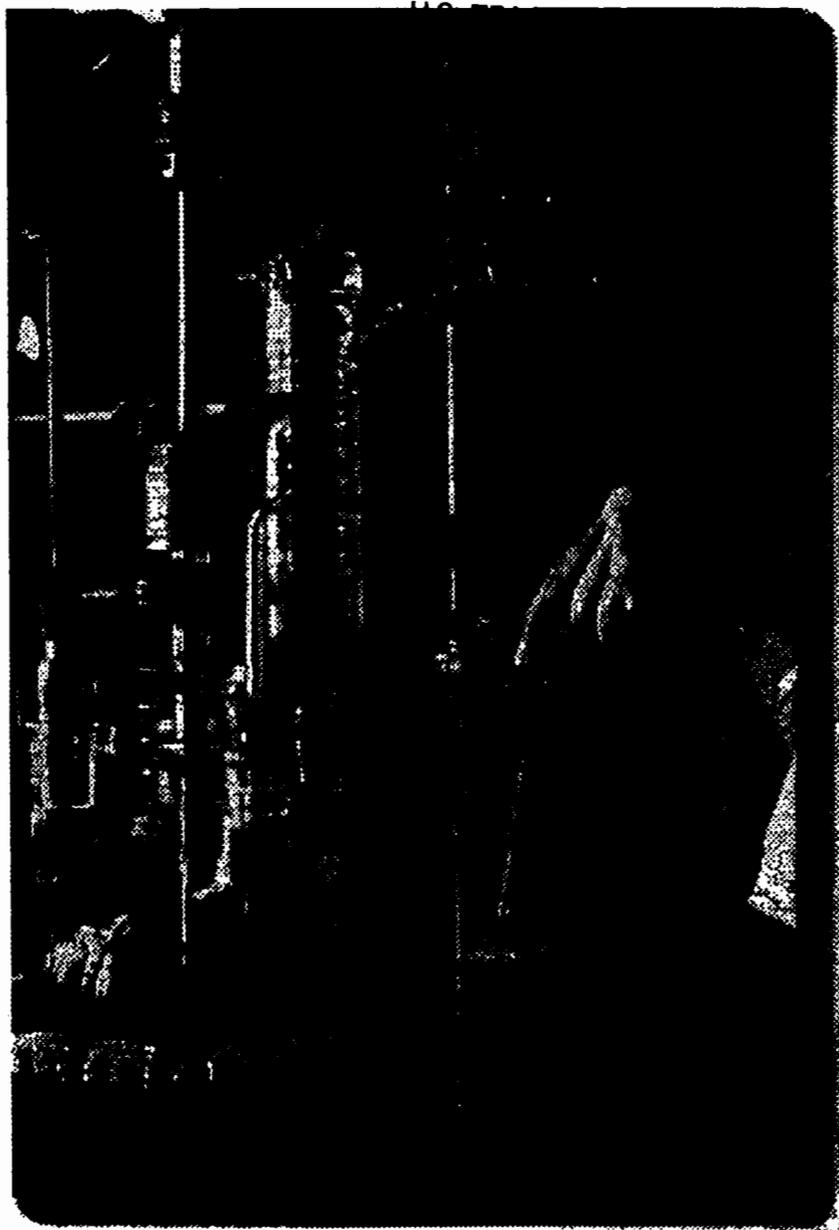




Safety, Health and Environmental Management Guidelines



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Safety, Health and Environmental
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**Section 01-02
Introduction**

**PURPOSES OF SHEMP
GUIDELINES**

Safety, Health and Environmental Management Program Guidelines (hereafter referred to as SHEMP Guidelines)

- a. provide management officials, union officials, Safety, Health and Environmental Management Program (SHEMP) Managers, and other Agency employees with interpretations of Federal statutes, Executive Orders, and regulatory mandates (hereafter referred to as mandates),
- b. explain their application to EPA's mission-oriented activities; and
- c. provide strategies, procedures, and management tools that can be used in complying with these mandates

**OBJECTIVES OF
SHEMP GUIDELINES**

The objectives of the guidelines are to

- a. trim administrative requirements and burdens on EPA's field units, by providing flexibility to Regional and Program Office Designated Safety, Health, and Environmental Management Program Officials in designing their programs;
- b. convert mandates and EPA Orders into a series of technical interpretations of the statutory and regulatory requirements and explanations of their application to EPA's mission-related activities, and
- c. provide up-to-date content and program materials that can be integrated into audit criteria and protocols, and to establish additional technical resources, self-assessment guides, and program tools.

INTRODUCTION

The Introduction explains:

- a. the structure of Guidelines and how to request changes or additional content areas or chapters and
- b. SHEMP's functions and business processes in detail

AUTHORITY

Contained in EPA Order 1440.1, Section 5

**SHEMP MANDATES
AND EPA ORDERS**

Federal mandates are contained in Appendix A.
EPA Orders are located in Appendix B.

**HOW SHEMP
GUIDELINES ARE
ORGANIZED**

Guidelines are divided into technical content chapters, which address specific mandates and EPA Orders. Additional chapters are devoted to technical and administrative topics not specifically covered in a single mandate and Order (e.g., ergonomics, accident

investigation and reports, and mandatory/refresher training for field, office, and laboratory employees) Implementation tools, usually in the form of guidelines, forms, and checklists, are normally found in exhibits *Italicized text identifies EPA guidance* EPA managers are encouraged to follow these non-mandatory guidelines

Each Chapter begins with a two-page summary which serves as a quick reference guide for the scope, regulatory requirements, authorities, references, implementation activities, and implementation implications of the Chapter's content

HOW TO
RECOMMEND
CHANGES IN SHEMP
GUIDELINES

Management officials, union officials, and other employees should feel free to recommend changes in Guidelines To recommend a change, send a memo to the Director, SHEMD, Mail Code 3207, Washington DC 20460. The memo should identify the content to be changed, why the change is beneficial, the impact the change would have on working conditions and management processes, and the proposed content (e.g., a marked up copy of the page and/or a draft of the proposed change being offered) The Director will respond within 30 days

HOW TO
RECOMMEND A NEW
CHAPTER OR TOPIC
FOR SHEMP
GUIDELINES

Management officials, union officials, and other employees should feel free to recommend new chapters or topics for Guidelines To recommend a new chapter or topic, send a memo to the Director, SHEMD, Mail Code 3207, Washington DC 20460. The memo should identify the Federal mandate that is to be interpreted, why this interpretation is needed, the impact that the new chapter or topic would have on working conditions and management processes, and recommend who should peer-review the technical content. The Director will respond within 30 days

KEEPING SHEMP
GUIDELINES
UP-TO-DATE

Officials with hard copies of Guidelines are responsible for ensuring that they are kept current. Updated copies of Guidelines are located on OA/SHEMD's Intranet Home Page (dc_www.wic.epa.gov/oa).

Section 01-03
SHEMD Program

SHEMD

The Safety, Health, and Environmental Management Division (SHEMD) is the Agency's national program office, with assigned responsibility for providing Agency-wide leadership for the EPA's internal Safety, Health, and Environmental Management Program (SHEMP). SHEMD is located in the Office of Administration, Office of Administration and Resources Management.

ACCOUNTABILITY
FOR SHEMP AT EPA
FIELD LOCATIONS

RAs and AAs appoint Regional and Program Office Designated Safety, Health, and Environmental Management Officials to represent them in the implementation of SHEMPs; those officials are accountable for managing SHEMPs in compliance with Federal mandates and EPA Orders.

SHEMP
MANAGEMENT
SYSTEMS

SHEMD has adopted the *Code of Environmental Management Principles (CEMP)* as its guidepost for designing its management systems and as its handbook for developing Agency policies and program tools. A detailed discussion of CEMP and SHEMP management systems can be found in Chapter 2.

SHEMD'S
MANAGEMENT
RESPONSIBILITIES

SHEMD is the principal management advisor to the Agency's Designated SHEMP Officials and senior managers. SHEMD's Responsibilities are listed in EPA Order 1440.1, Section 4c. It is organized into a National Programs Branch, Technical Support and Evaluation Branch, and Multimedia Laboratory.

National Programs
Branch

Develops policy, interprets mandates, and manages national and headquarters SHEMP programs.

Technical Support and
Evaluation Branch

Conducts program evaluations, property transfer audits, and accident/incident investigations; develops design specifications and technical guidelines; provides technical support services for new construction and renovation projects, prepares safety and environmental audit and technical assistance reports.

Multimedia Laboratory

Develops technology-based Learning, Information, and Performance Support (LIPS) systems for SHEMP implementation.

PROGRAM
RESPONSIBILITIES

Program responsibilities include:

- a. occupational safety and health;
- b. biological safety and health,
- c. life-safety,
- d. indoor environments;

- e underwater diving,
- f management of lead/asbestos and other specific toxicants,
- g medical surveillance, preventative health, and wellness,
- h radiation safety and health protection, and
- I environmental management, including pollution prevention and disposal/recycling of hazardous waste (with the exception of those environmental management matters listed below)

**SHEMP-RELATED
PROGRAM AREAS
NOT COVERED BY
SHEMD's
DELEGATIONS OF
AUTHORITY**

There are some SHEMP-related program matters that are the responsibility of other national program offices. In those areas, SHEMD establishes close working relationships and partnerships to assure that there is coordination and cooperation. They include

- a workers' compensation,
- b hazardous duty pay,
- c energy conservation,
- d recycling of non-hazardous solid waste,
- e affirmative procurement,
- f. NEPA assessments;
- g facility closures and property transfers;
- h facility design and construction;
- I occupant emergency planning, and
- j investigations of employment discrimination or reprisal

FMSD

Facilities Management and Services Division (FMSD) addresses the requirements of the National Environmental Policy Act (NEPA), and the incorporation of SHEMP requirements into lease agreements, facility design, occupant emergency planning, and construction. FMSD manages:

- a. energy conservation;
- b recycling of non-hazardous waste;
- c. management of the B&F processes, including decisions that address SHEMP corrective actions; and
- d. the real property transfer, including implementation of the Comprehensive Environmental Due Diligence Process

OAM

Office of Acquisition Management (OAM) provides leadership for the implementation of mandates and Executive Orders related to affirmative procurement in the areas of pollution prevention.

OHROS

Office of Human Resources and Organizational Services (OHROS) administers:

- a workers' compensation and reasonable accommodation; and
- b hazardous duty pay programs and processes.

OCR Office of Civil Rights (OCR) investigates complaints of reprisal related to employees who exercise their rights under the OSH Act of 1970 and 29 CFR Part 1960

**SHEMD's MISSION,
VALUES, AND
GUIDING PRINCIPLES**

SHEMD has formulated a mission statement, adopted a set of values, and established a set of guiding principles for the conduct of its business.

Mission Statement

To address the Agency's need to identify, assess, control, and communicate environmental and occupational risks to managers, supervisors and employees.

To address the Agency's need to develop management strategies which assure that EPA's activities and workplaces comply with Federal, state, and local statutory and regulatory mandates related to safety, occupational health, and environmental protection

To help managers preserve, protect, sustain, and enhance their employees, material and financial assets, and the environment

Values

Quality To achieve customer satisfaction, the quality of SHEMP products and services is its number one priority

Customer focus Work products and services are customer-focused, and customers are given opportunities to evaluate SHEMP products and services.

Employee involvement Work (both within SHEMD and throughout the Agency) is organized to promote employee involvement, labor/management processes, and team effort.

Professional and personal development. SHEMD employees and SHEMP managers are provided with opportunities for both personal and professional improvement and certification. Semi-annual technical workshops are held to update managerial and technical skills.

Regional, laboratory, and program officials. SHEMD develops and maintains mutually beneficial relationships with its regional, laboratory, and program office SHEMP managers. "Centers of Excellence" provide SHEMP managers with the opportunity to assume national leadership.

Integrity Business processes are managed in an ethical and responsible manner which provides positive contributions to the Agency's overall mission.

Guiding Principles

Program Documentation. Policies, guidance, and instructions are written and communicated in a clear and concise manner

Program Responsibilities, Authorities, and Accountability for SHEMPs Program responsibilities, authorities, and accountability are assigned in writing and are clear to all employees

Technology Where practical, information and learning technology is applied to all aspects of SHEMP.

**SHEMD's ROLES,
RESPONSIBILITIES,
AND ACTIVITIES --
DEFINED IN DETAIL**

As the Agency's focal point, SHEMD is responsible for performing numerous management and technical support functions. SHEMD's primary roles and responsibilities are identified in EPA Order 1440 I, Section 4c, and are explained in detail below.

