaminated reusable sharps are required to be placed in containers that 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)).	Verify that contaminated reusable sharps are placed in containers that are: (1)(2)(9)(10)(17) - puncture resistant - labeled or color coded - leakproof on the sides and bottom. Verify that reusable sharps contaminated with blood or other potentially infectious materials are not stored or processed in a manner that requires employees to reach by hand into the containers. (1)(2)(9)(10)(17)
...	...
8-17. Specimens of blood or other potentially infectious material are required to be placed in a container that prevents leakage during collection, handling, processing, storage, transport, or shipping and specific labeling and handling requirements followed (29 CFR 1910.1030(d)(2)(xiii)).	Verify that containers are: (1)(2)(9)(10)(17) - labeled and color coded - closed prior to being stored, transported or shipped. (NOTE: When the facility utilizes Universal Precautions in the handling of all specimens, the labeling/color-coding of specimens is not necessary if the containers are recognizable as containing specimens.) Verify that if outside contamination of the primary container occurs, it is placed in a second container. (1)(2)(9)(10)(17) Verify that if the specimens can puncture the primary container, the primary container is placed in a secondary container that is puncture resistant. (1)(2)(9)(10)(17)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (5) Industrial Hygiene Section (9) Medical Services (10) Biosafety Branch (17) Sanitation Maintenance Section (Facilities Operations Branch)

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-18. Contaminated sharps are required to be discarded immediately in containers meeting specific requirements (29 CFR 1910.1030(d)(4)(iii)(A)).	Verify that contaminated sharps are placed in containers that are: (1)(2)(9)(10)(17) - closeable - puncture resistant - leakproof on sides and bottoms - labeled or color coded. Verify that, during use, containers for contaminated sharps are: (1)(2)(9)(10)(17) - easily accessible - maintained upright throughout use - replaced routinely and not allowed to overfill. Verify that when the containers of contaminated sharps are being moved from the area of use, the containers: (1)(2)(9)(10)(17) - are closed - placed in a secondary container if leakage is possible. Verify that reusable containers are not opened, emptied, cleaned manually, or handled in any other manner that would expose employees to risk. (1)(2)(9)(10)(17)
...	...
8-19. 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)).	Verify that regulated wastes are placed in containers that: (1)(2)(9)(10)(17) - are closeable - constructed to contain all contents and prevent leakage of fluids - labeled or color coded - closed prior to removal. (NOTE: Regulated wastes that have been decontaminated need not be labeled or color coded.) Verify that if outside contamination of the regulated waste occurs, it is placed in a second container. (1)(2)(9)(10)(17)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (5) Industrial Hygiene Section (9) Medical Services (10) Biosafety Branch (17) Sanitation Maintenance Section (Facilities Operations Branch)

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-20. 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)).	Verify that receptacles with the potential for contamination are regularly inspected and decontaminated. (1)(2)(9)(10)(17)
...	...
8-21. 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)).	Verify that the labels: (1)(2)(9)(10)(17) - 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. (NOTE: Red bags or containers may be used as a substitute for labels.) (NOTE: The following are exempt from labeling requirements: - 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.) (NOTE: Regulated waste that has been decontaminated need not be labeled and color coded.)

(1) Environmental Program Manager (2) Facility Supervisor/Director (5) Industrial Hygiene Section (9) Medical Services (10) Biosafety Branch (17) Sanitation Maintenance Section (Facilities Operations Branch)

INSTALLATION:	COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Centers for Disease Control and Prevention	DATE:	REVIEWER(S):

STATUS NA C RMA	REVIEWER COMMENTS:

(1) Environmental Program Manager (2) Facility Supervisor/Director (5) Industrial Hygiene Section (9) Medical Services (10) Biosafety Branch (17) Sanitation Maintenance Section (Facilities Operations Branch)

Section 9

Special Pollutants Management

(Radon, Asbestos, PCBs and Noise)

SECTION 9

SPECIAL POLLUTANTS MANAGEMENT

A. Applicability

This section applies to all CDC facilities. Currently this section contains checklists for polychlorinated biphenyls (PCBs), asbestos, radon gas, and environmental noise. PCBs and asbestos are regulated on the Federal level by the U.S. Environmental Protection Agency (USEPA), though in some cases states have also promulgated regulations.

The *Special Pollutants Management* section is used to determine the compliance status of the management activities associated with:

- PCBs and in-service and out-of-service PCB Items
- the removal of asbestos from buildings and its ultimate disposal
- testing for potential radon exposure
- limiting environmental noise.

B. Federal Legislation

This section contains information on four special pollutants: Asbestos, Noise, PCBs, and Radon.

(NOTE: Additional pollutants may be added as the USEPA regulates other specific pollutants.)

- *Noise Control Act of 1972.* This Act, Public Law (PL) 92-574 (42 U.S. Code (USC) 4901-4918), as amended:

    1. establishes a means for effective coordination of Federal research and activities in noise control
    2. authorizes the establishment of Federal noise emission standards for products distributed in commerce
    3. provides information to the public respecting the noise emission and noise reduction characteristics of such products.

The following categories of products which produce noise are covered by the Act:

1. Construction equipment.
2. Transportation equipment (including recreational vehicles and related equipment).
3. Any motor or engine (including any equipment of which an engine or motor is an integral part).
4. Electrical or electronic equipment.

The following articles are not covered by the Act (42 USC 4902 (3)):

1. Aircraft, aircraft engines, propellers, or appliances.
2. Military weapons or equipment designed for combat use.
3. Rockets or equipment designed for research, or experimental or developmental work to be performed by the National Aeronautics and Space Administration (NASA).
4. Any other machinery or equipment designed for use in experimental work done by or for the Federal Government.

The manufacturer of a product is required to give notice to the prospective user about the level of the noise the product emits, or its effectiveness in reducing noise (42 USC 4907 (b)). Such notice may not be removed from the product or its container (42 USC 4909 (4)). The manufacturer is prohibited to remove or render ineffective any device or element of design incorporated into the product to control noise (42 USC 4909 (2)).

- *The Toxic Substances Control Act (TSCA).* This Act, as last amended in 1986, 15 USC 2601-2671, is the Federal legislation that deals with the control of toxic substances. The Act consists of three subchapters, one of which regulates the control of toxic substances, another that governs asbestos hazard emergency response, and another that regulates indoor radon abatement.

- *Toxic Substances (including PCBs)*

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 the development of such data should be the responsibility of those who manufacture and process such chemical substances and mixtures.

2. Adequate authority should exist to regulate chemical substances and mixtures that 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 unduly impede, or create unnecessary economic barriers to, technological innovation while fulfilling the primary purpose of this Act to ensure that such innovation and commerce in 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 the USEPA with 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)).

- *Asbestos*

The purpose of the Act regarding asbestos hazard is to:

1. provide for the establishment of Federal regulations that require inspection for asbestos-containing material (ACM) and implementation of appropriate response actions with respect to ACM in the Nation's schools in a safe and complete manner
2. mandate safe and complete periodic reinspection of school buildings following response actions, where appropriate
3. require the USEPA to conduct a study to find out the extent of the danger to human health posed by asbestos in public and commercial buildings and the means necessary 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) as an overseas school for dependents of members of the Armed Forces. Such identification, inspection, and management (including abatement) must,

subject to the preceding sentence, be carried out in a manner comparable to the manner in which a local educational agency is required to carry out such activities with respect to a school building under this Act (15 USC 2643(L)(2)).

- *Radon*

  The national long-term goal of the United States with respect to radon levels in building is that the air within buildings in the United States should be as free of radon as the ambient air outside of buildings (15 USC 2661).

  The head of each Federal Department or Agency that owns a Federal building must conduct a study for the purpose of determining the extent of radon contamination in such buildings. Such study must include, in the case of a Federal building using a nonpublic water source (such as a well or other groundwater), radon contamination of the water. The study must be based on design criteria specified by the USEPA.

  The 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)).

- *The Hazardous Materials Transportation Act* as amended in 1978 regulates the transport of asbestos materials. The regulations are contained in 49 CFR 172-177. In particular, 49 CFR 177 requires that asbestos must be loaded, handled, and unloaded in a manner that will minimize occupational exposure to airborne asbestos. Asbestos wastes that are transported for disposal at a landfill or other disposal facility must meet all applicable requirements.

C. State/Local Requirements

- *Asbestos*

  Many state and local governments have enacted standards more stringent than the Federal requirements concerning certification of asbestos workers and disposal of asbestos waste. If the facility is engaging in asbestos removal or disposal, contact the appropriate state and local agencies.

- *Noise*

  State, regional and local governmental agencies may develop zoning and planning ordinances that have the potential to effect Agency facilities and their operations. As a general rule, states tend to treat environmental noise as a source-specific pollutant whose emissions will be controlled by the locally affected community.

- *PCBs*

According to the general structure of Federal regulatory programs, any state regulations must adopt the Federal regulations as a minimum set of requirements. In some cases, state regulations have been developed that 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 sensitive activity 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 (i.e., 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.
- Analysis 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.

- *Radon*

State and local governments may enact radon control standards.

D. CDC Regulations/Requirements

- This section includes a description of the environmental regulations, policies, and requirements of the CDC. At this time, the CDC has not issued environmental regulations for its components.

E. Key Compliance Requirements

- *PCBs*

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 (less the fluid) must be disposed of in a specially licensed landfill.

- *Asbestos*

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. CDC Facilities involved in the demolition or renovation of buildings that contain asbestos are affected by these regulations. USEPA notification must be given if renovation or demolition is planned. Facilities that are involved in these activities must control 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 leak-proof containers with proper hazard labeling.

- *Radon*

SUGGESTED MITIGATION TIME FRAME

Radon Level (picoCuries/liter (pCi/L))	Mitigate:
Greater than 200[1]	1 mo or move the occupants
200-20[1]	6 mo
20-8[2]	1-4 yr[3]
8-4[2]	5 yr
4 or less[1]	No action required

[1]Determine by 90-day screen or a 1-yr measurement in the case of Priority 2 and 3 structures.
[2]Annual average determined by 1-yr measurement. Screening measurements in this range will not be used as the basis for initiating mitigation actions.
[3]Depending on the level of the measurement.

F. Responsibility for Compliance

- Electrical Section (Facilities Operations Branch) - responsible for the maintenance of all electrical equipment on CDC properties, including testing for the presence of PCBs, and maintaining PCB records.

- Asbestos Program Manager (Industrial Hygiene Section) - responsible for the asbestos program on CDC properties.

G. Key Compliance Definitions

- *Adequately Wetted* - sufficiently mixed or penetrated with liquid to prevent the release of particulates (40 CFR 61.14).

- *Asbestos* - substances composed of or derived from actinolite, amosite, anthophyllite, chrysotile, crocidolite, or tremolite (40 CFR 61.14).

- *Asbestos-containing Waste Materials* - means mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of 40 CFR 141. This term also includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. However, as applied to demolition and renovation operations, this term includes regulated ACM waste and materials contaminated with asbestos including disposable equipment and clothing (40 CFR 61.141).

- *Asbestos Material* - asbestos or any material containing asbestos (40 CFR 61.141).

- *Asbestos Waste from Control Devices* - any waste material that contains asbestos and is collected by a pollution control device (40 CFR 61.141).

- *Capacitor* - a device for accumulating and holding a charge of electricity and consisting of conducting surfaces separated by a dielectric. Types of capacitors are as follows (40 CFR 761.3):
    1. *Small Capacitor* - a capacitor that contains less than 1.36 kilograms (kg) (3 pounds (lb)) of dielectric fluid.
    2. *Large High-voltage Capacitor* - a capacitor that contains 1.36 kg (3 lb) or more of dielectric fluid and that operates at 2000 volts (V) (ac or dc) or above.
    3. *Large Low-voltage Capacitor* - a capacitor that contains 1.36 kg (3 lb) or more of dielectric fluid and that operates at 2000 V (ac or dc).

- *Category I Nonfriable ACM* - asbestos-containing packing, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos (40 CFR 61.141).

- *Category II Nonfriable ACM* - any material including Category I nonfriable ACM containing more than one percent asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure (40 CFR 61.141).

- *Chemical Waste Landfill* - landfill at which protection against risk of injury to health or the environment from mitigation of PCBs to land, water, or the atmosphere is provided from PCBs and PCB Items deposited therein by locating engineering, and operations, the landfill as req ired (40 CFR 761.3).

- *Commercial Asbestos* - any material containing asbestos that is extracted from ore and has value because of its asbestos content (40 CFR 61.141).

- *Commercial Storer of PCB Waste* - the owner or operator of each facility that is subject to the PCB storage facility standards of 40 CFR 761.65, and who engages in storage activities involving PCB waste generated by others, or PCB waste that was removed while servicing the equipment owned by others and brokered for disposal. The receipt of a fee or any other forms of compensation for services is not necessary to qualify as a commercial storer of PCB waste. It is sufficient under this definition that the facility stores PCB waste generated by others or the facility removed the PCB waste while servicing equipment owned by others. If a facility's storage of PCB waste at no time exceeds 1895 liters (L) (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).

- *Cutting* - to penetrate with a sharp-edged instrument and includes sawing, but does not include shearing, slicing, or punching (40 CFR 61.141).

- *dBA* - sound level in decibels, measured using the A-weighting network of a sound level meter.

- *dBC* - a sound level in decibels, measured using the C-weighting network of a sound level meter

- *Decibel (dB)* - sound is measured in decibels. The zero on the decibel scale is based on the lowest sound level that a healthy, unimpaired human ear can hear. Decibels are not linear, but representative points on a sharply rising (exponential) curve.

- *Demolition* - the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of a facility (40 CFR 61.141).

- *Disposal* - intentionally or accidentally to discard, throw away, or otherwise complete or terminate the useful life of PCBs and PCB Items (40 CFR 761.3).

- *Double Wash/Rinse* - a minimum requirement to cleanse solid surfaces (both impervious and 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 Renovation Operation* - a renovation operation that was not planned but results from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, is necessary to protect equipment from damage or is necessary to avoid imposing an unreasonable financial burden. This term includes operations necessitated by nonroutine failures of equipment (40 CFR 61.141).

- *Emergency Situations* - for continuing use of a PCB transformer exists when (40 CFR 761.3):
    1. neither a non-PCB transformer nor a non-PCB-contaminated transformer is currently in storage for reuse or readily available within 24 hours (h) for installation
    2. immediate replacement is necessary to continue service for power users.

- *Environmental Noise* - noise sources that interferes with desired activities, or cause annoyance. These desired activities include but are not limited to, sleep, recreation, and speech. Environmental noise also is 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.

- *Facility Component* - any part of any facility, including equipment (40 CFR 61.141).

- *Friable Asbestos Material* - any material that contains more than 1 percent asbestos by weight and can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure (40 CFR 61.141).

- *Fugitive Source* - any source of emissions not controlled by an air pollution control device (40 CFR 61.141).

- *Glove Bag* - a sealed compartment with attached inner gloves used for the handling of ACMs (40 CFR 61.141).

- *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 that 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 (m) (98 feet (ft)) of a nonindustrial, nonsubstation building (40 CFR 761.3).

- *In Poor Condition* - the binding of the materials is losing its integrity as indicated by peeling, cracking, or crumbling of the material (40 CFR 61.141).

- *Inactive Waste Disposal Site* - any disposal site or portion of it where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic (40 CFR 61.141).

- *Industrial Building* - a building directly used in manufacturing or technically productive enterprises (40 CFR 761.3).

- *Leak or Leaking* - any instance in which a PCB article, PCB container, or PCB equipment has any PCBs on any portion of its external surface (40 CFR 761.3).

- *Low Concentration PCBs* - PCBs that are tested and found to contain less than 500 ppm PCBs or those PCB-containing materials that the 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).

- *Marking* - the marking of PCB Items and PCB storage areas and transport vehicles by means of applying a legible mark by painting, fixation of an adhesive label, or by any other method that meets the requirements of these regulations (40 CFR 761.3).

- *Mineral Oil PCB Transformers* - any transformer originally designed to contain mineral oil as the dielectric fluid and that 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 PCB except that any transformer that has been converted from a PCB transformer or a PCB-contaminated transformer cannot be classified as a non-PCB transformer until reclassification has occurred in accordance with the requirements of 40 CFR 761.30(a)(2)(v) (40 CFR 761.3).

- *Non-scheduled Renovation* - a renovation operation necessitated by the routine failure of equipment, that is expected to occur within a given period based on past operating experience, but for which an exact date cannot be predicted (40 CFR 61.141).

- *Outside Air* - the air outside buildings and structures, including but not limited to, air under a bridge or an open ferry dock (40 CFR 61.141).

- *PCB or PCBs* - an chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances that contains such substance (40 CFR 761.3).

- *PCB Article* - any manufactured article, other than a PCB container, that contains PCBs and whose surface(s) has been in direct contact with PCBs. This includes capacitors, transformers, electric motors, pumps, and pipes (40 CFR 761.3).

- *PCB Article Container* - any package, can, bottle, bag, barrel, drum, tank, or other device used to contain PCB articles or PCB equipment, and whose surface(s) has not been in direct contact with PCBs (40 CFR 761.3).

- *PCB-Contaminated Electrical Equipment* - any electrical equipment, including but not limited to transformers, capacitors, circuit breakers, reclosers, voltage, regulators, switches, electromagnets, and cable, that contain 50 ppm or greater PCB, but less than 500 ppm PCB (40 CFR 761.3).

- *PCB Equipment* - any manufactured item, other than a PCB container or a PCB article container, that contains a PCB article or other PCB equipment, and includes microwave ovens, electronic equipment, and fluorescent light ballasts and fixtures (40 CFR 761.3).

- *PCB Item* - any PCB Article, PCB Article Container, PCB Container, or PCB Equipment, that deliberately or unintentionally contains or has as a part of it any PCB or PCBs (40 CFR 761.3).

- *PCB Transformer* - any transformer that contains 500 ppm PCB or greater (40 CFR 761.3).

- *PCB Waste* - those PCBs and PCB Items that are subject to the disposal requirements of Subpart D of 761 (40 CFR 761.3).

- *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 the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time based on operating experience (40 CFR 61.141).

- *Posing an Exposure Risk to Food or Feed* - being in any location where human food or animal feed products could be exposed to PCBs released from a PCB Item (40 CFR 761.3).

- *Radon-222* - a naturally occurring, inert, radioactive gas that is formed from the radioactive decay of uranium.

- *Regulated Asbestos-Containing Material (RACM)* - includes friable asbestos material; Category I nonfriable ACM that has become friable; Category I nonfriable ACM that has been subjected to grinding, casting, cutting, or abrading; and Category II nonfriable ACM that has a high probability of becoming crumbled, crushed, or pulverized (40 CFR 61.141).

- *Remove* - to take out RACM from any structure (40 CFR 61.141).

- *Renovation* - altering in any way one or more structure components. Operations in which load-supporting structural members are wrecked or taken out are excluded (40 CFR 61.141).

- *Retrofill* - to remove PCB or PCB contaminated dielectric fluid and replace it with either PCB, PCB contaminated, or non-PCB dielectric fluid (40 CFR 761.3).

- *Rupture of a PCB Transformer* - a violent or nonviolent break in the integrity of a PCB Transformer caused by an overtemperature and/or overpressure condition that results in the release of PCBs (40 CFR 761.3).

- *Strip* - to take off RACM from any part of a facility (40 CFR 61.141).

- *Structural Member* - any load-supporting member of a structure, such as beams and load-supporting walls; or any nonload-supporting member, such as ceilings and nonload-supporting walls (40 CFR 61.141).

- *Visible Emissions* - any emissions that are visually detectable without the aid of instruments, coming from RACM or asbestos containing waste material, or from any asbestos milling, manufacturing, or fabricating operation. This does not include condensed water vapor (40 CFR 61.141).