**Monitoring Regulatory
Activities and Analyzing
Their Impact**

Due to the diversity and complexity of regulatory mandates and their application to EPA's mission-related activities, determining how to comply and how to finance compliance matters is a significant management challenge. For example, research and scientific programs conducted at EPA facilities often fall outside the industry-focused environmental and occupational safety/health statutes. In response to this challenge, SHEMD

- a interprets mandates,
- b explains how mandates apply to EPA's mission-related activities;
and
- c. issues SHEMP Guidelines.

Designated SHEMP Officials have flexibility in applying these guidelines.

**Regulatory Impact
Analyses**

As unique or specialized regulatory compliance issues arise, working with EPA Program Offices, OSHA, NRC, and state/local officials often results in development of program guidance, compliance arrangements, and prudent management practices. For example, work with the Office of Toxic Substances resulted in special regulatory consideration for PCB management at research and development facilities.

Alerts

Alerts are used to heighten awareness, provide direction, and outline suggestions for managing special compliance and risk prevention matters

Workload Analyses and Financial Support	<p>Working with regional and program office managers, budget and OARM officials, and B&F managers is often necessary to conduct workload and risk analyses, benchmarking studies, and management reviews to address resource needs. For example, a Regional Support Account was established to enhance technical support for regional programs, initiate program improvement activities, and expand their use of technology-based products. A similar support system has been established by ORD senior management officials.</p>
Issuing EPA Orders	<p>In response to administrative reform and streamlining initiatives, directives and program resources are reengineered. EPA Order 1440.1 defines authorities, responsibilities, and accountability for SHEMP and abolishes all previous 1440 requirements, except those related to employee training.</p>
Developing SHEMP Guidelines	<p>Guidelines replace previous 1440 requirements (except those stated above). The length and scope of chapters are based on the seriousness and potential recurrence of historical audit findings, complexity of the mandate, and customer requirements. Guidelines provide suggestions which are based on prudent management practices and bench-marking, and management tools and strategies which address unique compliance issues.</p>
Managing National Programs	<p>By developing partnerships and leveraging resources with regional and program office officials (through IAGs and contracts), several national programs have been established. They are designed to achieve administrative efficiencies and employ competent and qualified professionals in the following areas:</p> <ul style="list-style-type: none">a. medical surveillance;b. laboratory employee exposure assessments; andc. radiation exposure monitoring
Operations Manuals for Specific SHEMP Challenges	<p>When common needs and opportunities are identified and the technical expertise is not available at local units, partnerships and leveraged resources (with regional and program office officials) are used to develop Operations Manuals which address specific technical challenges. Some examples of Operations Manuals include:</p> <ul style="list-style-type: none">a. safe vessel specifications and operations,b. radiation safety and health protection program,c. managing lead-containing building materials;d. asbestos-containing building materials;e. chemical hygiene planning;f. spill prevention control and countermeasures;g. management and inventories for chemicals and hazardous waste,

- h pollution prevention planning, and
- i risk-based training assessments

SHEMP Operations
Manuals for specific
employee populations

When common needs and opportunities are identified and the technical expertise is not available at local units, partnerships and leveraged resources (with regional and program office officials) are used to contract for the development of Operations Manuals for specific employee groups. As examples:

- a operations manual for field employees,
- b operations manual for office employees,
- c operations manual for laboratory employees, and
- d operations manual for underwater divers.

On-site technical
assistance for complex
SHEMP-related matters

When common needs and opportunities are identified and the technical expertise is not available at local units, partnerships and leveraged resources (with regional and program office officials) are used to contract for the delivery of on-site technical services. They include:

- a providing turn-key chemical inventory services to improve chemical management practices at EPA laboratories by automating and bar-coding of chemical and hazardous waste inventories.
- b reviewing, developing, and/or updating hazard assessments and compliance plans and documentation for, among other things, SPCC, chemical hygiene, and personal protective equipment
- c characterizing employee exposure to chemical, physical, and biological agents in laboratories (Laboratory Exposure Assessment Program (LEAP)) by an integrated team of highly qualified professionals using rigorous QA and QC processes and following professional practices. Results of the assessments are used for QA processes, development, and/or updating chemical hygiene plans, identifying chemical management improvements, providing guidance on PPE use, and determining opportunities for pollution prevention and risk management.
- d. responding to requests for specialized technical assistance support for planned technical requirements, complex situations unique to a particular facility, and *ad hoc* assistance in the event of an emergency.

Design and Engineering
Reviews for SHEMP-
related matters.

Helps FMSD conduct design and engineering reviews for new facilities and existing facility modification to ensure that SHEMP requirements are being met. QA audits and compliance reviews are conducted during all phases of project planning, design, and construction.

Property Transfer Reviews	Technical and engineering support is necessary for the real property transfer activities. Helps FMDS conduct environmental due diligence reviews to determine potential contamination and associated long-term liabilities
Learning, Information, and Performance Support	<p>A state-of-the-art multimedia laboratory (the agency's first reinvention laboratory) which was awarded the Vice President's Hammer Award is staffed by a multi-disciplinary team of instructional designers, communication specialists, computer systems, and technology professionals. The laboratory is a one-stop-shop for the creation of technology-based Learning, Information, and Performance Support (LIPS) systems and program tools used to address the complex challenges facing SHEMP managers. Tools, products and services include</p> <ul style="list-style-type: none">a. equipping field offices with multi-media learning and information centers in order to<ul style="list-style-type: none">(1) deliver technology-based products,(2) improve productivity, and(3) trim program delivery costs,b. providing field offices with technology-based tools and an integrated system for delivering "just-in-time" employee training and access to technical information explaining mandates and job-related occupational and environmental risks and hazards (employee right-to-know),c. creating electronic forms and performance support tools to help in the implementation of compliance requirements and to construct compliance plans (e.g., pollution prevention plans, chemical hygiene plans, etc),d. placing SHEMP products, technical manuals, and technical data bases on CD-ROM with search engines to expand easy-to-use technical resources; ande. housing multimedia products on the OA/SHEMD Intranet Home Page to keep up-to-date material available
Program Evaluations	<p>A formal process for conducting program evaluations has been established. The evaluations address regulatory compliance, risk management, and management system factors, and the review team uses detailed audit criteria and protocol. The evaluation process includes:</p> <ul style="list-style-type: none">a. collecting pre-evaluation data through the distribution of a standardized pre-visit questionnaire, examination of historical information, and the review of previous audits and corrective action plans. Before an evaluation is conducted, a review strategy is developed and appropriate technical resources are identified;

- b conducting an entrance-briefing to explain the evaluation process to local management and union officials,
- c collecting information and data through interviews, observations of physical facilities, and document reviews,
- d. conducting an out-briefing to explain and discuss preliminary findings, observations, and recommendations to local management and union officials,
- e providing a written preliminary report of findings, which assigns them a significance rating, to officials after out-briefing,
- f issuing a draft report of findings and observations which is sent to the Designated SHEMP Official for comment,
- g incorporating comments of Designated SHEMP Officials into a final report, requesting action plans for each outstanding finding,
- h. tracking, in an automated management information system, to monitor corrective actions and to validate requests for B&F funds;
- i conducting follow-up reviews to confirm the status of corrective actions and offering technical assistance in order to address any outstanding findings, and
- j preparing an annual report to
 - (1) summarize accomplishments,
 - (2) analyze compliance vulnerabilities,
 - (3) document the need for new Guidelines;
 - (4) justify the need for additional technical information or learning modules;
 - (5) set audit follow-up schedules; and
 - (6) justify additional resources.

**SHEMD Partnerships
with other Federal
agencies**

Public Health Service - The U.S Public Health Service (PHS) plays an important role in providing national support services for the Agency's occupational safety and health program Through a national interagency agreement with the Division of Occupational Health, PHS, in the areas of occupational medical support, medical surveillance program assistance, and specialized technical support, such as lead in drinking water monitoring, indoor air quality assessments, or laboratory exposure assessments.

Other Federal Agencies - Partnership agreements are established with other Federal agencies in order to leverage resources for the development of technology-based products and to establish cross-servicing agreements Partnership agreements have been established with the Federal Aviation Administration (FAA), Department of Interior (DOI), Department of the Army, Food and Drug Administration, Occupational Safety and Health Administration (OSHA), Coast Guard, and several EPA Program

Offices SHEMD is now discussing additional partnership opportunities with other Federal agencies, state/local governments, foreign governments, private sector organizations, and professional societies, in order to leverage resources and transfer technology

**COMMON
CHARACTERISTICS
AND BEST-
PRACTICES FOR
SHEMPs**

Through years of audits and program evaluations, SHEMD has identified common characteristics and best-practices for SHEMPs

- a establishing an organization-wide SHEMP to cover programmatic matters, and appointing a Designated SHEMP Official to oversee and monitor performance of SHEMP,
- b establishing and issuing a management policy statement to explain priorities and commitment to SHEMP and defining performance and accountability measures for managers and employees;
- c formulating, at least annually, strategies and plans of operation which document injury/illness experiences, results of inspections and self-assessments, potential vulnerabilities for violations of mandates and EPA Orders, resource needs, and accomplishments;
- d developing program specifications, techniques, and QA/QC procedures for the conduct of regular internal inspections, industrial hygiene surveys, exposure/risk assessments, and self assessments in regional and program office workplaces,
- e maintaining SHEMP management systems, including injury/illness logs and records for training, medical surveillance, PPE use, inspection results, chemical inventories, and MSDSs,
- f. operating wellness programs;
- g. providing (or arranging for through SHEMD) technical assistance and expert counsel to regional, program, or laboratory officials to resolve SHEMP-related issues;
- h. reviewing engineering plans for construction, renovations, and abatement projects under \$75,000 and helping SHEMD with projects over \$75,000;
- i. performing special investigations and studies of fatalities, injuries, illnesses, losses, and complaints and sensitive environmental compliance issues;
- j. conducting feasibility studies of engineering and administrative controls for environmental and occupational risks;
- k. developing emergency preparedness and chemical hygiene plans;
- l. working with SHEMD to arrange for the certification of the adequacy and use of personal protective equipment and devices;
- m. working with SHEMD to arrange for and finance the documentation of toxic emissions for facilities and transmitting the documents to state/local authorities,

- n working with SHEMD to arrange for and finance assessments of employee exposure to chemical, physical, and biological agents and safety hazards,
- o developing applications for facility discharge permits and monitoring strategies,
- p developing aggressive Pollution Prevention Plans which establish timetables and techniques for reducing the volume and toxicity of chemicals used and waste generated at EPA facilities,
- q working with SHEMD to arrange for and finance the automation of chemical and hazardous waste inventories in laboratories,
- r implementing systems for identifying, classifying, labeling, and arranging for the disposal of hazardous waste,
- s working with landlords and facility managers to develop lead and asbestos O&M plans;
- t developing and delivering education and training programs for management and union officials, supervisors, employees, and high-risk activities,
- u when necessary, developing handbooks and manuals for managers, supervisors, and employees on SHEMP-related matters,
- v designing special emphasis and promotional programs to counteract potential or actual risks to and losses of resources and assets, and
- w working with SHEMD to arrange for and finance professional development and certification programs for SHEMP managers

Appendix A

SHEMD

Program Authorities and Statutes

Executive Orders

Occupational Safety and Health

- Executive Order 12196, Occupational Safety and Health Programs for Federal Employees, February 28, 1980, effective October 1, 1980
- Executive Order 13043, Increasing Seat Belt Use in the United States, April 16, 1997
- Executive Order 13058, Protecting Federal Employees and the Public from Exposure to Tobacco Smoke in the Federal Workplace, August 9, 1997

Environmental Compliance

- Executive Order 11593, Protection and Enhancement of Cultural Environment, May 13, 1971
- Executive Order 11738, Providing for Administration of the Clean Air Act and the Federal Water Pollution Control Act with Respect to Federal Contracts, Grants, or Loans, September 10, 1973
- Executive Order 11987, Exotic Organisms, May 24, 1977
- Executive Order 11990, Protection of Wetlands, May 24, 1977
- Executive Order 12088, Federal Compliance with Pollution Control Standards, October 13, 1978
- Executive Order 12843, Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances, April 21, 1993
- Executive Order 12856, Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements, August 3, 1993
- Executive Order 12873, Federal Acquisition, Recycling, and Waste Prevention, October 20, 1993
- Executive Order 12902, Energy Efficiency and Water Conservation, March 8, 1994
- Executive Order 12844, Alternative Fuel Vehicles, April 21, 1993
- Executive Order 12845, Purchasing Energy-Efficient Computer Equipment, April 21, 1993

Statutes

Occupational Safety and Health

- Section 19 of the Occupational Safety and Health Act of 1970, PL 91-596, December 29, 1970 - establishes requirements for federal facilities to implement occupational safety and health programs

General Environmental

- National Environmental Policy Act, PL 91-190, January 1, 1990 - requires federal facilities to consider the environmental consequences of intramural and extramural research activities as well as facility modification and construction
- Environmental Quality Improvement Act of 1970, PL 91-224, April 3, 1970 - establishes a broad policy mandate to support the enhancement of environmental quality

Air Pollution Control

- Clean Air Act, PL 90-148, as amended, November 21, 1967 - establishes standards for the protection and enhancement of the Nation's air quality
- National Energy Conservation Policy Act Relating to the Clean Air Act, PL 95-619, November 9, 1978 - establishes provisions to promote energy conservation as a means for reducing fossil fuel emissions to the atmosphere
- Radon Gas and Indoor Air Quality Research Act of 1986, PL 99-499, October 17, 1986 (passed as Title IV of the Superfund Amendments and Reauthorization Act of 1986) - requires federal facilities to conduct monitoring of federal workplaces for radon

Water Pollution Control

- Federal Waste Pollution Control Act of 1972, as amended by the Clean Water Act of 1977, PL 92-500, October 18, 1972 - establishes standards to promote the protection and improvement of water quality within navigable waters of the United States
- Oil Pollution Act of 1990, PL 101-380, August 18, 1990 - amended the Clean Water Act to incorporate new requirements for double-hulled vessels, facility response plans, and strengthened liability provisions
- Marine Protection, Research, and Sanctuaries Act of 1972, PL 92-532, October 23, 1972 - establishes provisions for the protection of the marine environment from pollution
- Coastal Zone Management Act of 1972, PL 92-583, October 27, 1972 - creates management planning requirements to foster protection of coastal zones
- Wild and Scenic Rivers Act, PL 90-542, October 2, 1986 - establishes provisions to ensure that wild and scenic rivers are safeguarded against harm from development and water quality degradation.
- National Ocean Pollution Planning Act, PL 95-273, May 8, 1978 - defines planning provisions for protection of oceans.

Drinking Water Management

- Safe Drinking Water Act, PL 93-523, December 16, 1974 - creates a detailed framework of technical standards and monitoring requirements to ensure the quality of drinking water

Past Disposal Practices

- Comprehensive Environmental Response, Compensation, and Liability Act of 1980, PL 96-510, as Amended, December 11, 1980 - establishes a national program for the management of abandoned hazardous waste sites and created the Hazardous Substance Trust Fund

Solid and Hazardous Waste Management

- Resource Conservation and Recovery Act of 1976, PL 94-580, October 31, 1976 - establishes a comprehensive cradle-to-grave framework for managing hazardous wastes
- Hazardous and Solid Waste Amendments of 1984, PL 98-616, November 8, 1984 - amended the Resource Conservation and Recovery Act to incorporate provisions for land disposal restrictions, new technical standards, and incorporated a new regulatory program for underground storage tanks
- Solid Waste Disposal Act of 1975, Title II of PL 89-272, establishes a comprehensive system of hazardous waste management

Radioactive Materials Management

- Atomic Energy Act of 1954, PL 83-703 - created requirements for the management of certain types of radioactive materials.

Toxic Substances

- Toxic Substances Control Act, PL 94-469, October 11, 1976 - establishes life-cycle management standards for designated toxic substances, including PCBs and asbestos

Pesticides

- Federal Insecticide, Fungicide, and Rodenticide Act, PL 92-516, October 21, 1976 - creates a comprehensive program for the registration and management of pesticides

Emergency Planning and Community Right-To-Know

- Emergency Planning and Community Right-To-Know Act of 1986, PL 99-499, October 17, 1986 (passed as Title III of the Superfund Amendments and Reauthorization Act of 1986) - devised notification and chemical inventory reporting requirements to support emergency planning and community awareness.

Transportation

- Hazardous Materials Transportation Act - contains provisions to safeguard against environmental, property, and individual risks during the transportation of hazardous materials.

Natural Resources Protection

- Endangered Species Act, PL 93-205, December 28, 1973 - establishes a national program for listing and protecting designated threatened and endangered species
- Noise Control Act, PL 92-574, October 18, 1972 - establishes provisions for limiting noise pollution
- National Historic Preservation Act of 1966, PL 89-665 - provides a detailed inventory and consultation process for protecting sensitive historic resources

Regulations

Occupational Safety and Health

- 10 CFR Part 20, Standards for Protection Against Radiation
- 10 CFR Part 820, Procedural Rules for Department of Energy Nuclear Activities
- 10 CFR Part 835, Occupational Radiation Protection
- 29 CFR Part 1910, General Industry Standards
- 29 CFR Part 1926, Construction Standards
- 29 CFR Part 1960, Basic Program Elements for Federal Employee Occupational Safety and Health Program and Related Matters Service
- 40 CFR Part 311, EPA Worker Protection Rules

General Environmental

- 40 CFR Part 6, EPA National Environmental Policy Act Procedures
- 40 CFR Part 25, EPA Regulations on Public Participation in Programs Under the Resource Conservation and Recovery Act, the Safe Drinking Water Act, and the Clean Water Act
- 40 CFR Part 124, EPA Decisionmaking (Permitting) Procedures
- 40 CFR Part 311, EPA Worker Protection Rules
- 40 CFR Part 1500, Council of Environmental Quality (CEQ) Policy Regulations
- 40 CFR Part 1501, National Environmental Policy Act and Agency Planning Regulations
- 40 CFR Part 1502, CEQ Regulations on Environmental Impact Statements
- 40 CFR Part 1503, CEQ Commenting Regulations
- 40 CFR Part 1504, CEQ Regulations on Predecision Referrals of Proposed Federal Actions to be Environmentally Unsatisfactory
- 40 CFR Part 1505, CEQ National Environmental Policy Act and Agency Decisionmaking Regulations
- 40 CFR Part 1506, CEQ Regulations on National Environmental Policy Act Requirements
- 40 CFR Part 1507, CEQ Agency Compliance Regulations
- 40 CFR Part 1508, CEQ Regulations on Terminology and Index
- 40 CFR Part 1517, CEQ Public Meeting Procedures

Air Pollution Control

- 40 CFR Part 50, EPA Regulations on National Primary and Secondary Ambient Air Quality Standards
- 40 CFR Part 51, EPA Regulations on Preparation of State Implementation Plans
- 40 CFR Part 52, EPA Regulations on Approval and Promulgation of Implementation Plans
- 40 CFR Part 53, EPA Regulations on Ambient Air Monitoring Reference and Equivalent Methods
- 40 CFR Part 58, EPA Ambient Air Quality Surveillance Regulations
- 40 CFR Part 60, EPA Regulations on Standards for Performance of New Stationary Sources
- 40 CFR Part 61, EPA Regulations on National Emission Standards for Hazardous Air Pollutants
- 40 CFR Part 63, EPA Regulations on National Emission Standards for Hazardous Air Pollutants for Source Categories
- 40 CFR Part 68, EPA Provisions for Chemical Accident Prevention
- 40 CFR Part 69, EPA Special Exemptions From Requirements of the Clean Air Act
- 40 CFR Part 70, EPA Regulations on State Operating Permit Programs
- 40 CFR Part 72, EPA Regulations on Permits
- 40 CFR Part 75, EPA Regulations on Continuous Emissions Monitoring Systems
- 40 CFR Part 76, EPA Regulations on Acid Rain Nitrogen Oxides Emission Reduction Program
- 40 CFR Part 79, EPA Regulations on Registration of Fuels and Fuel Additives
- 40 CFR Part 80, EPA Regulations on Fuels and Fuel Additives
- 40 CFR Part 82, EPA Stratospheric Ozone Protection Regulations
- 40 CFR Part 85, EPA Regulations on Control of Air Pollution from Motor Vehicles and Motor Vehicle Engines
- 40 CFR Part 86, EPA Regulations on Control of Air Pollution from New and In-Use Motor Vehicles and New and In-Use Motor Vehicle Engines
- 40 CFR Part 87, EPA Regulations on Control of Air Pollution from Aircraft and Aircraft Engines
- 40 CFR Part 88, EPA Regulations on Clean-Fuel Vehicles

Water Pollution Control

- 33 CFR Part 151, Coast Guard Oil, Noxious Substances, and Municipal or Commercial Waste Regulations
- 33 CFR Part 153, Coast Guard Control of Pollution by Oil and Hazardous Substances, Discharge Removal
- 33 CFR Part 154, Coast Guard Regulation for Facilities Transferring Oil or Hazardous Materials in Bulk
- 33 CFR Part 155, Coast Guard Oil or Hazardous Material Pollution Prevention Regulations for Vessels
- 33 CFR Part 156, Coast Guard Regulations on Oil and Hazardous Material Transfer Operations
- 33 CFR Part 159, Coast Guard Regulations on Marine Sanitation Devices

- 33 CFR Part 323, Coast Guard Regulations for Dredged Materials
- 40 CFR Part 110, EPA Regulations on Discharge of Oil
- 40 CFR Part 112, EPA Regulations on Oil Pollution Prevention
- 40 CFR Part 113, EPA Regulations on Liability Limits for Small Onshore Oil Storage Facilities
- 40 CFR Part 114, EPA Interim Rules on Civil Penalties for Violations of Oil Pollution Prevention Regulations
- 40 CFR Part 116, EPA Regulations on Designation of Hazardous Substances under the Federal Water Pollution Control Act
- 40 CFR Part 117, EPA Regulations on Determination of Reportable Quantities for Hazardous Substances
- 40 CFR Part 122, EPA National Pollutant Discharge Elimination System (NPDES) Permit
- 40 CFR Part 125, EPA Criteria and Standards for the National Pollutant Discharge Elimination System
- 40 CFR Part 129, Toxic Pollutant Effluent Standards
- 40 CFR Part 130, EPA Requirements for Water Quality Planning and Management
- 40 CFR Part 131, Water Quality Standards
- 40 CFR Part 133, EPA Secondary Treatment Regulations
- 40 CFR Part 136, EPA Guidelines Establishing Test Procedures for the Analysis of Pollutants
- 40 CFR Part 140, Marine Sanitation Device Standard
- 40 CFR Part 220, EPA General Ocean Dumping Regulations
- 40 CFR Parts 221-222, EPA Ocean Dumping Permit Regulations
- 40 CFR Part 225, EPA Dredged Material Permit Regulations
- 40 CFR Part 230, EPA Interim Regulations on Discharge of Dredged or Fill Material into Navigable Waters
- 40 CFR Part 232, EPA Rule on Activities Exempt from Dredge or Fill (Section 404) Permit Program Requirements
- 40 CFR Part 401, General Provisions for Effluent Guidelines and Standards
- 40 CFR Part 403, General Pretreatment Regulations for Existing and New Sources of Pollution
- 40 CFR Parts 405-471, Categorical Industrial Effluent Guidelines and Standards
- 40 CFR Part 503, EPA Standards for the Use or Disposal of Sewage Sludge

Drinking Water Management

- 40 CFR Part 141, EPA National Primary Drinking Water Regulations
- 40 CFR Part 143, EPA National Secondary Drinking Water Regulations
- 40 CFR Part 144, EPA Underground Injection Control Program
- 40 CFR Part 146, EPA Underground Injection Control Program. Criteria and Standards
- 40 CFR Part 148, EPA Hazardous Waste Injection Restrictions
- 40 CFR Part 149, EPA Regulations for Sole Source Aquifers

Past Disposal Practices

- 40 CFR Part 300, EPA National Oil and Hazardous Substances Pollution Contingency Plan under the Comprehensive Environmental Response, Compensation, and Recovery Act (CERCLA)
- 40 CFR Part 302, EPA Designation, Reportable Quantities, and Notification Requirements for Hazardous Substances under CERCLA
- 40 CFR Part 303, EPA Regulations Governing Citizen Awards for Information on Criminal Violations Under Superfund
- 40 CFR Part 304, EPA Arbitration Procedures for Small Superfund Cost Recovery Claims
- 40 CFR Part 307, CERCLA Claims Procedures
- 40 CFR Part 310, EPA Rules for Reimbursing Local Governments for Emergency Response to Hazardous Substance Releases
- 40 CFR Part 373, Hazardous Substance Reporting Requirements for Selling or Transferring Federal Real Property