SPECIAL POLLUTANTS MANAGEMENT

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Facilities	9-1 through 9-4	(1)(2)
PCBs		
General	9-5 through 9-9	(1)(2)(5)(9)(18)
Records	9-10 and 9-11	(1)(2)(5)(18)
Transformers	9-12 through 9-19	(1)(2)(5)(6)(18)
Spills	9-20 through 9-22	(1)(2)(5)(18)
PCB Items	9-23 through 9-26	(1)(2)(5)(18)
Research	9-27	(1)(2)(5)(18)
Storage	9-28 through 9-32	(1)(2)(5)(18)
Transportation	9-33 and 9-34	(1)(2)(5)(18)
Disposal	9-35 through 9-46	(1)(2)(5)(18)
Asbestos		
General	9-47	(1)(2)(19)
Renovation and Demolition	9-48 through 9-57	(1)(2)(19)
Disposal	9-58 and 9-59	(1)(2)(19)
Radon	9-60 through 9-62	(1)(2)(6)
Noise	9-63 and 9-64	(1)(2)(5)

(a)CONTACT/LOCATION CODE:

(1) Environmental Program Manager
(2) Facility Supervisor/Director
(5) Industrial Hygiene Section
(6) Radiation Protection & Fire Safety Section
(9) Medical Services
(18) Electrical Section (Facilities Operations Branch)
(19) Asbestos Program Manager (Industrial Hygiene Section)

SPECIAL POLLUTANTS MANAGEMENT

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
- Asbestos management plan and operating plan
- Notifications to regulators concerning asbestos disposal
- Records of onsite disposal and transportation and offsite disposal of asbestos
- Regulatory inspection reports
- Documentation of asbestos sampling and analytical results
- Documentation of preventive measure or action
- Results of air sampling at the conclusion of response action
- Records of asbestos training program
- List of buildings insulated with asbestos or housing ACMs
- Record of demolition or renovation projects completed in the past 5 yr that involve friable asbestos
- Decision documents / Records of Decision (ROD)
- Administrative Record
- A-106 Pollution Abatement Plan
- Facility Master Plan Document
- Complaint log from local community
- Spill Prevention, Control, and Countermeasures (SPCC) plan
- Installation Spill Cleanup Plan (ISCP)
- Copies of any state regulations on the use and/or disposal of special pollutants (if applicable)

Physical Features to Inspect

- PCB storage areas
- Equipment, fluids and other items used or stored at the facility containing PCBs
- Pipe, spray-on, duct, and troweled cementitious insulation and boiler lagging
- Ceiling and floor tiles
- Power generating or other noise
- Emergency generators

People to Interview

- Environmental Program Manager
- Facility Supervisor/Director
- Industrial Hygiene Section
- Radiation Protection & Fire Safety Section
- Medical Services
- Electrical Section (Facilities Operations Branch)
- Asbestos Program Manager (Industrial Hygiene Section)

COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL FACILITIES	
9-1. Determine actions or changes since previous review of special pollutants management (GMP).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report. (1)
...	...
9-2. Copies of all relevant Federal, CDC, state, and local regulations and guidance documents on PCB, Asbestos, Radon Gas and Noise management should be available at the facility (GMP).	Verify that copies of the following regulations are available and kept current, as needed: (1)(2) - 40 CFR 61, Subpart M, *National Emission Standards for Hazardous Air Pollutants.* - 40 CFR 761, *PCB Manufacturing, Processing, Distribution in Commerce and Use Prohibitions.* - Executive Order (EO) 12088, *Federal Compliance With Pollution Control Standards.*
...	...
9-3. Facilities are required to abide by state and local regulations (EO 12088, Section 1-1).	Verify that the facility is abiding by state 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 typically regulated by state and local agencies include: - definitions of PCB-contaminated - PCB storage, labeling, and disposal requirements - certification of individuals sampling and/or working with asbestos - renovation and demolition procedures - asbestos handling and disposal procedures - motor vehicle noise - construction noise.)
...	...
9-4. Facilities must meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning special programs issues have been issued since the finalization of the manual. (1)(2) Verify that the facility is in compliance with newly issued regulations. (1)(2)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

PCBs
 	
General
 	
9-5. Certain regulations and practices should be followed to ensure the health of personnel who come in contact with PCBs (GMP).
	Verify that personnel are instructed to practice the following: (1)(2)(5)(18)
	
	- wash hands and exposed skin during workshift before:
	  - eating
	  - drinking
	  - smoking
	  - using toilet facilities
	- shower thoroughly before changing into street clothes.
	
	Verify that protective clothing is provided and worn when working with PCBs: (1)(2)(5)(18)
	
	- gloves
	- boots
	- overshoes
	- coveralls
	- safety glasses
	- face shields.

...	...
9-6. Airborne contamination of PCBs should be assessed and certain precautionary practices to protect personnel must be followed (GMP).	Determine if measurements are made of air in the workplace to determine if airborne PCB contamination is present. (1)(5)(18) Verify that if the contamination level is at or above 0.5 milligram (mg) PCB/cubic meter: (1)(5)(18) - respirators are worn by all personnel - nondisposable equipment and clothing are thoroughly washed before being stored for reuse.
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-7. Certain records and practices should be enacted for employees exposed to PCBs (GMP).	Verify that employees with potential exposure to PCBs are given medical examinations that include: (1)(5)(9)(18) - medical history - physical examination emphasizing liver function and skin condition. Verify that the liver function tests include: (1)(5)(9)(18) - serum glutamic oxaloacetic transaminase (SGOT) - serum glutamic pyruvic transaminase (SGPT) - gamma glutamyl transpeptidase (GGTP). Verify that if respirators are used, each employee is checked annually for ability to work using such equipment. (1)(5)(9)(18) Verify that records and results of medical examinations are maintained for at least 40 yr after the termination of employment. (1)(5)(9)(18)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-8. Certain equipment that contains PCBs must be marked with an M_L marking (40 CFR 761.40 and 761.45).	(NOTE: Marking Format Large PCB Mark (M_L) 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 centimeter (cm) (6 inches (in.)) on each side. If the article is too small to accommodate this size, a smaller label (M_S) may be used.) Inspect equipment containing PCBs and verify that they are marked with an M_L marking easily read by any person inspecting or servicing the equipment (See Appendix 9-1 for a sample of the marking): (1)(2)(5)(18) - 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 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). 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)(18) (NOTE: Marking of PCB-contaminated Electrical Equipment (50 - 500 ppm) is not required.) (NOTE: Appendix 9-2 contains a list of manufacturers that produced PCB-contaminated dielectric fluid.)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS	**REVIEWER CHECKS**
9-9. Generators, transporters, and disposers of PCB waste are required to have a USEPA ID No. (40 CFR 761.202 through 761.205).	(NOTE: Some facilities are exempt from the notification requirement and do not have a specified PCB storage area as regulated by 40 CFR 761.65 and just temporarily store before they transport for disposal.) Determine if the facility is a generator, transporter, or disposer of PCB waste. (1)(2)(5)(18) Verify that facilities that generate PCB waste have a USEPA ID No. before processing, storing, dispensing, transporting, or offering for transport PCB waste. (1)(2)(5)(18) Verify that facilities that transport or disposed of PCB waste have an USEPA ID No. (1)(2)(5)(18) (NOTE: If the facility must file, check that Form 7710-53, *Notification of PCB Waste Activity,* was filed with the USEPA by 4 April 1990 and a USEPA ID No. obtained.)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

Records
 	
9-10. 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 lb) of PCBs contained in PCB Containers or one or more PCB Transformers (500 ppm or greater, or 50 or more PCB Large, High, or Low Voltage Capacitors (40 CFR 761.180(a)).
	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)(18)
	
	Review the written annual document log for the following: (1)(2)(5)(18)
	
	- 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:
	  - 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 the 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.
	
	Verify that the annual document log contains the following for each manifest, for unmanifested waste, and for any PCBs or PCB Items received or shipped from another facility owned or operated by the generator: (1)(2)(5)(18)
	
	- 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
	  - 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 kilograms) 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.