Solid and Hazardous Waste Management

- 40 CFR Part 240, Guidelines for the Thermal Processing of Solid Wastes
- 40 CFR Part 241, Guidelines for Land Disposal of Solid Wastes
- 40 CFR Part 243, Guidelines for Solid Waste Storage and Collection
- 40 CFR Part 244, Guidelines for Beverage Containers
- 40 CFR Part 245, Guidelines for Resource Recovery Facilities
- 40 CFR Part 246, Guidelines for Source Separation and Materials Recovery
- 40 CFR Part 247, Guidelines for Products That Contain Recycled Material
- 40 CFR Part 248, Guidelines for Federal Procurement of Building Insulation Products Containing Recovered Materials
- 40 CFR Part 249, Guidelines for Federal Procurement of Cement and Concrete Containing Fly Ash
- 40 CFR Part 250, Guidelines for Federal Procurement of Paper and Paper Products Containing Recovered Materials
- 40 CFR Part 252, Guidelines for Federal Procurement of Lubricating Oils Containing Re-Refined Oil
- 40 CFR Part 253, Guidelines for Federal Procurement of Retread Tires
- 40 CFR Part 257, EPA Regulations on Criteria and Classification of Solid Waste Disposal Facilities and Practices
- 40 CFR Part 258, EPA Criteria for Municipal Solid Waste Landfills
- 40 CFR Part 260, EPA Hazardous Waste Management System. General
- 40 CFR Part 261, EPA Regulations for Identifying Hazardous Waste
- 40 CFR Part 262, EPA Regulations for Hazardous Waste Generators
- 40 CFR Part 263, EPA Regulations for Transporters of Hazardous Waste
- 40 CFR Part 264, EPA Regulations for Owners or Operators of Hazardous Waste Facilities
- 40 CFR Part 265, EPA Interim Status Standards for Owners and Operators of Hazardous Waste Facilities
- 40 CFR Part 266, EPA Standards for Management of Specific Types of Facilities

- 40 CFR Part 268, EPA Regulations on Land Disposal Restrictions
- 40 CFR Part 270, EPA Regulations for Federally Administered Hazardous Waste Permit Programs
- 40 CFR Part 271, EPA Requirements for Authorization of State Hazardous Programs
- 40 CFR Part 279, EPA Standards for Managing Used Oil
- 40 CFR Part 280, EPA Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks

Radioactive Materials Management

- 10 CFR Part 19, Notices, Instructions, and Reports to Workers: Inspection and Investigations
- 10 CFR Part 20, Standards for Protection Against Radiation
- 10 CFR Part 21, Reporting of Defects and Noncompliance
- 10 CFR Part 25, Access Authorization for Licensee Personnel
- 10 CFR Part 26, Fitness for Duty Programs
- 10 CFR Part 30, Rules of General Applicability to Domestic Licensing of By-product Material
- 10 CFR Part 31, General Domestic Licensing of Byproduct Material
- 10 CFR Part 33, Specific Domestic Licenses of Broad Scope for By-Product Material
- 10 CFR Part 36, Licenses and Radiation Safety Requirements for Irradiators
- 10 CFR Part 40, Domestic Licensing of Source Material

Toxic Substances

- 40 CFR Part 747, Metalworking Fluids
- 40 CFR Part 749, Water Treatment Chemicals
- 40 CFR Part 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
- 40 CFR Part 762, Fully Halogenated Chlorofluoroalkanes
- 40 CFR Part 763, Asbestos
- 40 CFR Part 766, Dibenzo-Para-Dioxins/Dibenzofurans

Pesticides

- 40 CFR Part 152, Pesticide Registration and Classification Procedures
- 40 CFR Part 155, Registration Standards
- 40 CFR Part 156, Labeling Requirements for Pesticides and Devices
- 40 CFR Part 157, Packaging Requirements for Pesticides and Devices
- 40 CFR Part 158, Data Requirements for Registration
- 40 CFR Part 160, Good Laboratory Practice Standards
- 40 CFR Part 165, Regulations for the Acceptance of Certain Pesticides and Recommended Procedures for the Disposal and Storage of Pesticides and Pesticides Containers
- 40 CFR Part 166, Exemption of Federal and State Agencies for Use of Pesticides Under Emergency Conditions
- 40 CFR Part 170, Worker Protection Standard
- 40 CFR Part 172, Experimental Use Permits

Emergency Planning and Community Right-To-Know

- 40 CFR Part 355, Regulations for Emergency Planning and Notification
- 40 CFR Part 370, Hazardous Chemical Reporting and Community Right-To-Know Requirements
- 40 CFR Part 372, Toxic Chemical Release Reporting Regulations

Transportation

- 49 CFR Parts 100-178, Transportation of Hazardous Materials

Appendix B
SHEMD Program References

EPA Orders

- EPA Order 1440 1, Safety, Health and Environmental Management Division, 1997
- EPA Order 1440 2, Health and Safety Requirement for Employees Engaged in Field Activities
- EPA Order 1440 4, Health and Safety Training Requirements for Mine Safety
- EPA Order 1440 6, Occupant Restraint Systems
- EPA Order 1000 9, Policy on Smoking in EPA-Occupied Buildings
- EPA Order 1000 18, Transportation of Hazardous Materials
- EPA Order 3100 1, Uniforms, Protective Clothing and Protective Equipment
- EPA Order 3100 3, Authorization of Performance of Hazardous Duty
- EPA Order 3120 1, Conduct and Discipline
- EPA Order 3140, Training and Development Manual
- EPA Order 3180 1, Federal Employees Compensation Program
- EPA Order 1480 1, EPA Facility Compliance with the Emergency Planning and Community Right-To-Know Act

DOE Orders

U S Department of Energy (DOE) Order 1324.2A, Records Disposition
DOE Order 5000 3B, Occurrence Reporting and Processing of Operations Information
DOE Order 5480 11, Radiation Protection for Occupational Workers
DOE Order 5480 4, Environmental, Safety, and Health Protection Standards
DOE Order 5480 6, Radiological Controls
DOE Order 5484.1, Environmental, Protection, Safety, and Health Protection Information Reporting Requirements

GSA Directive

GSA Directive PBS-PQ100.1, Facilities Standards for the Public Building Service

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**Section 2-02
Introduction**

**PURPOSE AND
SCOPE**

This *Safety, Health, and Environmental Management Guidelines (SHEMG)* chapter provides an introduction to Environmental management systems (EMSs), as well as the environmental Protection Agency's (EPA's) Code of Environmental Management Principles (CEMP). Additionally, it describes the increasingly important role of EMSs at federal facilities.

Although the management systems discussed in this chapter primarily are derived from environmentally focused standards, the systems and principles discussed throughout this chapter also are applicable to managing the Agency's occupational safety and health (OSH) program. In fact, regulators have begun to incorporate management system concepts into regulatory programs to promote performance-based compliance approaches (e.g., the Occupational Safety and Health Administration's (OSHA's) Process Safety Management Standard). Accordingly, this chapter presents an integrated discussion of environmental, safety, and health management systems (ES&HMSs) and their relevance to EPA's Safety, Health and Environmental Management Division Program (SHEMP).

**OVERVIEW OF
SAFETY, HEALTH
AND
ENVIRONMENTAL
MANAGEMENT
SYSTEMS**

There are many ways of describing management systems. Typically the different management system models are alternate ways of trying to explain ES&HMS concepts. The Agency believes that ES&HMSs are essential for directing EPA operations toward achieving desired safety, health, and environmental management performance on a sustained basis. An EMS provides order and consistency for organizations to address environmental concerns by allocating resources, assigning responsibilities, and performing ongoing evaluations of practices, procedures, and processes. The EMS is best viewed as an organizing framework that should be continually monitored and periodically reviewed to provide effective direction for an organization's environmental activities. This framework ensures that safety, health, and environmental programs can be adjusted to reflect changing internal and external requirements.

Every individual in an organization is responsible for ES&H improvements to foster peak and sustained compliance. ES&HMSs include both formal and informal actions and typically comprise four basic management functions: (1) planning,

Management Systems

(2) implementing, (3) checking/corrective action (monitoring), and (4) continuous improvement. Whereas the planning function establishes the overall direction for an organization or agency, the implementation function creates the basis for effectively directing and coordinating resources toward achieving SHEMP objectives. Critical at the facility level, the monitoring function determines the organization's ES&H implementation results, while the continuous function keeps the organization on track relative to its SHEMP goals and objectives.

Most importantly for SHEMP Managers, is the concept that ES&HMSs provide a framework for managing operations and compliance requirements, including compliance with relevant regulatory requirements. ES&HMSs can also help SHEMP Managers identify opportunities for improving their performance beyond compliance and to make greater use of pollution prevention practices. Pollution prevention is a key tool for managing compliance issues and achieving environmental excellence. For detailed implementation guidance on this topic, SHEMP Managers should refer to a document developed by EPA's Office of Water, entitled, *Environmental Management Systems - An Implementation Guide For Small and Medium-Sized Organizations* (EPA 832-B-96-007, November 1996). This guide is intended to support and facilitate the development of EMS's and is broadly applicable to implementation of EMSs for larger organizations.

**OVERVIEW OF ISO
14001 VOLUNTARY
STANDARD FOR
ENVIRONMENTAL
MANAGEMENT
SYSTEMS**

The International Organization for Standardization (ISO) 14001 Voluntary Standard for Environmental Management Systems was published in September 1996, and is a widely accepted official national standard for EMSs. Presently organizations around the world are putting EMSs in place based on ISO 14001 and preparing for third-party certification by outside auditors. The ISO 14001 Standard supports environmental compliance through its requirements for organizations to:

- Develop an environmental policy with a commitment to compliance
- Set management objectives and targets that are in line with its environmental policy
- Have a procedure for identifying and having access to environmental laws and regulations

Management Systems

- Establish operational control, communication, and documentation procedures
- Establish procedures for emergency preparedness and response
- Checking/corrective action (i.e., monitoring and measurement)
- Establish a procedure for periodically evaluating compliance
- Continuous improvement.

An EMS based on the ISO 14001 Standard can complement and improve an organization's compliance management and help the organization meet objectives and targets that go beyond compliance in a cost-effective manner. Additional ISO 14000 standards address: environmental performance evaluations, environmental auditing, life cycle assessment, and environmental labeling.

**OVERVIEW OF
EPA's CODE OF
ENVIRONMENTAL
MANAGEMENT
PRINCIPLES
(CEMP)**

The Code of Environmental Management Principles for Federal Agencies, developed by EPA in response to Executive Order 12856, *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*, is a collection of five broad principles and underlying performance objectives that provide a basis for federal agencies and SHEMP Managers to move toward responsible environmental management. The principles and supporting performance objectives, shown in Exhibit 1 on the next page, are meant to serve as guideposts for organizations intending to implement environmental management programs or improve existing programs. It is expected that each of the five principles and supporting performance objectives will receive careful review by SHEMP Manager for incorporation into SHEMPs. The degree to which each is emphasized will depend largely on the specific activities of the implementing organization. An initial review of the existing programs will help an organization determine where it stands and how best to proceed. Adherence to the five principles will help ensure environmental performance that is proactive, cost-effective, integrated, and sustainable.

Management Systems

**Exhibit 1.
CEMP Principles**

Principle and Statement of Expectation	Supporting Performance Objectives
<p>1. Management Commitment</p> <p>The agency makes a written top-management commitment to improved environmental performance by establishing policies that emphasize pollution prevention and the need to ensure compliance with environmental requirements.</p>	<ul style="list-style-type: none"> • Agency communicates its policy externally, to regulatory authorities and other stakeholders • Agency decisions consider environmental criteria when appropriate; program thoroughly integrated • All agency decisions include appropriate environmental criteria to minimize impact
<p>2. Compliance Assurance and Pollution Prevention</p> <p>The agency implements proactive programs that aggressively identify and address potential compliance problem areas and utilize pollution prevention approaches to correct deficiencies and improve environmental performance.</p>	<ul style="list-style-type: none"> • Full agency compliance is sustainable; contractors are included within the compliance program • All agency personnel are trained in emergency response procedures • Program maintained throughout the agency; significant reductions in waste achieved
<p>3. Enabling Systems</p> <p>The agency develops and implements the necessary measures to enable personnel to perform their functions consistent with regulatory requirements, agency environmental policies, and its overall mission.</p>	<ul style="list-style-type: none"> • 100% of agency is fully trained, refresher training is provided, computer-based and distance learning are employed, and programs are continually evaluated • Procedures are fully implemented and reviewed periodically • Agency maintains effective communications, applies environmental information to decision-making, and maintains thorough records
<p>4. Performance and Accountability</p> <p>The agency develops measures to address employee environmental performance, and to ensure full accountability of environmental functions.</p>	<ul style="list-style-type: none"> • Assignment of environmental responsibilities is reviewed periodically in light of performance • Agency develops a program to recognize and reward personnel that carry out environmental responsibilities with disciplinary systems in place
<p>5. Measurement and Improvement</p> <p>The agency develops and implements a program toward meeting its environmental goals and uses the results to improve environmental performance.</p>	<ul style="list-style-type: none"> • Data-gathering is a continuous process; gaps in performance are identified and analyses conducted to identify root causes • Agency maintains ongoing benchmarking cycles; agency becomes a target for benchmarking by others • Agency shows significant improvement in addressing substandard performance situations and aggressively seeks to compare its performance to others

In developing the CEMP, EPA examined a number of

environmental management systems standards to identify common elements and areas that needed to be addressed. The CEMP reflects its EMS origin in its structure and format; however, it is not a technical management specification standard like ISO 14001. Rather than focus on strict evaluations of conformance, EPA developed the principles to emphasize the aspects of improved management (leading to enhanced performance) and continuous improvement. The CEMP also differs from most EMS standards in its emphasis on regulatory compliance and its target of federal agencies.

EPA is seeking endorsement of the CEMP on an agency-wide basis, with flexibility as to how the Principles themselves are implemented at the facility level. For example, facilities can use the ISO 14001 Environmental Management Standard or some alternative environmental management system to achieve the CEMP performance objectives. This flexible approach recognizes that individual federal facilities and installations may already have EMSs in place or are considering adoption of the ISO 14001 Environmental Management Standard. SHEMP realizes that there is a logical but not strictly structured progression of activities in the growth of a EMS-based program. Therefore, SHEMP Managers are encouraged to adapt the principles to their existing programs. While some of the above CEMP performance objectives are clear, others are more subjective (i.e., open to interpretation). For more detailed CEMP implementation guidance, SHEMP Managers should review EPA's document entitled, *Implementation Guide for the Code of Environmental Principles for Federal Agencies*, EPA-315-B-97-001, March 1997.

REFERENCES

These references provide additional information on EMSs and EPA's CEMP.

- *Implementation Guide for the Code of Environmental Management Principles for Federal Agencies (CEMP)* (Report Number - EPA-315-B-97-001, March 1997)
- *Environmental Management System Benchmark Report: A Review of Federal Agencies and Selected Private Corporations* (Report Number - EPA-300R-94-009, December 1994)
- *NSF International Standard for Environmental Management Systems—Guiding Principles and Generic Requirements for Environmental Management Systems.* (NSF 110-1994)

Management Systems

- *Managing in the Environmental Era: Lessons from Environmental Leaders*, Booz, Allen & Hamilton Inc., (Columbia Journal of World Business, Vol XXVII, Nos. III and IV, 1992)
- *Environmental Management Systems: An Implementation Guide for Small and Medium-sized Organizations* (Report Number - EPA 832-B-96-007, November 1996)
- Code of Environmental Management Principles (61 Federal Register 54062; October 1996)
- ISO 14001 Environmental Management System - Specification with Guidance for Use (including March 1996 changes)
- ISO 14001 Environmental Management System - General Guidelines on Principles, Systems and Supporting Techniques (including March 1996 changes)
- *Occupational Health and Safety Management Systems*, American Industrial Hygiene Association (1997)
- Guidance for Incorporating the Code of Environmental Management Principles in Office Functions at Federal Agencies (Draft), 1997

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Section 2-03
The Role of ES&HMSs at Federal Facilities

**SAFETY, HEALTH
AND
ENVIRONMENTAL
MANAGEMENT
FOR FEDERAL
AGENCIES**

Over the years, Presidents have issued a series of executive orders which extend certain safety, health, and environmental protections to federal employees, workplaces, and activities. These protections are provided under various federal laws and regulations. Historically, some of these regulations applied to elements of the private sector, but they were not applicable within the federal sector. The President directed heads of federal departments and agencies to establish SHEMPs which ensure that federal employees are provided with safe and healthful workplaces and working conditions, and that federal activities comply with applicable federal, state, and local ES&H mandates.

**IMPORTANCE OF
EPA
DEMONSTRATING
STEWARDSHIP**

EPA's safety, health and environmental management programs are at a critical transition point. The Agency has set a goal of moving these programs from reactive compliance-orientated activities to a more proactive, risk-management focus. Like its counterparts in industry and other government agencies, EPA must develop the policies, programs, and procedures to achieve these SHEMP goals. The Agency faces a challenge, however, that none of its industry and government counterparts face. As a regulatory enforcement Agency, EPA's compliance with its own regulations must be beyond reproach. Executive Order 12088 makes the Agency responsible for providing technical assistance and guidance to all federal agencies to help them comply with environmental regulations and statutes.

**EMS APPROACH
TO SHEMP
MANAGEMENT**

SHEMP Managers are challenged with the responsibility for integrating the broad spectrum of statutes, executive orders, rules, regulations, nationally recognized consensus standards, and relevant standards of care into one comprehensive regional, program office, and/or laboratory and field-based SHEMP. Therefore, a SHEMP founded on strong ES&HMS principles and standards provides confidence that:

- A management effort exists to meet the provisions of its policy and objectives
- Emphasis is placed on prevention rather than corrective action
- Evidence of reasonable care and regulatory compliance can be provided

Management Systems

- The systems design incorporates the process of continual improvement.

In addition, SHEMP Managers should seek to exploit the links between safety, health, and environmental management and other aspects of the organization. Exhibit 2, below, identifies how various operational functions can support the Agency's ES&HMS. Achieving effective integration of EMSs with other support functions is an ongoing and interactive process.

**Exhibit 2.
How Various Functions Can Support Your EMS**

Functions	How They Can Help (Possible Roles)
1. Top Management	<ul style="list-style-type: none"> • Communicate imp. rtance of ES&HMSs throughout organization • Provide necessary resources • Track and review ES&HMS performance
2. Purchasing	<ul style="list-style-type: none"> • Develop and implement controls for chemical and other material purchases • Integrate pollution prevention and overall acquisition management • Establish processes for affirmative procurement • Comply with common requirements of executive orders
3. Human Resources	<ul style="list-style-type: none"> • Define competency requirements and job descriptions for various ES&HMS roles • Develop and implement training and awareness programs • Integrate environmental management reward, discipline, and appraisal systems
4. Maintenance	<ul style="list-style-type: none"> • Implement preventive maintenance programs for key equipment to ensure proper operations and risk avoidance
5. Finance	<ul style="list-style-type: none"> • Track data on ES&H management costs • Prepare budgets for ES&H management programs • Evaluate economic feasibility of environmental project
6. Engineering	<ul style="list-style-type: none"> • Consider ES&H impacts of new or modified processes • Identify pollution prevention opportunities
7. Line Workers	<ul style="list-style-type: none"> • Provide first-hand knowledge of ES&H aspects of their operations • Participate in orientation and continuing training activities

Management Systems

AGENCY
APPROACH TO
ACHIEVE
CONTINUOUS
SHEMP ---
IMPROVEMENT

The Agency has implemented an approach toward continuous SHEMP improvement that includes preventive and corrective actions, as well as exploring new opportunities for programmatic improvements. ES&HMS provide a structured process for the achievement of continual feedback and refinement. However, the establishment and operation of an ES&HMS will not in itself, necessarily result in an immediate reduction of adverse impacts. Although some improvement can be expected due to the adoption of a systematic approach, the ES&HMS is primarily a tool which enables the organization to achieve and systematically develop the level of ES&H performance that it sets for itself.

Continuous improvement is achieved by continually evaluating the performance of the ES&HMS against environmental, safety and health policies, objectives, and goals for the purpose of identifying opportunities for advancement. This continual improvement process should:

- Identify opportunities for improving the ES&HMS
- Determine the root cause or causes of nonconformance or deficiencies
- Develop and implement a plan of corrective and preventive action to address root causes
- Verify the effectiveness of the corrective and preventive actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with goals and objectives.

In summary, continuous improvement may be demonstrated through the use of lessons learned and employee involvement programs that provide the opportunity to learn from past performance and incorporate constructive suggestions.

EMS AND CEMP
RELEVANCE TO
THE SHEM
GUIDELINES

The Safety, Health, and Environmental Management Guidelines were designed to provide EPA facilities with practical implementation guidance and tools to assist SHEMP Managers in effectively executing their program responsibilities. The *SHEMG* provides descriptive information on regulatory requirements, guidance, recommended procedures, and management tools to

Management Systems

assist EPA facilities in complying with applicable safety, health, and environmental standards in mitigating risks to human health and environmental quality. Through the establishment of the *SHEMG*, EPA has addressed a number of key performance objectives for EMSs that are contained in both ISO 14001 and EPA's CEMP. As illustrated in Exhibit 3, below, there is a strong connection between ISO and CEMP in the "Implementation" and "Enabling Systems" areas. When viewed against the objectives and focus of EPA's *SHEMG*, it is evident that the guidelines provide an important ES&HMS that aligns the SHEMP with EMS principles.

**Exhibit 3.
EMS and CEMP Relevance to the SHEMP Guidelines**

EMS Principles and Selected Performance Objectives	<i>Safety, Health and Environmental Management Guidelines Objectives and Focus</i>
<p>CEMP - Principle 3, Enabling Systems</p> <p>The agency develops and implements the <u>necessary measures to enable personnel to perform their functions</u> consistent with regulatory requirements, agency environmental policies, and its overall mission.</p> <ul style="list-style-type: none"> • <u>Clear procedures, standards, systems, programs, and short- and long-term objectives</u> in place • A <u>streamlined set of procedures, standards, systems, programs, and goals</u> describe organization's commitment to responsible environmental management <p>ISO 14001 Principle 3, Implementation</p> <p>For effective implementation, an organization should develop the capabilities and <u>support mechanisms</u> necessary to achieve its environmental policy, objectives and targets.</p> <ul style="list-style-type: none"> • <u>Operational processes and procedures should be defined and appropriately documented</u> and updated as necessary • The existence of <u>EMS documentation supports employee awareness of what is required to achieve organizations' environmental objectives</u> 	<p>Example SHEMG - Chapter 23, "Chemical Handling and Storage Program"</p> <p>Document Intent: The intent of this guideline is to outline <u>specific procedures and requirements</u>, as well as <u>requirements of relevant, existing Agency policies</u> by reference.</p> <p>Guideline Focus:</p> <ul style="list-style-type: none"> • Purpose and Scope • Authorities - sources of legal authority, including laws and regulations • References - documents and other sources of information to assist in implementation • Program Administration and Responsibilities • Program Requirements • Implementation Activities • Program Evaluation • Appendices

**SAFETY, HEALTH, AND
ENVIRONMENTAL MANAGEMENT
PROGRAM GUIDE**

Guide No. 04

Issued 05/98

Revised _____

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) PROGRAM

SCOPE OF THE PROGRAM

This Program Guide provides an overview of the requirements EPA facilities must fulfill to comply with the regulations, guidance, and procedures associated with the National Environmental Policy Act (NEPA) of 1969. NEPA established national environmental policy and goals for the protection, maintenance, and enhancement of the environment and requires all federal agencies to evaluate the potential environmental impacts from major federal actions and to follow a procedural decision-making process that includes public input. The NEPA evaluation process must be undertaken by all federal agencies when executing major actions with potential environmental impacts. Major federal actions include promulgating regulations, issuing permits, or building or modifying a federal facility. Specific examples of EPA actions that require NEPA involvement include designing and constructing new facilities, engaging in major new research projects involving highly toxic substances, or performing bioengineering studies with potential to introduce genetically engineered microbes into sensitive habitats. The level of NEPA analysis and review is commensurate with the project complexity and impact potential, ranging from categorical exclusions (CX's), where no impacts are anticipated, through environmental assessments (EAS) and environmental impact statements (EISs), where significant environmental consequences are possible.

REGULATORY REQUIREMENTS

The key or basic elements of the NEPA Program required by law and/or EPA policy are to:

- Determine the appropriate level of NEPA review for a given project
- Define the significant issues to be analyzed through information gathering and the public participation process
- Evaluate project alternatives, including the proposed action and possible mitigation measures to determine whether or not potential environmental impacts are significant

AUTHORITIES

The following documents are the sources of the legal authority that establish the applicability and requirements of this program.