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-10. (continued)	Review the annual record and determine if the following information is provided: (1)(2)(5)(18) - 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.
...	...
9-11. Storage and disposal facilities for PCBs shall maintain specific records for 3 yr (40 CFR 761.180(f)).	Verify that facilities that store or dispose of PCBs collect and maintain the following records for 3 yr: (1)(2)(5)(18) - all documents and correspondence and data that have been provided by any state or local government - all documents, correspondence, and data provided to the state or local governments by the facility - any applications and related correspondence concerning wastewater discharge permits, solid waste permits, building permits, or other permits and authorizations.
...	...
Transformers	
9-12. PCB Transformers with PCBs 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)).	Review PCB inventory for any PCB Transformers on the facility, in use or in storage for reuse, that pose an exposure risk to food and feed. (1)(2)(5)(18)
...	...
9-13. PCB Transformers with concentrations of PCBs of 500 ppm or greater are subject to certain registration requirements (40 CFR 761.30(a)(1)(vi)).	Verify that all PCB Transformers, including those in storage for reuse, are registered with facility fire department, or the fire department with jurisdiction, with the following information: (1)(2)(6)(18) - 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).
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-14. Combustible materials, including but not limited to paints, solvents, plastics, paper, and sawn wood, must not be stored by a PCB Transformer (40 CFR 761.30(a)(1)(viii)).	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 (16 ft) of a PCB Transformer or PCB Transformer enclosure. (1)(2)(6)(18)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-15. PCB Transformers of 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)). ...	Review PCB inventory for any transformers located in or near commercial buildings. (1)(2)(5)(18) Verify procedure/policy exists prohibiting installation of PCB Transformers that have been placed into storage for reuse or that have been removed from another location. (1)(2)(5)(18) Verify that there are no network PCB Transformers with higher secondary voltages (equal to or greater than 430 volts (V), including 480/277 V systems) in or near commercial buildings. (1)(2)(5)(18) 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)(18) - Radial PCB Transformers and lower secondary voltage network PCB Transformers (voltage less than 480 V) - Radial PCB Transformers with higher secondary voltages (greater than or equal to 480 V including 480/277 V system). Determine if lower secondary voltage network PCB Transformers that 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)(18) 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)(18) - 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. 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)(18) If PCB Transformers are in use in or near commercial buildings, confirm that they have been registered with the Directorate of Engineering and Housing (DEH) and the following information provided: (1)(2)(5)(18) - specific location of PCB Transformer(s) - principal constituent of dielectric fluid (i.e., PCBs, mineral oil, silicone oil, etc.) - type of transformer. ...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-16. PCB Transformers are required to be properly serviced (40 CFR 761.30(a)(2)).	Verify that servicing activities are properly conducted as follows: (1)(2)(5)(18) - transformers classified as PCB-contaminated Electrical Equipment (50 - 500 ppm PCBs) are only serviced with dielectric fluid containing less than 500 ppm PCB - the transformer coil is not removed during servicing of PCB Transformers with PC 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 with PCB concentrations of 500 ppm or greater are not mixed with or added to dielectric fluid from PCB-contaminated Electrical Equipment (50 - 500 ppm PCBs) - dielectric fluids containing less than 500 ppm PCBs 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 PCBs). (NOTE: PCB Transformers may be serviced with dielectric fluid at any concentration.)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-17. Inspections must be performed once every 3 mo for all in-service PCB Transformers with greater than 500 ppm PCB (40 CFR 761.30(a)(1)(ix) and 761.30(a)(1)(xii) through 761.30(a)(1)(xiv)).	Review inspection records to verify that applicable transformers are inspected at least once every 3 mo. (1)(2)(5)(18) Determine whether any PCB Transformers have been leaking. (1)(2)(5)(18) Verify that proper reporting procedures have been followed if any leaking transformers have been discovered. (1)(2)(5)(18) Verify that the following information is recorded for each PCB Transformer inspection: (1)(2)(5)(18) - 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. (NOTE: Reduced visual inspections 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.) (NOTE: Increased visual inspections of once a week is required for any PCB Transformer in use or stored for reuse that poses an exposure risk to food or feed.) Verify that records of inspection and maintenance are kept for 3 yr after disposal. (1)(2)(5)(18)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-18. PCB Transformers with PCB concentrations of 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)).	Determine if cleanup and/or containment of released PCBs has been initiated within 48 h of its detection or as soon as possible. (1)(2)(5)(18) Verify that leaking PCB Transformers are inspected daily. (1)(2)(5)(18) Determine if plans exist to repair or replace transformers to eliminate the source of the leak. (1)(2)(5)(18) Verify that cleaned up material is disposed of according to appropriate requirements. (1)(2)(5)(18)
...	...
9-19. When a PCB Transformer with concentrations of PCBs 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)).	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)(18) Verify that the NRC was notified and the following measures were taken: (1)(2)(5)(18) - floor drains were blocked - water runoff was contained.
...	...
Spills	
9-20. Facilities are required to report spills of more than 4.5 kilograms (kg) (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)).	Verify that when a spill of 4.5 kg (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)(18) Verify that if a spill of 4.5 kg (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 spill cleanup. (1)(2)(5)(18) Verify that when a spill of 4.5 kg (10 lb) or more occurs that 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)(18) (NOTE: Spills of greater than 0.45 kg (1 lb) are required to be reported to the NRC under 40 CFR 302.1 through 302.6. See applicable checklist items in *Hazardous Materials Management.*)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-21. Cleanup of low concentration spills of less than 0.45 kg (1 lb) of PCBs (less than 1023 L (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)).	Verify that solid surfaces are double washed/rinsed and all indoor, residential surfaces other than vault areas are cleaned to 10 micrograms (μg)/100 cm^2 by standard commercial wipe tests. (1)(2)(5)(18) Verify that all soil within the spill area (visible traces of soil and buffer of 0.30 lateral m (1 lateral 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)(18) Verify that the above cleanup requirements are done within 48 h after identifying the spill unless an emergency or adverse weather delays the process. (1)(2)(5)(18) Verify that the cleanup is documented with records and certification of decontamination and the records are maintained for 6 yr. (1)(2)(5)(18) (NOTE: The final numerical cleanup standards do not apply to spills directly into surface waters, drinking water, sewers, grazing lands, and vegetable garden.) (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 groundwater contamination.)
...	...
9-22. Cleanup of high-concentration spills and low concentration spills involving 0.45 kg (1 lb) or more of PCBs by weight (1023 L (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)).	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)(18) - 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 0.6 m (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. Verify that if the spill occurs in an outdoor substation: (1)(2)(5)(18) - contaminated solid surfaces are cleaned to a PCB concentration of 100 $\mu g/cm^2$ (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.

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-22. (continued)	Verify that if the spill occurs in a restricted access area other than an outdoor substation: (1)(2)(5)(18) - high-contact solid surfaces are cleaned to 10 μg/ 100 cm^2 (as measured by standard wipe tests) - low-contact, indoor, impervious solid surfaces are decontaminated to 10 μg/ 100 cm^2 - low contact, indoor, nonimpervious surfaces are cleaned to either 10 μg or 100 μg/ 100 cm^2 and encapsulated at the option of the facility - low-contact, outdoor surfaces (both impervious and non-impervious are cleaned to 100 μg/ 100 cm^2 - soil contaminated by the spill is cleaned to 25 ppm PCBs by weight - post-cleanup sampling is done. Verify that spills in nonrestricted access locations are decontaminated as follows: (1)(2)(5)(18) - 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 cm^2 (as measured by standard wipe tests) - indoor vault areas and low-contact, outdoor, impervious solid surfaces are decontaminated to 10 μg/ 100 cm^2 - at the option of the facility, low-contact, outdoor, nonimpervious solid surfaces are cleaned to either 10 or 100 μg/ 100 cm^2 and encapsulated - soil is decontaminated to 10 ppm PCBs by weight provided that the soil is excavated to a minimum depth of 25 cm (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)(18) (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 groundwater contamination.)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
PCB Items	
9-23. PCBs may be used in heat transfer and hydraulic systems in a manner other than a totally enclosed manner at concentrations less than 50 ppm if specific requirements are met (40 CFR 761.30(d) through 761.30(e)).	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)(5)(18) Verify that no fluid containing greater than 50 ppm PCB is added to heat transfer or hydraulic systems. (1)(2)(5)(18) 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)(5)(18) Verify that heat transfer or hydraulic systems are free from leaks of dielectric PCBs. (1)(2)(5)(18)
...	...
9-24. Electromagnets, switches, and voltage regulators may contain PCBs at any concentrations if certain requirements are met (40 CFR 761.30(h)).	Verify that no electromagnets are used or stored at the facility that contain greater than 500 ppm PCB and pose an exposure risk to food or feed. (1)(2)(5)(18) Verify that electromagnets that contain greater than 500 ppm PCB and that pose an exposure risk to food or feed are inspected at least weekly to determine if they are leaking. (1)(2)(5)(18) 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)(2)(5)(18) Verify that electromagnets, switches, and voltage regulators that contain between 50 and 500 ppm PCB (PCB-contaminated Electrical Equipment) are only serviced with dielectric fluid with concentration less than 500 ppm PCB. (1)(2)(5)(18) Verify that PCBs removed or captured are either reused as dielectric fluid or disposed of properly. (1)(2)(5)(18) Verify that dielectric fluid containing a mixture of fluids with less than 500 ppm PCBs are not used as dielectric fluid in any electrical equipment. (1)(2)(5)(18)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-25. Capacitors may contain PCBs at any concentration subject to certain requirements (40 CFR 761.30(l)).	Verify that all PCB Large, High- and Low-Voltage Capacitors that pose an exposure risk to food and feed have been removed. (1)(2)(5)(18) 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)(2)(5)(18) Verify that Capacitors have been free from leaks of dielectrical PCBs. (1)(2)(5)(18)
...	...
9-26. 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)).	Verify that any circuit breakers, reclosers, and cables used at the facility are serviced using only dielectric fluid that contains less than 50 ppm PCB and have been free from leaks. (1)(2)(5)(18)
...	...
Research	
9-27. The use of pigments containing PCBs in research or microscopy or in miscellaneous items is subject to certain conditions (40 CFR 761.30(g), 761.30(j), and 761.30(k)).	Verify that pigments used at the facility contain PCBs in concentrations less than 50 ppm. (1)(2)(5)(18) Verify that pigments are handled in enclosed conditions. (1)(2)(5)(18)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Storage	
9-28. 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 761.65(b)).	Verify that the following provisions are present by inspecting the PCB storage area: (1)(2)(5)(18) - the roof and walls of the building in which the PCBs are stored must be constructed so as to exclude rainfall from contacting PCBs and PCB Items - a 15-cm(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, are not present - floors and curbing are constructed of continuous, smooth, and impervious material - location is not below a 100-yr flood water elevation. 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)(18)
...	...
9-29. 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)).	Verify that only the following items are properly marked and stored in areas used as a 30-day storage area: (1)(2)(5)(18) - nonleaking PCB Articles and PCB Equipment - leaking PCB Articles and PCB Equipment placed in a nonleaking PCB Container that contains sufficient material to absorb liquid contained on the PCB Article or Equipment - PCB Containers in which nonliquid PCBs have been placed - PCB Containers in which liquid PCBs at a concentration between 50-500 ppm have been placed when Containers are marked to indicate less than 500 ppm PCB. Verify that area has been included in the facility SPCC plan. (1)(2)(5)(18)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-30. Nonleaking and structurally undamaged PCB Large, High-Voltage Capacitors and PCB-contaminated Electric Equipment that have not been drained of freeflowing dielectric fluid may be stored on pallets next to a storage area that complies with the storage area requirements (40 CFR 761.65(c)(2)).	Determine if available unfilled storage space in the storage area is is equal to at least 10 percent of the volume of capacitors and electrical equipment stored outside. (1)(2)(5)(18) Verify that capacitors and equipment stored outside the storage facility are on pallets and inspected at least weekly. (1)(2)(5)(18)
...	...
9-31. Specific operational procedures are required at PCB storage areas (40 CFR 761.65 (c)(4), 761.65(c)(5), and 761.65(c)(8)).	Verify that the following practices are conducted at any areas where PCBs or PCB Items are stored: (1)(2)(5)(18) - movable equipment used for handling PCBs and PCB Items that directly contact PCBs is not removed from storage area 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 properly disposed - 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.
...	...
9-32. 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) and 761.65(c)(7)).	Inspect PCB storage area for containers. (1)(2)(5)(18) Verify that DOT specifications are on drums/containers. Typical specifications are 5, 5B, 17C. (1)(2)(5)(18) (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.) Verify that containers used for storage of liquid PCBs are containers without removable heads. (1)(2)(5)(18) Verify that if the facility uses containers larger than DOT-approved containers, that it has prepared an SPCC plan covering the containers storing PCBs. (1)(2)(5)(18)

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COMPLIANCE CATEGORY:
SPECIAL POLLUTANTS MANAGEMENT
Centers for Disease Control and Prevention

REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
Transportation	
9-33. 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).	(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 500 ppm by dilution.) Verify, using USEPA Form 8700-22, that a manifest has been prepared when needed and that it contains: (1)(2)(5)(18) - 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 - the unique ID No. 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. 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)(18) 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)(18)
...	...
9-34. 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)).	Verify that a procedure is in place so that if the generator does not receive a copy within 35 days of the date the waste was accepted by the initial transporter, an Exception Report was filed with the USEPA containing the following information: (1)(2)(5)(18) - 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.
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Disposal **9-35.** For each shipment of manifested PCB waste that a disposal facility accepts, the owner or operator of the disposal facility must prepare a Certificate of Disposal (40 CFR 761.218). ...	Verify that a Certificate of Disposal has been prepared containing the following information: (1)(2)(5)(18) - the identity of the disposal facility: by name, address, and USEPA ID No. - the identity of the PCB waste affected by the Certificate including reference to the manifest number for the shipment - a certification as defined in 40 CFR 761.3. Verify that a copy of the Certificate was: (1)(2)(5)(18) - sent to the generator identified on the manifest within 30 days of the date that disposal of the PCB waste was completed - retained at the facility with the annual report. ...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

9-36. PCB-contaminated fluids other than mineral oil dielectric fluid of concentrations greater than 50 ppm but less than 500 ppm are required to be disposed of according to specific requirements (40 CFR 761.60(a)(3)).	Determine if any PCB fluids meeting these criteria were processed for disposal in the last year. (1)(2)(5)(18)
	
	Verify that disposal was done at: (1)(2)(5)(18)
	
	- a USEPA-approved incinerator
	- a USEPA-approved chemical waste landfill
	- a high efficiency boiler.
	
	Verify that if the fluid is burned in an high efficiency boiler: (1)(2)(5)(18)
	
	- the boiler is rated at a minimum of 50 MBTU/h
	- the carbon monoxide (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 ten 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:
	  - 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 minutes (min) if the boiler will burn less than 113,700 L (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.
	
	Verify that before burning waste fluid, approval has been obtained from the USEPA Regional Administrator. (1)(2)(5)(18)
	
	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)(18)
	
	- emissions data
	- the quantity of waste fluid burned in the boiler each month
	- a waste analysis.
	
	Verify that such PCB fluids were disposed of by an approved method at a properly licensed facility. (1)(2)(5)(18)

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-37. PCB liquids greater than 50 ppm must be disposed of in an incinerator approved by the USEPA for incinerating PCBs (40 CFR 761.60(a)(1)).	Verify that all shipments were made to USEPA-licensed PCB incinerators by reviewing manifests for PCB shipments over the past 3 yr. (1)(2)(18) (NOTE: Other disposal provisions apply to: - 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 PCB at concentrations greater than 50 ppm - PCB Articles.)
...	...

9-38. 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)).	Verify that mineral oil dielectric fluid as described is disposed of in one of the following ways: (1)(2)(18)
	
	- 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 that is rated at a minimum of 50 MBtu/h.
	
	Verify that if the fluid is burned in an high efficiency boiler: (1)(2)(18)
	
	- the boiler is rated at a minimum of 50 MBTU/h
	- the CO concentration in the stack is 10 ppm or less and the excess oxygen is at least 3 percent when PCBs are being burned and the boiler uses natural gas or oil as the primary fuel
	- 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:
	  - 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 113,700 (30,000 gal) of mineral oil dielectric fluid per year

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
9-38. (continued)	- 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. Verify that 30 days before burning mineral oil dielectric fluid, a written notice of the burning is given to the USEPA Regional Administrator. (1)(2)(18) 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: (1)(2)(18) - emissions data - the quantity of mineral oil dielectric fluid burned in the boiler each month.
...	...
9-39. 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)).	Determine if any contaminated soil or debris has been disposed of, and verify that disposal was conducted at a properly licensed facility. (1)(2)(18)
...	...
9-40. PCB Transformers with PCB concentrations of 500 ppm or greater shall be disposed of in either a USEPA approved incinerator or a chemical waste landfill (40 CFR 761.60(b)(1)).	Determine if the PCB Transformers are being disposed of at a USEPA-approved incinerator or a chemical waste landfill. (1)(2)(18) 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)(18)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-41. PCB Capacitors must be disposed of in accordance with certain facility regulations (40 CFR 761.60(b)(2)).	Verify that disposal of PCB Capacitors was done as follows: (1)(2)(18) - PCB Small Capacitors (less than 1.4 kg (3 lb) of PCBs) are disposed of in a solid waste landfill - PCB Large, High- or Low-Voltage Capacitors (greater than 1.4 kg (3 lb) of PCBs) containing more than 500 ppm are incinerated in a USEPA approved incinerator. (NOTE: The large, high, or low-voltage capacitors may be disposed of in a chemical waste landfill upon approval of the USEPA.) Verify that capacitors in storage are placed in DOT containers with absorbent material. (1)(2)(18)
...	...
9-42. 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)).	Verify that the machines are drained of all free-flowing liquid. (1)(2)(18) 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)(18)
...	...
9-43. PCB-contaminated Electrical Equipment (50 - 500 ppm PCB), except for capacitors, shall be disposed of by draining off the free-flowing liquid (40 CFR 761.60(b)(4)).	Verify that the free-flowing liquid is drained from electrical equipment prior to disposal. (1)(2)(18)
...	...
9-44. PCB Articles shall be disposed of properly (40 CFR 761.60(b)(5)).	Verify that PCB Articles with concentrations at 500 ppm or greater are disposed of in either: (1)(2)(18) - a USEPA-approved incinerator - a chemical waste landfill if all free-flowing liquids have been removed. Verify that PCB Articles with PCB concentration between 50 and 500 ppm are drained of all free-flowing liquid. (1)(2)(18)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-45. PCB Containers shall be disposed of properly (40 CFR 761.60(c)).	Verify that PCB Containers with concentrations of 500 ppm or greater are disposed of in one of the following ways: (1)(2)(18) - in a USEPA-approved incinerator - in a chemical waste landfill if first the container is drained of any liquid PCBs. 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)(18)
...	...

9-46. PCB-contaminated fluids other than mineral oil dielectric fluid of concentrations greater than 50 ppm but less than 500 ppm shall be disposed of properly (40 CFR 761.60(a)(3)).	Determine if any PCB fluids meeting these criteria were processed for disposal in the last year. (1)(2)(18)
	
	Verify that disposal was done at: (1)(2)(18)
	- a USEPA-approved incinerator
	- a USEPA-approved chemical waste landfill
	- a high efficiency boiler, if:
	  - the boiler is rated at a minimum of 50 MBtu/h
	  - the boiler uses natural gas or oil.
	
	Verify that such PCB fluids were disposed of by an approved method at a properly licensed facility. (1)(2)(18)

...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ASBESTOS **All Facilities**	
9-47. Facility buildings should be surveyed for asbestos and friable material with the potential to be contaminated with asbestos should be tested (GMP).	Verify that an asbestos survey has been done. (1)(2)(19) Determine if there is friable insulation, roofing, or flooring at the facility by inspection. (1)(2)(19) Verify that friable materials with the potential for asbestos contamination that are located in areas of worker exposure are tested. (1)(2)(19)
...	...
Renovation and Demolition	
9-48. Facilities that demolish structures containing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 square feet (sq ft)) of RACM on other facility components, or at least 1 m^3 off facility components, and facilities renovating structures and stripping or removing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 sq ft) of friable asbestos on other facility components and at least 1 m^3 off facility components must meet certain notification requirements (40 CFR 61.145(a)(1), 61.145(a)(3), and 61.145(b)).	Determine if the USEPA has been provided with written notice of intent to demolish or renovate at least 10 days before demolition begins and as early as possible before renovation begins. (1)(2)(19) Verify that the written notice contains the following information: (1)(2)(19) - name and address of facility - description of facility being renovated or demolished (size, age, prior use) - estimates of approximate amount (linear feet 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. (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.)
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-49. Facilities demolishing a facility with RACM of less than 80 linear meters (260 linear feet) on pipes and less than 15 m^2 (160 sq ft) on other facility components and less than 1 m^3 off facility components are required to submit notification of demolition (40 CFR 61.145(a)(2) and 61.145 (b)).	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)(19) - 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.
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

9-50. Facilities that demolish structures containing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 sq ft) of RACM on other facility components, and facilities renovating structures and stripping or removing at least 80 linear meters (260 linear feet) of friable asbestos on pipes, or at least 15 m^2 (160 sq ft) of friable asbestos on other facility components, or 1 m^3 or more off facility components, must meet certain emission control requirements (40 CFR 61.145(a)(1) through 61.145(a)(3) and 61.145 (c)(1) through 61.145 (c)(3)).
 	
...
	Inspect facility during demolition or renovation operations for procedures to prevent emissions of particulate asbestos to outside air. (1)(2)(19)
	
	Verify that all RACM are removed from facilities being demolished or renovated before any wrecking or dismantling unless: (1)(2)(19)
	
	- 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 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
	
	Verify that when a facility component that contains, is covered by, or is coated with RACM, is being taken out of the facility in units or sections: (1)(2)(19)
	
	- the units or sections are adequately wetted when the RACM is exposed during cutting and disjointing operations
	- the units or sections are carefully lowered to ground level.
	
	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 operations where wetting would unavoidably damage equipment, and the facility: (1)(2)(19)
	
	- requests a determination from the Administrator as to whether unavoidable damage would occur and supplies the Administrator with the information needed to make the decision
	- uses one of the following emission control methods:
	  - a local exhaust ventilation and collection system
	  - a glove bag system
	  - leaktight wrapping to contain all RACM.
	