- 42 United States Code (USC) 4321, which also established the President's Council on Environmental Quality (CEQ)
- Title 40 Code of Federal Regulations (CFR), Parts 1500-1517 (CEQ NEPA regulations)
- Title 40 CFR Part 6 (EPA NEPA regulations)
- *EPA Safety, Health, and Environmental Management Guidelines*
- *EPA Facility Safety, Health, and Environmental Management Manual*

REFERENCES

The first five documents listed below can help

you implement the NEPA program and specifically are intended for design and construction activities. The last document, and other outside sources of information, also will assist you in implementing NEPA.

- EPA, Architecture, Engineering, and Real Estate Branch (AEREB), The NEPA Review Procedures for EPA Facilities
- EPA, AEREB, Understanding the National Environmental Policy Act: A Self-Study Training Booklet
- EPA, AEREB, The NEPA General Information Pamphlet
- EPA, AEREB, The NEPA General Information, Regulatory Cross-Cutters, and Project Level Compliance Worksheet Booklet
- EPA, AEREB, The NEPA Categorical Exclusion, Environmental Assessment, and Finding of No Significant Impact Preparation Assistance Booklet.

IMPLEMENTATION ACTIVITIES

The following list gives an overview of the activities that this program will require. To implement and operate this program, you must:

Identify and document construction and research projects eligible for a CX under EPA NEPA regulations

Integrate NEPA review activities into Agency project planning activities

For construction and research projects, ensure that potential environmental impacts and mitigation alternatives are systematically identified during project planning

Provide technical direction and input to support the preparation of EISs for major construction and research actions undertaken to support the Agency's mission

Participate in Agency-sponsored training forums and reviewing other training materials

Maintain an archive of NEPA-related information that can be made available for public review.

IMPLEMENTATION IMPLICATIONS

The management systems and internal controls required to implement this program include:

- A system to track construction and research projects during planning phases that may be subject to NEPA environmental review requirements
- Procedures to ensure that CX's, EAs, and EISs are prepared correctly in response to initiating major EPA-sponsored actions
- Verification processes to ensure NEPA reviews are performed in accordance with Agency policy and guidance, including required checklists and forms.
- A centralized NEPA documentation archive
- NEPA training to promote and ensure staff awareness and educate staff on specific implementation procedures.

National Environmental Policy Act

Section 04-01
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**Section 04-02
Introduction**

PURPOSE

The National Environmental Policy Act (NEPA) is a general statute that was signed into law on January 1, 1970. NEPA establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment. The enactment of NEPA triggered the beginning of an era of environmental legislation and land use regulation, as NEPA was the first federal legislation to promote environmental values and consideration into the federal administrative decisionmaking process.

The requirements of NEPA are essentially procedural in nature. The NEPA evaluation process must be undertaken by all federal agencies when executing major actions with potential environmental impacts. Major federal actions include promulgating regulations, issuing permits, or building or modifying a federal facility. Specific examples of EPA actions which require NEPA involvement include designing and constructing new facilities, rehabilitating an existing facility, engaging in major new research projects involving highly toxic substances, or performing bioengineering studies with potential to introduce genetically engineered microbes into sensitive habitats. This chapter of the Safety, Health and Environmental Management (SHEM) Guidelines provides descriptive information, guidance, recommended procedures, and management tools to assist Environmental Protection Agency (EPA) facilities in complying with NEPA and to prevent negative environmental impacts resulting from major facility actions.

NEPA requires federal agencies to use a multidisciplinary process to provide environmental impact information to federal, state, local, and Indian Tribal officials as well as citizens before making decisions on major federal actions that may significantly affect the environment. Federal agencies are required to obtain public input and to study, develop, and describe impacts, alternatives, and mitigation measures on decisions that may impact the environment. The NEPA process is all-inclusive, incorporating socioeconomic, historic, and a broad spectrum of environmental values into its review criteria. For EPA and other federal agencies, the NEPA process should be an integral part of the business and project planning process.

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AUTHORITY

The authority of the NEPA statute, 42 United States Code (USC) 4321, also established the President's Council on Environmental Quality (CEQ), which reviews and appraises federal government activities to ensure compliance with the NEPA statute and implementing regulations. The CEQ promulgated regulations to implement NEPA in Title 40 Code of Federal Regulations (CFR), Parts 1500-1517. NEPA requires all federal agencies to evaluate the consequences of major federal actions associated with the implementation of agency activities. In addition, all federal agencies are encouraged to develop their own implementing regulations. EPA's NEPA regulations are located at 40 CFR Part 6.

**RESPONSIBLE
OFFICERS**

If a project at an EPA facility is considered to be a major federal action, a responsible official will be assigned to the project to ensure that NEPA procedures are appropriately executed. If the design and construction funding is managed by EPA's Architecture, Engineering, and Real Estate Branch (AEREB), the chief of AEREB will be the responsible official. If the funding is received and managed by one of EPA's regional offices, the Regional Administrator (RA) will be the responsible official. If the funding is received and managed by one of EPA's program offices, the Assistant Administrator (AA) or another individual at that program office is the responsible official. When the Office of Administration and Resources Management (OARM), Research Triangle Park (RTP), or Cincinnati is responsible for design and construction funding, the director of the respective organization is the responsible official. Where the EPA is working with the General Services Administration (GSA) to construct new space, the GSA is the lead agency and will prepare the environmental documentation with the cooperation of EPA.

EPA's NEPA responsibilities will be effectively executed by the responsible official by following these procedures, which are discussed more fully later in this chapter:

1. Determining the appropriate level of NEPA review for a project
2. Defining the significant issues to be analyzed through information gathering and the public participation process

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3. Evaluating project alternatives, including the proposed action and possible mitigation measures, to determine whether potential environmental impacts are significant or not significant
4. Developing documentation to assist the public and decision-makers in evaluating the proposed action and alternatives.

The Safety, Health and Environmental Management Program (SHEMP) Manager should assist the responsible official for the proposed action by providing technical input, regulatory guidance, and documentation of current facility environmental program activities to facilitate the NEPA review process. The SHEMP Manager should also ensure that NEPA documentation (or copies of originals) developed during environmental review procedures conducted pursuant to NEPA are maintained in the facility's permanent environmental records file. This information should be managed to allow for ease of access and review in the event of a public inquiry.

REFERENCES

Statutory and regulatory references that establish NEPA requirements include:

5. National Environmental Policy Act of 1969, 42 USC 4321
6. CEQ NEPA regulations, 40 CFR Parts 1500-1517
7. EPA NEPA regulations, 40 CFR Part 6.

In addition, AEREB has developed materials to assist in the implementation of NEPA, specifically geared for design and construction activities. These materials, which can be obtained by contacting AEREB at 202-260-2160, include:

8. *The NEPA Review Procedures for EPA Facilities*, an easy-to-use comprehensive guide that presents the requirements of EPA NEPA regulations, located at 40 CFR Part 6, as well as specific EPA implementation procedures. It also contains NEPA review procedures to assist the EPA project managers in integrating NEPA into facility management priorities
9. *Understanding the National Environmental Policy Act: A Self-Study Training Booklet*, which provides training on understanding and implementing the NEPA process and

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includes information on completing the NEPA Review Form for Facility Alteration or Construction Project (EPA Form 3300-16)

10. The *NEPA General Information Pamphlet*, which provides a overview on the NEPA process and general background information
11. The *NEPA General Information, Regulatory Cross-Cutters, and Project Level Compliance Worksheet Booklet*, which summarizes related legislation and provides a compliance worksheet to assist in preparing NEPA documentation
12. The *NEPA Categorical Exclusion, Environmental Assessment, and Finding of No Significant Impact Preparation Assistance Booklet*, which provides a broad overview of the NEPA process and copies of the NEPA Review Form for Facility Alteration or Construction Project (EPA Form 3300-16) and assists in correctly completing NEPA documentation.

A list of acronyms and a glossary are provided as Appendix A to assist in understanding the terminology used in this chapter.

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Section 04-03
Overview of the NEPA Process

INTRODUCTION

This section of the NEPA SHEM Guidelines explains the three tiers of the NEPA review process and the methodology associated with determining what documentation is appropriate. Several documents are referenced for additional information.

**PREPARING THE
APPROPRIATE NEPA
DOCUMENTATION**

EPA and other federal agencies follow a three-tiered procedural review process when an action that could affect the environment is proposed. Exhibit 1 on the next page depicts an overview of the NEPA process. The three tiers of NEPA review are the categorical exclusion (CX), environmental assessment (EA), and environmental impact statement (EIS). Each tier has documentation associated with it, which will be prepared depending on the environmental impacts of a proposed action. The NEPA review process should begin concurrently with an action's planning and conceptualization stages to promote proactive environmental compliance and resource efficiency.

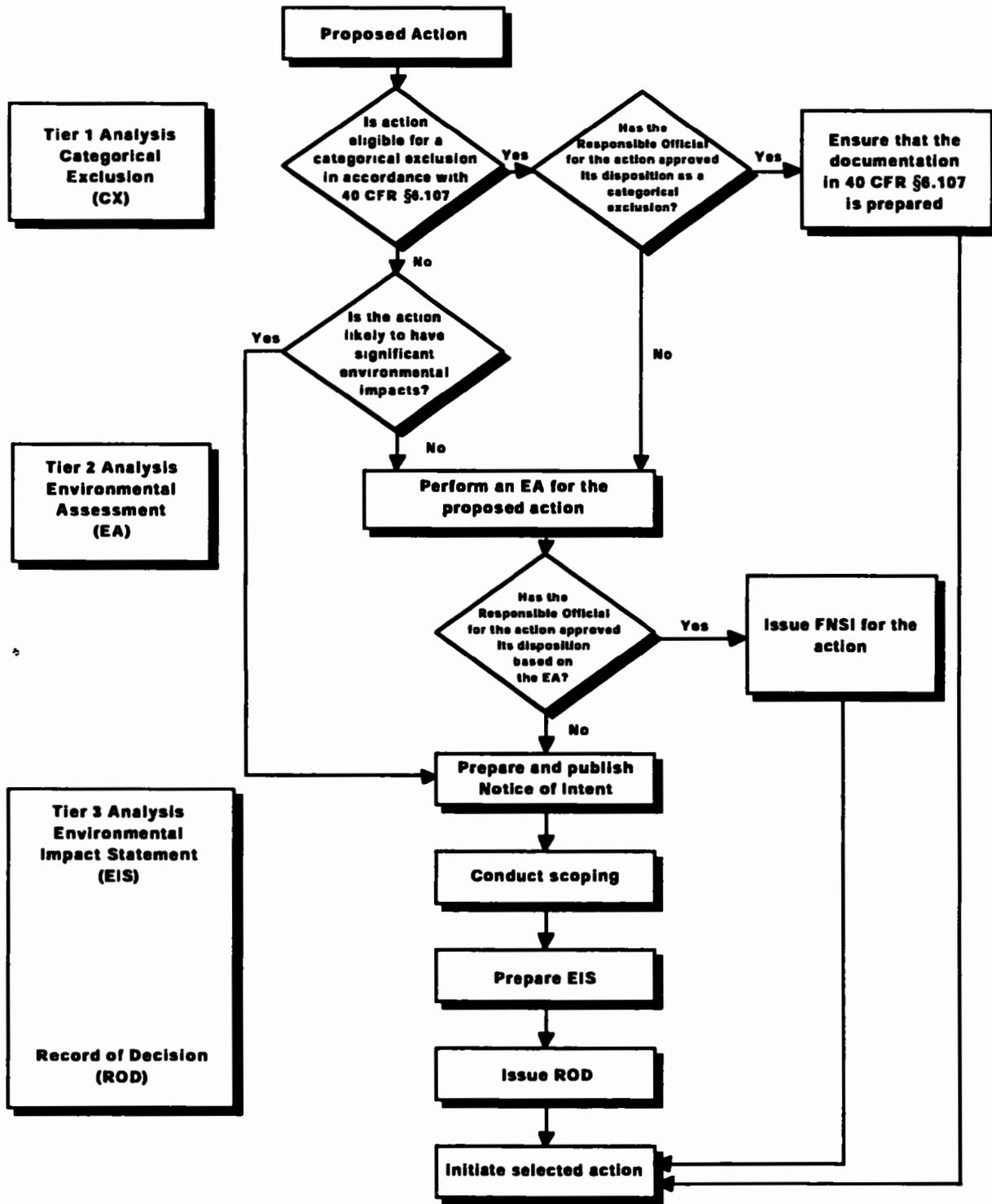
**TIER 1:
CATEGORICAL
EXCLUSION**

A categorical exclusion, the first tier in the NEPA process, is a type of action that does not significantly impact the environment. Actions eligible for a CX have minimal or no effect on environmental quality and pose no significant change to the existing environment. Examples of actions qualifying for a CX are minor rehabilitations to an existing structure or functional replacement of equipment. Actions that qualify for a CX usually do not cause public controversy and are cost effective.

The responsible official should determine whether the action qualifies for a CX as described in 40 CFR 6.107. If the action is a facility alteration or construction project, the form provided in Appendix B can be used to determine whether a CX is appropriate and also can serve as required documentation for a CX in the project file. The documentation associated with a CX is typically a one-page form or report explaining why the proposed action will not have a major impact on the environment. CXs do not have to be published for public review or comment, but they may be obtained through a Freedom of Information Act (FOIA) request.

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Exhibit 1.
Overview of the NEPA Process



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Guidance: Documentation (or copies of originals) developed during the environmental review process conducted pursuant to NEPA should be maintained in the facility's permanent environmental records file. Such information should be maintained to allow for ease of access and review in the event of a public inquiry.

Exhibit 2, Project Planning Flowchart for a Categorical Exclusion, depicts the planning process for an action eligible for a CX.

**Exhibit 2.
Project Planning Flowchart for a Categorical Exclusion**

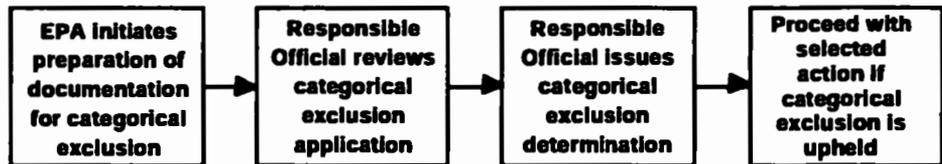


Exhibit 3 gives an overview of the purpose, scope, and contents of a CX. For more information on completing a CX, refer to the *NEPA Categorical Exclusion, Environmental Assessment, and Finding of No Significant Impact Preparation Assistance Booklet*.

**Exhibit 3.
Categorical Exclusion Overview**

Purpose	Determines potential impacts of proposed action.
Scope	Reviews criteria to determine whether the project qualifies for a CX.
Content	Provides a checklist to determine reasonableness of a CX.
Public Participation	Project-specific CXs are available for public review or comment. They may be obtained through a FOIA request.
Typical Number of Pages	Usually a one page form or report.

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TIER 2:
ENVIRONMENTAL
ASSESSMENT

If an action does not qualify for a CX, tiers 2 and 3 of the NEPA review process must be addressed. An EA should be prepared if it is uncertain whether a proposed action will have a major impact on the environment. An EA is a concise document that provides data to determine whether environmental impacts resulting from the proposed action are significant enough to warrant the preparation of an EIS. An overview of the EA is provided as Exhibit 4.

Exhibit 4.
Environmental Assessment Overview

Purpose	Summarizes the environmental impacts to determine needs for: 13. Further study 14. Mitigation measures.
Scope	Reviews all environmental impacts (e.g., natural and human impacts).
Content	Describes and identifies: 15. Purpose and need for the proposed action 16. Proposed action 17. Alternatives considered (including the no action alternative) 18. Affected environment (baseline conditions) 19. Environmental consequences of the proposed action and alternatives 20. List of preparers and agencies consulted.
Public Participation	The EA is provided for review by making a FOIA request or as an attachment to the FNSI.
Typical Number of Pages	The EA typically will be 10 to 50 pages of text and exhibits.

If a preliminary review of an action reveals obvious significant environmental impacts, the review process should omit a formal EA and proceed directly to an EIS. In determining whether to conduct an EA or EIS, important issues to consider include cost, controversy surrounding the project, cumulative impacts, and mitigation measures.

Guidance: Documentation of an EA (and FNSI if applicable) (or copies of originals) developed during environmental review process conducted pursuant to NEPA should be maintained in the

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facility's permanent environmental records file. Such information should be maintained to allow for ease of access and review in the event of a public inquiry.

Cumulative Impacts

Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time. The initial impact of a project may not be considered to be significant, but the long-term, cumulative effects of a project may create severe impacts, which may not be mitigated easily. Past, present, and potential future actions should be considered when analyzing the proposed action's cumulative impacts. One example of a cumulative impact would be research that involves the application of pesticides with a fixed half life. Repeated applications of these materials to test plots may result in increased levels of pesticide residuals that represent potential impacts to neighboring flora and fauna through food chain uptake processes.

Mitigation Measures

Mitigation measures are techniques designed to minimize the impacts of a proposed action on the environment. According to CEQ regulations, mitigation measures include avoiding impacts by not executing an action, minimizing impacts by limiting the degree or magnitude of the action, and repairing, rehabilitating or restoring the affected environment. Examples of mitigation measures are applying best available control technology to hazardous waste treatment processes to minimize cross-media pollutant transfers, or using silt fences or vegetation filters to minimize impacts to local receiving waters from parking lot runoff.

The identification of mitigation measures for a proposed action is an important component of an EA. Mitigation measures can make the preparation of an EIS and ROD unnecessary — allowing for a significant savings in time and dollars — if the mitigation measures can compensate for or avoid anticipated impacts.

Other EA Components

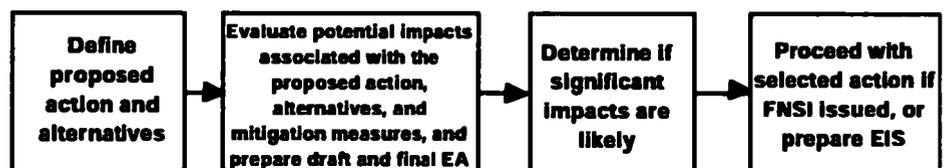
In addition to a description of mitigation measures, the EA should contain a brief discussion of the purpose and need for the proposed action, alternatives to the proposed action, baseline conditions, environmental impacts stemming from the proposed action, and a list of agencies and persons consulted. An EA typically is approximately 10 to 50 pages in length, depending on the size of the project and the number of potential impacts. Three alternatives and their potential impacts are usually considered, including the "no action" alternative. The "no action" alternative discusses the

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impacts of not implementing the proposed action. For example, if EPA proposes to build a laboratory, the no action alternative would assess the impact of not building that laboratory, such as not having the capability to perform certain important laboratory experiments. Other alternatives that may be considered in the proposal to build a new laboratory would be to consider different sites on which to construct the laboratory or, if feasible, consideration could be given to leasing laboratory space. It is important to evaluate alternatives that meet the purpose and need for the proposed action, or they will not be considered viable.

Exhibit 5, Project Planning Flowchart for Environmental Assessments, depicts the basic review process for completing an EA. An EA should be done concurrently with other initial activities early in the planning stages to be most resource efficient. For example, environmental permits will most likely be required for construction projects. Because much of the data developed in support of permit applications will be useful in the NEPA review process, it is critical that these activities be coordinated closely.

**Exhibit 5.
Project Planning Flowchart for Environmental Assessments**



For more information on completing an EA, refer to the *NEPA Categorical Exclusion, Environmental Assessment, and Finding of No Significant Impact Preparation Assistance Booklet* and the *National Environmental Policy Act: A Self-Study Training Booklet*. These booklets provide assistance in completing the NEPA Review Form for Facility Alteration or Construction Project [EPA Form 3300-16 (5-92)]. Page 3 of the form contains an outline or template of criteria necessary to complete an EA. This form is especially applicable to perform a NEPA review for construction-related activities.

Finding of No Significant Impact (FNSI)

The EA will result in either a FNSI or, if significant impacts are identified, a decision to prepare an EIS. A FNSI is generally one or two pages long and provides succinct evidence of why a proposed

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action will not have a significant impact on the environment. The FNSI also explains any mitigation measures necessary to compensate for environmental impacts and to justify selecting the alternative. An accepted FNSI nullifies the requirement for preparing an EIS.

Once a FNSI has been completed, the availability of the FNSI, EA, and supporting information should be announced in a newspaper of general circulation. If an action has national significance, it should also be published in the *Federal Register*. A fact sheet could also be prepared and distributed to alert the public. The FNSI, with the attached EA and any supporting information, should be made available for review at local libraries, at the EPA Headquarters, regional office, or laboratory, and at another public establishment that is open during evening hours and is equipped with copying machines. This approach to making information available to the public ensures information exchange, allows timely review of the document, and encourages feedback to EPA. There must be a minimum of 30 days between the release of a FNSI and moving forward with a proposed action.

An overview of the FNSI is provided as Exhibit 6.

**Exhibit 6.
Finding of No Significant Impact (FNSI) Overview**

Purpose	Notifies the public of EA result and mitigation plans.
Scope	Explains why an action will not have a significant effect on the natural or human environment.
Content	Describes: 21. Why an action will not have significant effect on the environment 22. Mitigation measures necessary to make the alternative environmentally acceptable.
Public Participation	A 30-day public comment period is necessary before proceeding with the action. An announcement about the FNSI's availability usually is published in a newspaper of general circulation and in fact sheets. When an action has national significance, the availability of the EA/FNSI should be published in the <i>Federal Register</i> .
Typical Number of Pages	A FNSI typically will be one or two pages.

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TIER 3:
ENVIRONMENTAL
IMPACT STATEMENT

If the responsible official determines that a proposed action will have significant environmental impacts, an EIS must be prepared. An EIS, the third tier in the NEPA review process, is the most extensive level of environmental review, as it anticipates that the project will significantly impact the environment. The EIS can be immediately prepared if significant impacts are obvious, or as a result of an EA, if the EA did not result in a FNSI. If an EIS is prepared after an EA, then significant impacts would be discovered in the EA process which would not allow the EA to qualify for a FNSI. Several documents must be issued as part of the EIS process, including a notice of intent (NOI), draft EIS (DEIS), final EIS (FEIS), and a record of decision (ROD). These documents are described below. Because public participation in the decision-making process is a major goal of NEPA, requirements and suggestions for involving the public are incorporated into the discussion.

Guidance: Documentation (or copies of originals) developed during environmental impact statement procedures conducted pursuant to NEPA are maintained in the facility's permanent environmental records file. This information should be maintained to allow for ease of access and review in the event of a public inquiry.

Notice of Intent

The first step in preparing an EIS for a proposed action is to issue a notice of intent (NOI) in the *Federal Register*. The NOI announces that an EIS will be prepared and gives the scope of the proposed action, reasonable alternatives to the proposed action, and potential impacts as a result of executing the proposed action. The NOI begins the EIS scoping process. The scope, as defined in the CEQ regulations, consists of the range of actions, alternatives, and impacts to be considered in the EIS. A scoping meeting is required to announce the NOI to encourage public participation. The EPA project manager or responsible official publishes the NOI in the *Federal Register*.

Draft EIS

After the scope of the project and any related activities have been identified, the EPA project manager prepares a draft EIS. EPA regulations call for EIS preparers to conform to the content requirements detailed in 40 CFR Part 1502 and in 40 CFR 6.203. These requirements are summarized in Exhibit 7.

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**Exhibit 7.
Environmental Impact Statement Overview**

<p>Purpose</p>	<p>23. Provides detailed environmental information to the public for input in EPA's decision-making process. 24. Examines alternatives and potential for mitigating impacts.</p>
<p>Scope</p>	<p>Provides a comprehensive review of all impacts of the proposed action and alternatives.</p>
<p>Content</p>	<p>25. Provides for a 45-day public comment on the DEIS 26. Requires a public hearing on the DEIS not earlier than 30 days after issuance 27. Provides for a 30-day review period on the FEIS prior to the agency's decision, which is documented in a ROD. 28. Unless the responsible official determines that there is a compelling reason to change the standard format, the EIS text includes</p> <ul style="list-style-type: none"> - Cover sheet - Executive summary - Table of contents - Purpose and need for action - Alternatives considered, including proposed action - Affected environment (baseline conditions) - Environmental and socioeconomic consequences of alternatives - A list of agencies, organizations, and persons to whom copies of the EIS are sent - List of preparers - Index - Appendices.
<p>Public Participation</p>	<p>29. Requires a public hearing on the DEIS not earlier than 30 days after issuance 30. Provides for a 45-day public comment period between the DEIS and FEIS 31. Provides for a 30-day review period on the FEIS prior to issuance of the ROD.</p>
<p>Typical Number of Pages</p>	<p>The EIS typically will be 150 to 300 pages, including text and exhibits.</p>

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When the DEIS is complete, EPA must seek comments from other relevant federal, state, and local agencies and other stakeholders. Inviting public comment satisfies one of the primary purposes of the NEPA process — to ensure that the public is involved in federal decisionmaking for actions that affect the environment. Public response to the DEIS will depend on issues such as size, scope, anticipated controversy, and timing of the proposed action. At a minimum, facilities should refer to the requirements in 40 CFR 1506.6 and 40 CFR 6.104 on public involvement to ensure that they are adhering to the letter and spirit of NEPA. For example, the public should be informed of meetings and be provided with project-related environmental documentation in a timely manner. Exhibit 8 shows a flowchart for incorporating public participation into the EIS process.