	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-51. Emissions from facility components that have been taken out in units or in sections from facilities being demolished under state or local orders, or facilities being demolished or renovated with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 sq ft) of RACM on other facility components, or at least 1 m^3 off facility components, must be controlled (40 CFR 61.145 (c)(4) and 61.145(c)(5)).	Verify that facility components are either stripped or contained in leaktight wrappings. (1)(2)(19) Inspect facility components removed from facility as units or in sections for stripping to observe that: (1)(2)(19) - 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. 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)(19) (NOTE: For large facility components such as reactor vessels, large tanks, and steam generators, but not beams, stripping is not required if the following standards are met: - the component is removed, transported, stored, disposed of, or reused without disturbing the RACM - the component is labeled and encased in leaktight wrapping.)
...	...
9-52. Emissions from RACM that has been removed or stripped from facilities being demolished under state or local orders, or facilities being demolished or renovated with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 sq ft) of RACM on other facility components, or 1 m^2 or greater off facility components, must be controlled (40 CFR 61.145 (c)(6)).	Verify that asbestos materials that have been removed or stripped meet the following standards: (1)(2)(19) - materials are adequately wetted, and remain wet until collected for disposal - materials are carefully lowered (not dropped or thrown) to the ground or lower floor - materials not removed as units or in sections are transported to the ground via dust-tight chutes or containers if they are removed more than 15 m (50 ft) above ground level.
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-53. When the temperature at the point of wetting is below 0 °Centigrade (C) (32 °Fahrenheit (F)), and facilities are being demolished under state or local orders, or facilities with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 sq ft) of RACM on other facility components, or at least 1 m^2 off facility components, are being demolished or renovated, specific exemptions and requirements apply (40 CFR 61.145(c)(7)).	Verify that facility components coated or covered with RACM materials are removed as units or in sections to the maximum extent possible. (1)(2)(19) (NOTE: Wetting is not required at this temperature.) 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)(19) Verify that temperature records are kept for 2 yr. (1)(2)(19)
...	...
9-54. 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)).	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)(19)
...	...
9-55. 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)).	Verify that complex removal is done before burning. (1)(2)(19)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (5) Industrial Hygiene Section (6) Radiation Protection & Fire Safety Section (9) Medical Services (18) Electrical Section (Facilities Operations Branch) (19) Asbestos Program Manager (Industrial Hygiene Section)

COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-56. As of 20 November 1991, no RACM shall be stripped, removed, or otherwise handled or distributed unless at least one onsite representative trained in asbestos removal is present (40 CFR 61.145 (c)(8)). ...	Verify that a trained person is present. (1)(2)(19) Verify that the individual receives refresher training every 2 yr. (1)(2)(19) ...

(1) Environmental Program Manager (2) Facility Supervisor/Director (5) Industrial Hygiene Section (6) Radiation Protection & Fire Safety Section (9) Medical Services (18) Electrical Section (Facilities Operations Branch) (19) Asbestos Program Manager (Industrial Hygiene Section)

COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-57. 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).	Verify that fabric filter collection systems meet the following requirements: (1)(2)(19) - the device is operated at a pressure drop of no more than .995 kilopascals (kPa) (4 in. water gage), as measured across the filter fabric - airflow permeability does not exceed 9 m^3/min/m^2 (30 cu ft/min/sq ft) for woven fabrics or 11 m^3/min/m^2 (35 cu ft/min/sq ft) for felted fabrics - the felted fabric weighs at least 475 grams (g)/m^2 (14 ounce (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 spun fill yarn, is avoided.
...	...
Disposal	
9-58. Asbestos-containing waste materials are required to be disposed of properly (40 CFR 61.150 (a) through 61.150(b)).	(NOTE: These requirements do not apply to Categories I or II nonfriable ACM that did not become crumbled, pulverized, or reduced to powder.) 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)(19) - the asbestos-containing waste is adequately wetted - the asbestos-containing waste is processed into nonfriable forms - an alternative method approved by the USEPA. Verify that if the waste is wetted: (1)(2)(19) - 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 the Occupational Safety and Health Adminstration (OSHA) - materials that do not fit into containers are placed in leaktight wrapping. Verify that the waste generator deposits all ACM as soon as possible at one of the following locations: (1)(2)(19) - a properly operated waste disposal site - a USEPA-approved site that converts RACM and asbestos-containing waste material intro asbestos-free material.
...	...

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COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-59. Asbestos-containing waste must be transported according to specific parameters (40 CFR 61.150(c) through 61.150(e)).	Verify that vehicles used to transport asbestos-containing waste material are marked to indicate an asbestos dust hazard. (1)(2)(19) 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)(2)(19) 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)(2)(19)
...	...

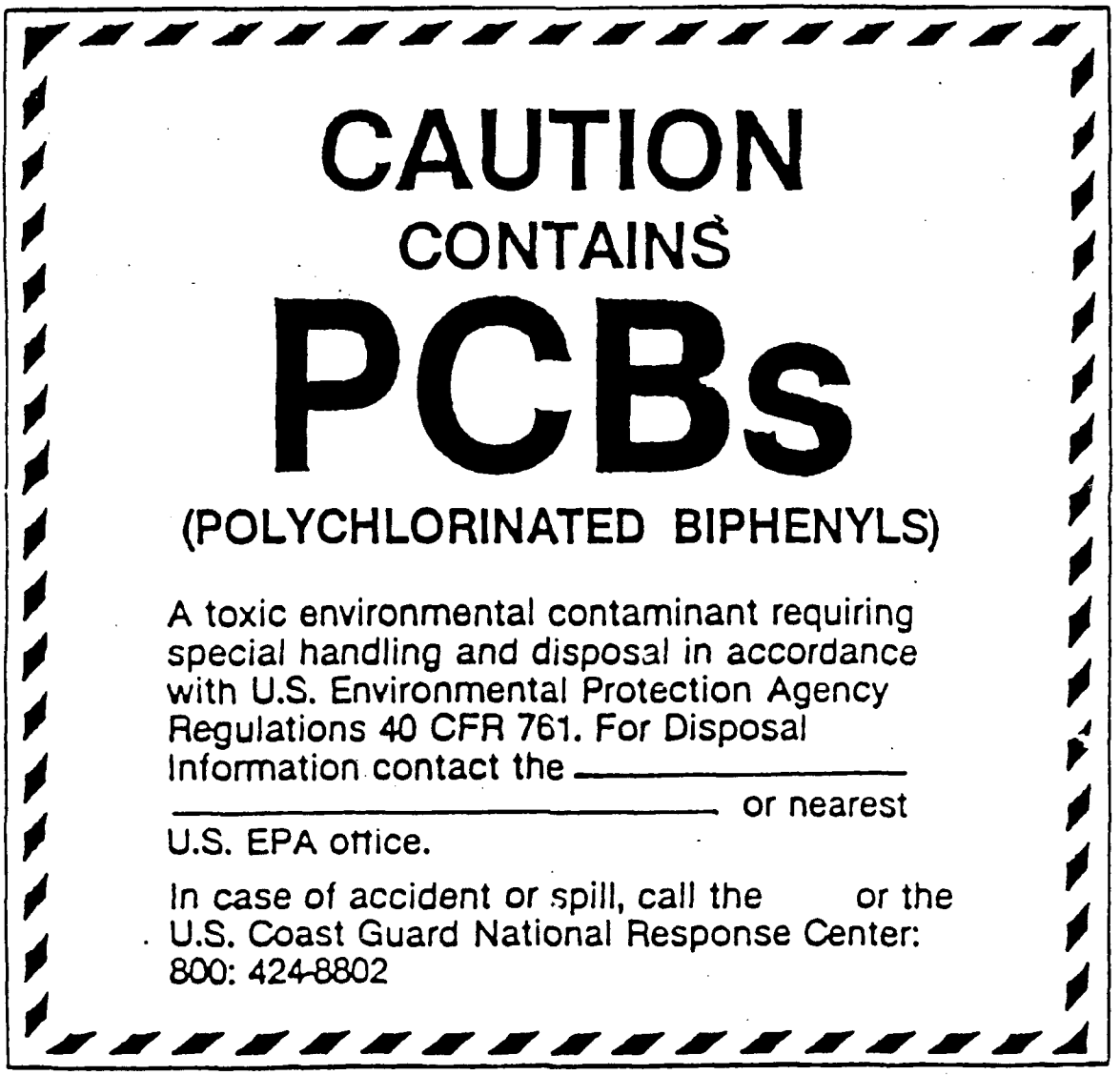
(1) Environmental Program Manager (2) Facility Supervisor/Director (5) Industrial Hygiene Section (6) Radiation Protection & Fire Safety Section (9) Medical Services (18) Electrical Section (Facilities Operations Branch) (19) Asbestos Program Manager (Industrial Hygiene Section)

COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
RADON	
9-60. Studies have shown a linkage between continuous exposure to radon gas and increased incidence of lung cancer. Awareness of this potential problem and precautions, if necessary, is a good management practice (GMP).	Determine whether a geological survey has been conducted of the facility area and if any of the strata are composed of one or more of the following: (1)(2)(6) - granite - phosphate - shale - uranium.
...	...
9-61. A survey for radon should be conducted for all CDC facilities (GMP).	Determine if radon gas survey has been done at the facility. (1)(2)(6) Determine if the facility has had any radon gas measurements exceeding 4 pCi/L in an occupied building and if preventive measures are being taken to reduce exposure. (1)(2)(6)
...	...
9-62. Primary mode of entry of radon gas into occupied space is through migration of soil gases. Lengthy, continued exposure is especially dangerous and most likely to occur in family housing units and underground command centers (GMP).	Determine whether any radon gas measurements exceeding 4 pCi/L have been found in any underground facilities or any other structures occupied for 80 manhours or more per year. (1)(2)(6)
...	...
NOISE	
9-63. Facilities that generate noise should be sensitive to noise complaints (GMP).	Determine if the facility generates noise that may affect neighboring properties. (1)(2) Verify that the facility refers all noise complaints to the Environmental Program Manager. (1)(2)
...	...
9-64. Protection against the effects of noise should be provided to personnel under certain conditions (GMP).	Confirm that protective devices are provided for personnel if the sound level: (1)(2)(5) - exceeds 85 dB(A) continuous - exceeds 140 dB impulse.

(1) Environmental Program Manager (2) Facility Supervisor/Director (5) Industrial Hygiene Section (6) Radiation Protection & Fire Safety Section (9) Medical Services (18) Electrical Section (Facilities Operations Branch) (19) Asbestos Program Manager (Industrial Hygiene Section)

Appendix 9-1

PCB Label Format



Appendix 9 - 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.
Hyvol	Aerovox
Inerteen	Westinghouse Electric
No-Flamol	Wagner Electric
Pyranol	General Electric
Saf-T-Kuhl	Kuhlman Electric

* Generic name used for insulating liquids in capacitors and transformers.

2. Foreign Manufactured Dielectrics:

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: SPECIAL POLLUTANTS MANAGEMENT Centers for Disease Control and Prevention	DATE:	REVIEWER(S):

STATUS NA C RMA	REVIEWER COMMENTS:

(1) Environmental Program Manager (2) Facility Supervisor/Director (5) Industrial Hygiene Section (6) Radiation Protection & Fire Safety Section (9) Medical Services (18) Electrical Section (Facilities Operations Branch) (19) Asbestos Program Manager (Industrial Hygiene Section)

Section 10

Water Quality Management

SECTION 10

WATER QUALITY MANAGEMENT

A. Applicability

This section includes regulations, responsibilities, and compliance requirements associated with wastewater discharge at CDC facilities. Wastewater discharge can include any of the following:

- Sanitary wastewater discharged directly to a receiving stream or through a CDC treatment facility.
- Sanitary or industrial wastewater discharged to a Publicly Owned Treatment Works (POTW) or other non-CDC facility.
- Stormwater runoff from operational areas of the facility to a receiving stream or waterbody.
- Industrial or storm wastewater drained to an industrial waste reservoir.

Most CDC facilities have wastewater discharge of one kind or another, and therefore this section will be applicable to most facilities.

B. Federal Legislation

- *The Federal Water Pollution Control Act*, commonly known as the *Clean Water Act (CWA)*, as amended 4 February 1987, 33 U.S. Code (USC) 1251-1387, Public Law (PL) 100-4, governs the control of water pollution in the nation. The objective of the *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 that provides for the protection and propagation of fish, shellfish, and wildlife, and 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).

Each department, agency, or instrument of the executive, legislative, and judicial branches of the Federal Government, and each officer, agent, or employee of such organizations, 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 U.S. Environmental Protection Agency (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 innovative treatment processes and techniques. Such a program will include an inventory of property and facilities that could use such processes and techniques (33 USC 1323(b)(1)).

C. State/Local Requirements

- States normally have wastewater discharge legislation and regulations which require permitting similar to the National Pollutant Discharge Elimination System (NPDES) program. A state is often delegated authority to administer the NPDES permits for discharges in that state. These permits are often joint permits issued pursuant to both Federal CWA and state legislation. In some cases, the state will not administer the NPDES program and will issue a state permit even though an NPDES permit has been issued by the USEPA. This dual permitting is common. 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 that are restricted. These requirements normally do not conflict, but may require additional sampling and dual reporting.

  States also have more stringent requirements for wastewater treatment plant operations. Many states have Sanitary Treatment Plant (STP) operator licensing and certification programs that require an operator to pass an exam and have a requisite amount of experience.

Local entities (counties and cities) may also have enforceable wastewater discharge limitations that regulate discharges to a POTW. Local limitations often include pH, temperature, and concentrations of various organic and inorganic compounds. Major industrial operations that discharge to an offsite POTW will be subjected to pretreatment permits issued by the POTW, state, or USEPA as appropriate.

D. CDC Regulations/Requirements

- This section includes a description of the environmental regulations, policies, and requirements of the CDC. At this time, the CDC has not issued environmental regulations for its components.

E. Key Compliance Requirements

- Discharge Permits - NPDES permits are required for point source discharges to "navigable waters." Discharges shall comply with all terms and conditions of an USEPA or state issued permit.

- Monitoring, Recordkeeping, and Reporting - Discharge permits usually require monitoring that may include the facility use and maintenance of equipment for influent, effluent, and receiving water sampling. Recordkeeping and reporting that may include scheduled discharge monitoring reports (DMRs) are also required.

- Discharges to POTWs - Discharges to equal public treatment facilities shall meet all applicable general and categorical pretreatment standards in 40 Code of Federal Regulations (CFR) 401 through 471. Agency facilities that discharge to public treatment facilities must adhere to the discharge limitations that are stipulated in local ordinances. However, many local POTW authorities have not yet developed pretreatment programs.

- Industrial Pretreatment - The USEPA has set effluent standards for many industries which discharge to POTWs. These categorical standards are contained in 40 CFR 404 through 471 and are implemented through local pretreatment programs established by POTWs. In some instances, a state may assume this local responsibility. Industrial discharge limitations are also stipulated in local ordinances.

- 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 in order to maintain their certification.

F. Responsibility for Compliance

- Biosafety Branch - responsible for the operation of the wastewater treatment facilities associated with Building 15 at the Clifton complex. This treatment facility is operated by a contractor.

G. Key Compliance Definitions

- *Blowdown* - the minimum discharge of recirculating water for the purpose of discharging materials contained in the water, the further buildup of which would cause concentrations in amounts exceeding limits established by best engineering practice (40 CFR 401.11(p)).

- *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).

- *Continuous Discharge* - a discharge that 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).

- *CN,A* - cyanide amenable to chlorination (40 CFR 413.02).

- *CN,T* - cyanide, total (40 CFR 413.02).

- *Daily Discharge* - the discharge of a pollutant measured during a calendar day or any 24-hour (h) period that reasonably represents the calendar day for purposes of sampling (40 CFR 122.2).

- *Direct Discharge* - the discharge of a pollutant (40 CFR 122.2).

- *Discharge of Pollutant* - the addition of any pollutant to navigable waters from any point source and the addition of any pollutant to the waters of the contiguous zone, the ocean zone, or the ocean from any point source other than a vessel or other floating craft (40 CFR 401.11(h)).

- *Effluent Limitations* - any restriction established by the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents that 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 in or adjacent to navigable waters (49 CFR 194.5).

- *Good Management Practices (GMPs)* - methods, measures, or practices to prevent or reduce water pollution, including, but not limited to, structural and nonstructural controls, and operation and maintenance procedures. GMPs may be applied before, during, or after pollution-producing activities in order to reduce or eliminate the introduction of pollutants into waterbodies.

- *Indirect Discharge* - the introduction of pollutants into a POTW 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 or 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, and 373
    3. facilities classified as Standard 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 the *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 Classifications 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 for 4221 through 25), 43, 44, 45, and 5171, which have vehicle maintenance shops, equipment cleaning operations, or air-port 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 milligrams per day (mg/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 for operations that result in the disturbance of land less than five acres of total land area, which is 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, and 4221 through 25, and which are not otherwise included in categories 1 through 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)).

- *Integrated Facility* - a facility that performs electroplating as only one of several operations necessary for the manufacture of a product at a single physical location and has significant quantities of process wastewater from nonelectroplating sources (40 CFR 413.02).

- *Interference* - a discharge which, alone or in conjunction with one or more discharges from other sources inhibits or disrupts the POTW and causes a violation of any requirement of the POTW's NPDES permit (40 CFR 403.3(i)).

- *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).

- *National Pretreatment Standard* - any regulation containing pollutant discharge limits promulgated by the USEPA (40 CFR 403.3(j)).

- *Navigable Waters* - all navigable waters of the United States, tributaries of navigable waters of the United States, interstate waters, intrastate lakes, rivers, and streams utilized by interstate travelers for rivers, recreation, or other purposes, intrastate lakes, rivers, and streams from which fish or shellfish are taken and sold in interstate commerce, and intrastate lakes, rivers, and streams utilized for industrial purposes by industries in interstate commerce (40 CFR 401.11(l)).

- *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 the *CWA* that are applicable to such sources, or
  - after proposal of standards of performance in accordance with section 306 of the *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
  - it totally replaces the process or production equipment that causes the discharge of pollutants at an existing sources
  - 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 which there is or may be the discharge of pollutants, the construction of which is commenced after the publication of proposed regulations prescribing standards of performance under section 306 of the Act, which will be applicable to such source as such standards are thereafter promulgated in accordance with section 306 of the Act (*40 CFR 401.11(e)*).

- *Non-Contact Cooling Water* - the water that is contained in a leak-free system, i.e., no contact with any gas, liquid, or solid other than the container for transport. The water shall have no net poundage addition of any pollutant over intake water levels (40 CFR 401.44(o)).

- *NPDES Permit* - a permit granted by the USEPA to a direct discharger, which permits wastewater discharge to a watercourse in accordance with the conditions of the permit. (40 CFR 403.3(l)).

- *Pass Through* - a discharge that exits a POTW into waters in quantities or concentrations, which, alone or in conjunction with one or more discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (40 CFR 403.3(n)).

- *Point Source* - any discernible confined and discrete conveyance including, but not limited to, a pipe, ditch, channel, or conduit from which pollutants are or may be discharged (40 CFR 401.11(d)).

- *Pretreatment* - the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to, or in lieu of, discharging or otherwise introducing such pollutants into a POTW (40 CFR 403.3(q)).

- *Publicly Owned Treatment Works (POTW)* - a treatment works 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)).

- *Stormwater Discharge Associated with an Industrial Activity* - the discharge from any conveyance used for collecting and conveying stormwater and 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*, 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 byproducts used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process 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 stormwater discharges from all the areas (except access roads and rail lines) listed in the previous sentence where materials handling equipment or activities, raw materials, intermediate products, final products, waste materials, byproducts, or industrial machinery are exposed to stormwater (40 CFR 122.26(b)(14)).

- *Strong Chelating Agents* - all compounds that, 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).

- *Total Toxic Organics* - TTO (40 CFR 413.02).

- *Total Metal* - the sum of the concentrations of mass of copper, nickel, chromium, and zinc (40 CFR 413.02).

WATER QUALITY MANAGEMENT PROTOCOL

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Facilities	10-1 through 10-4	(1)(2)(3)
Drinking Water	10-5	(1)(2)
NPDES Permits	10-6 through 10-11	(1)(2)(15)
Discharges to POTWs	10-12 through 10-15	(1)(2)(3)(4)(15)
Photo Labs	10-16	(1)(2)(3)

(a)CONTACT/LOCATION CODE:

(1) Environmental Program Manager
(2) Facility Supervisor/Director
(3) Facilities Operations Branch
(4) Section Chiefs
(15) Engineering Services Office

Records to Review

- NPDES permits
- NPDES permit renewal applications (if expire within 180 days)
- Discharge monitoring reports for the past year
- Laboratory records and procedures and USEPA QA results
- Monthly operating reports for wastewater treatment facilities
- Flow monitoring calibration certification and supporting records
- Ash pond volume certification and supporting records
- Red water inspection records
- Special reports, certifications, etc., required by NPDES permit
- Spill Prevention Control and Countermeasure (SPCC) plan
- All records required by the SPCC plan
- All notices of noncompliance
- All notices of violations
- NPDES state or Federal inspection reports
- Sewage treatment plant operator certification
- Administrative Orders
- Sewer and storm drain layout
- Local sewer ordinance
- Local service use permit
- Notification to local POTW
- Old spill reports
- Stormwater prevention plans
- Repair/maintenance records for the wastewater treatment system
- As-built drawings

Physical Features to Inspect

- Discharge outfall pipes
- Wastewater treatment facilities
- Industrial treatment facilities
- Streams, rivers, open waterways
- Floor & sink drains (especially in industrial areas)
- Storm water collection points (especially in industrial areas)
- Oil storage tanks
- Oil/water separators

People to Interview

- Environmental Program Manager
- Facility Supervisor/Director
- Facilities Operations Branch
- Section Chiefs
- Engineering Services Office

COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL FACILITIES	
10-1. Determine actions or changes since previous review of wastewater management (GMP).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report. (1)
...	...
10-2. Copies of all relevant Federal, CDC, state, and local regulations and guidance documents on wastewater management should be made available at the facility (GMP).	Verify that copies of the following regulations are available and kept current: (1)(2) - 40 CFR 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System.* - 40 CFR 136, *Guidelines Establishing Test Procedures for the Analysis of Pollutants.* - 40 CFR 403, *General Pretreatment Standards for New and Existing Sources.* - 40 CFR 413, *Electroplating 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.* - Executive Order (EO) 12088, *Federal Compliance With Pollution Control Standards.* - State and local regulations.
...	...
10-3. Facilities are required to abide by state and local water quality regulations (EO 12088, Section 1-1).	Verify that the facility is abiding by state and local water quality requirements. (1)(2)(3) Verify that the facility is operating according to permits issued by the state or local agencies. (1)(2)(3) (NOTE: Issues typically regulated by state and local agencies include: - nonpoint sources - NPDES permits - 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 - stormwater pollution prevention plans - septic tanks - stormwater discharges.)
...	...

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch (4) Section Chiefs (15) Engineering Services Office

COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-4. Facilities will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning wastewater have been issued since the finalization of the manual. (1)(2) Verify that the facility is in compliance with newly issued regulations. (1)(2)
...	...
DRINKING WATER	
10-5. Drinking water provided at the facility should be potable (GMP).	Verify that potable water is provided at the facility. (1)(2)
...	...
NPDES PERMITS	
10-6. 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 a USEPA-approved NPDES permit program (40 CFR 122.1(b)(3)).	Determine if the facility is located in a state with a USEPA-approved NPDES permit program. (1)(2) Verify the facility has obtained the proper permits for point source discharges and/or treatment works treating domestic sewage. (1)(2) Verify that the facility is operating according to permit requirements such as: (1)(2) - monitoring/sampling - concentrations of discharge constituents - recordkeeping - reports. (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.) (NOTE: Stormwater runoff may be addressed in the NPDES permit.)
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-7. Facilities that discharge 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)).	Determine if the facility is discharging stormwater associated with an industrial activity. (1)(2)(15) Verify that an application has been submitted for a permit. (1)(2)(15)
...	...
10-8. Samples required by the NPDES permit must be collected in accordance with proper collection, testing, preservation, and shipping procedures outlined in *Standard Methods for Water Analysis* (40 CFR 136.1 through 136.4).	Verify that: (1)(2)(15) - proper sample containers are used - samples are refrigerated during compositing - proper preservation techniques are used - flow-proportioned samples are obtained where required by permit - sample holding times prior to analyses conform with requirements - the chain of custody is maintained from sampling point through analytic testing to results (essential if litigation occurs). Determine if monitoring and analysis are performed more frequently than permits require. (1)(2)(15) Verify that results are reported in the facility's self-monitoring report. (1)(2)(15)
...	...
10-9. Analytical testing required by the NPDES permit must be done in accordance with USEPA-approved analytical procedures (40 CFR 136.3).	Determine if: (1)(2)(15) - a USEPA-approved analytical testing lab was used - proper approval was obtained from the 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 programs).
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-10. Installations with NPDES permits are required to meet specific reporting requirements (40 CFR 122.41(l)).	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: (1)(2) - 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 to other notifications) - the alteration or addition results in a significant change in the facility's sludge use or disposal practices. Verify that the facility notifies the Director of any planned changes at the permitted facility or of activities that may result in noncompliance with permit requirements. (1)(2) Verify that monitoring is reported as required on the permit. (1)(2) Determine if the facility is monitoring more frequently than required. (1)(2) Verify that if the facility is monitoring more frequently than required by permit, these results are also being reported. (1)(2) Verify that reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule on the permit are submitted no later than 14 days following each specified date. (1)(2) Verify that noncompliance which might endanger health or the environment is reported as follows: (1)(2) - verbally 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.
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-11. Even where not covered by NPDES permits, stormwater discharge on the facility should be uncontaminated, and periodic surveillance of these discharges should be completed (GMP).	Determine which drains at the facility are connected to the storm sewer and the location of all outfalls and discharge points. (1)(2)(15) Determine if there is evidence of contamination (oil sheen, discoloration, etc.) by physical review of stormwater discharge sites. (1)(2)(15) Verify that oil/water separators connected to the storm sewer on the facility are operating and maintained correctly. (1)(2)(15) Determine if there is evidence of contaminated waste streams discharging to floor drains connected to the stormwater discharge system by physically checking major industrial shops or industrial areas, including: (1)(2)(15) - battery shop - corrosion control - engine shop - motor pool - paint shop - plating shop - petroleum, oils, and lubricants (POL) area.
...	...
DISCHARGES TO POTWs	
10-12. Facilities must not discharge into a POTW any pollutant which would cause "pass through" or "interference" (40 CFR 403.5(a) and 403.5(c)(2)).	Determine the following: (1)(2)(3)(4)(15) - which point source discharges are at the facility - what drains in the facility lead to the treatment works - what substances 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. Verify that the facility is not discharging to a POTW pollutants that would cause a "pass through" or "interference (see definitions). (1)(2)(3)(4)(15) Determine if the POTW has imposed any pretreatment standards or reporting requirements on the facility, and verify that they are being met. (1)(2)(3)(4)(15)
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS	**REVIEWER CHECKS:**
10-13. Facilities shall not introduce specific pollutants into a POTW (40 CFR 403.5(b)).	Verify that pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, waste streams with a closed-cup flashpoint of less than 140 degrees Fahrenheit (°F) are not being discharged from the facility to a POTW. (1)(2)(3)(4)(15) Verify that pollutants which will cause corrosive structural damage to the POTW are not being discharged from the facility to a POTW. (1)(2)(3)(4)(15) Verify that in no case discharges with a pH below 5.0 are released. (1)(2)(3)(4)(15) Verify that solid or viscous pollutants in amounts that will cause obstruction to the flow are not being discharged to the POTW. Examples include: (1)(2)(3)(4)(15) - fish-cleaning stations - pieces of metal, rubber, and wood from shops - sand and sediment. Verify that no pollutants, including oxygen-demand pollutants, are released at a flow rate or concentration that will cause interference with the POTW. (1)(2)(3)(4)(15) Verify that heat in amounts that would inhibit biological activity at the POTW resulting in interference is not discharged, including: (1)(2)(3)(4)(15) - scrubber water - boiler blowdown. (NOTE: In no case will the temperature of discharges result in a temperature at the POTW of greater than 104 °F.) Verify that petroleum, oil, nonbiodegradable cutting oil, or products of mineral oil origin is not discharged in amounts that would result in a pass through or interference (specifically check maintenance areas and oil/water separators). (1)(2)(3)(4)(15) Verify that pollutants which would result in the presence of toxic gases, vapors, or fumes within the POTW in quantities that would cause acute worker health and safety problems are not discharged. (1)(2)(3)(4)(15) Verify that no trucked or hauled pollutants are discharged, except at discharge points designated by the POTW. (1)(2)(3)(4)(15) Determine if the facility has been granted any exemptions or variances concerning its discharges. (1)(2)(3)(4)(15)
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Centers for Disease Control and Prevention	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-14. Facilities are required to notify the POTW immediately of any discharge, including slug loading, that could cause problems to the POTW (40 CFR 403.12 (f)).	Verify that personnel at the facility are aware of the need to notify the POTW of any discharge that would cause problems. (1)(2)(3)(4)(15)
...	...
10-15. Personnel engaged or employed in operation and maintenance of water pollution control facilities should be trained in safety and occupational hazards (GMP).	Determine if periodic refresher training is conducted by interviewing operating/maintenance staff at plant. (1)(2)(3)(15) Verify that training is conducted by reviewing operating staff training records. (1)(2)(3)(15)
...	...
PHOTO LABS	
10-16. Facilities that have point source discharges resulting from the development or printing of paper prints, slides, negatives, enlargements, movie film, and other sensitized materials, are subject to certain limitations (40 CFR 459.10 and 459.12).	Determine if the facility has point source discharges resulting from the development or printing of paper prints, slides, negatives, enlargements, movie film, and other sensitized materials. (1)(2)(3) Verify that the photographic processing point source effluent is limited according to the specifications in Appendix 10-1. (1)(2)(3) (NOTE: Facilities processing 150 square meters (m^2) (16,000 square feet (sq ft) per day or less are not covered.)
...	...

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Appendix 10-1

Effluent Limitations for Photographic Point Sources

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Maximum average values for 30 consecutive days
	Metric units (kg/1000 m^2 of product)	
Ag	0.14	0.07
CN	0.18	0.09
pH	[1]	[1]
	English units (lb/1000 sq ft of product)	
Ag	0.030	0.015
CN	0.038	0.019
pH	[1]	[1]

[1] Within the range 6.0-9.0

From 40 CFR 459.12

INSTALLATION:	COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Centers for Disease Control and Prevention	DATE:	REVIEWER(S):

STATUS NA C RMA	REVIEWER COMMENTS:

(1) Environmental Program Manager (2) Facility Supervisor/Director (3) Facilities Operations Branch
(4) Section Chiefs (15) Engineering Services Office