Exhibit 8.
Public Participation Flowchart During the EIS Process



The availability of the DEIS to the public should be announced in the *Federal Register* or a newspaper of general circulation.

Final EIS

After a 45-day public review and comment period on the DEIS 30 days prior to a public hearing and 15 days following a final EIS may be issued. If desired, the responsible official may choose to extend the public comment period. The responsible official or EPA project manager must consider and respond to public input. Where feasible and appropriate, the FEIS will incorporate public concerns and issues raised by other stakeholders during the DEIS comment period. The availability of the FEIS should be announced using the same methods as in the DEIS for consistency in responses. The FEIS must be available for comment for at least 30 days before EPA can reach its official decision on the action.

Record of Decision

After the public comment period on the FEIS, the Agency can issue its record of decision (ROD). It summarizes the EIS analysis, states EPA's official decision, and identifies alternatives considered by EPA. If appropriate, it also identifies applicable mitigation

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measures and monitoring programs that will be implemented. An overview of the ROD is provided in Exhibit 9.

**Exhibit 9.
Record of Decision Overview**

Purpose	Announces the Agency's decision regarding the proposed major EPA action.
Scope	32. States EPA's decision and the basis for the decision 33. Summarizes the EIS analyses and selected mitigation measures.
Content	34. Documents EPA's decision, based on the DEIS, FEIS, and all comments received 35. States EPA's preferred alternative 36. Identifies alternatives considered by EPA 37. States whether all precautions to avoid or minimize harm to the environment were considered, and if not, explains why environmental precautions were not taken 38. Explains, when appropriate, the mitigation monitoring programs.
Public Participation	39. Provides a notice to announce the decision to the public 40. ROD is distributed to all persons responding to the DEIS or FEIS and those requesting it.
Typical Number of Pages	The ROD typically will be one to five pages.

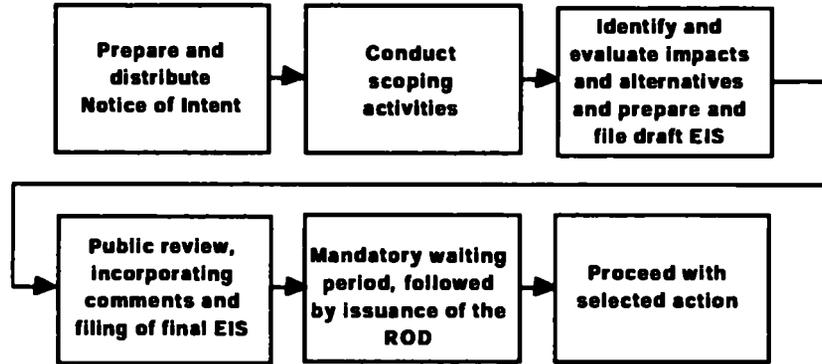
The ROD should be provided to all parties who submitted comments on the DEIS or FEIS and to other parties requesting a copy. Exhibit 10 shows a flowchart for planning an EIS.

For more information on completing the documentation associated with an EIS, refer to the *NEPA Review Procedures for EPA Facilities*.

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**Exhibit 10.
Project Planning Flowchart for EISs**

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Section 04-04
NEPA Implementation

INTRODUCTION

This section of the NEPA SHEM Guidelines addresses how to incorporate NEPA review procedures into potential facility activities.

FACILITY
CONSTRUCTION
PROJECTS

One of the most common facility actions that requires NEPA documentation is a construction project. Project managers or the responsible official can determine the appropriate level of NEPA documentation by completing *EPA Form 3300-16, the NEPA Review Form for Facility Alteration or Construction Project*. The form, provided in its entirety in Appendix B, is four pages long and can be obtained electronically by contacting AEREB.

Page 1 of the form helps determine whether the project qualifies for a CX under NEPA. The completed form, signed by the responsible official and maintained as part of the project file, serves as appropriate documentation for a CX. Page 2 of the form provides guidance and criteria for deciding whether an EA or EIS is the appropriate NEPA documentation for the project. Pages 3 and 4 of the form provide suggested outlines for an EA and FNSI.

The NEPA Categorical Exclusion, Environmental Assessment, and Finding of No Significant Impact Preparation Assistance Booklet and the Understanding the National Environmental Policy Act: A Self-Study Training Booklet provide detailed instructions on completing the NEPA Review Form for Facility Alteration or Construction Project. Also, for more information on complying with NEPA for design and construction projects, refer to the *National Environmental Policy Act Review Procedures for EPA Facilities*.

REGIONAL
ENVIRONMENTAL
SERVICES DIVISION

Periodically, the Environmental Services Division may commission special studies or environmental monitoring projects that constitute a major federal action. For example, special projects may involve siting sampling equipment or conducting field activities in sensitive natural habitats. Accordingly, these projects should be reviewed at the earliest stages of planning (see related discussion later in this

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chapter) to determine potential environmental consequences and the need for NEPA review.

PROGRAM OFFICES

Agency program offices conduct a wide variety of research and development activities. Although these projects are intended to advance scientific information and protect environmental quality, the hazardous agents or industrial processes involved may represent potential impacts to human health and the environment if not fully controlled. Past activities, such as the mobile incineration of tetrachlorodibenzo(p)dioxin and other toxic compounds, require the development of an EIS to address fully those potential consequences to both environmental and socioeconomic concerns prior to commencing operations. Similarly, current agency research activities include pollutant fate and transport and degradation kinetics assessments that may warrant NEPA review during project planning and conceptualization. Accordingly, program offices should review their intramural and extramural project plans to determine activities that may represent environmental consequences triggering NEPA review requirements. In particular, the Office of Research and Development (ORD) has devised its own regulatory standards and internal review processes for considering the potential impacts of extramural research activities. These ORD procedures are found in 40 CFR Part 6, Subpart G. A standardized worksheet (EPA Form 5300-23) and instructions for completing it are presented in Appendix C and can be used to determine the applicability of NEPA review parameters to ORD activities.

**INCORPORATING
NEPA IN PROJECT
PLANNING**

As discussed, the NEPA environmental review process can take a few weeks to more than a year to complete. Therefore, to reduce or eliminate project delays, effective planning of a proposed project should include the early initiation of the environmental review process.

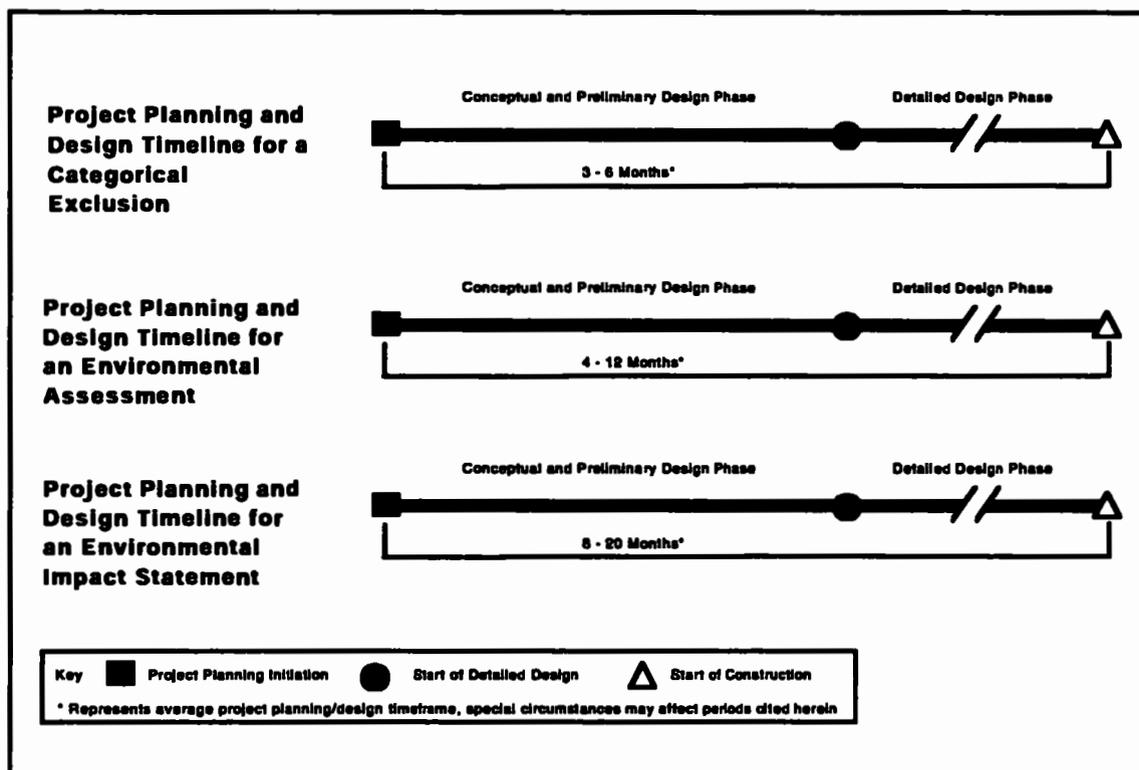
Timelines

In many cases, the length of time devoted to the environmental review is proportional to size of the proposed action. An action qualifying as a CX, for example, may be relatively a small project. A large project, such as the construction of a new laboratory, may have potentially significant environmental effects and require a mitigation and monitoring program. The time to complete an EIS for this project can be lengthy, and planning will be complex. The EPA project manager must allow for months of independent study,

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public meetings, and several public and agency comment periods prior to developing detailed design documents. Thus, the EIS process should begin as early as possible in the business and project planning process. Environmental planning and integration procedures may provide for more effective budgeting and resource management and allow the project to continue on schedule. The timelines below explain how the preparation of each document fits in with overall project planning.

**Exhibit 11.
Timelines for a CX, EA, and EIS**



The NEPA regulations are located in 40 CFR Part 6. The mandated procedures within the regulations are summarized in Exhibit 12 for reference. These procedures should be considered to avoid

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unnecessary delays resulting from environmental issues in project planning.

**Exhibit 12.
Summary of Regulatory Requirements for NEPA Documentation**

Tiers of NEPA Review	Summary of Regulatory Requirements
Tier 1: Categorical Exclusion	41. Responsible official determines whether action will have a significant effect on the environment. 42. If CX is appropriate, a one-page report or form should be completed and maintained as part of the action's project file. 43. See EPA NEPA regulations at 40 CFR 6.107.
Tier 2: Environmental Assessment	44. EA should be prepared if it is uncertain whether a proposed action will have major impacts on the environment. 45. An EA will result in either a FNSI or a decision to prepare an EIS. The availability of a FNSI, if appropriate, should be published in local media (e.g., newspaper) and distributed to stakeholders. When an action has national significance, the availability of the EA/FNSI should be published in the <i>Federal Register</i> . A 30-day public comment period is required on the FNSI before the action is implemented. 46. See EPA NEPA regulations at 40 CFR 6.105(d).
Tier 3: Environmental Impact Statement	47. Responsible official ensures that a NOI is published in the <i>Federal Register</i> to initiate the EIS scoping process. 48. DEIS is prepared and made available for at least a 45-day public comment period. 49. FEIS is prepared and distributed to stakeholders. 50. After allowing at least 30 days for public comment on the FEIS, the ROD can be issued. 51. The availability of the DEIS, FEIS, and ROD are published in the <i>Federal Register</i> as they are completed 52. See EPA NEPA regulations at 40 CFR 6.108 and 40 CFR 6.200-6.205.

Cross-Cutters

A number of environmental laws address federal responsibility for protecting and conserving special resources. These laws are generally referred to as "cross-cutters" because the requirement to comply with them cuts across, or overlaps, other federal programs. The cross-cutters require federal agencies to consider the impact that their programs and individual actions might have on particular resources and to document such considerations as part of the agency's decisionmaking process. Generally, the process involves coordinating with the agencies administering the cross-cutters, and providing an opportunity for public comment before making a

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decision on an action. The evaluation that is conducted under cross-cutters is usually integrated with the environmental reviews completed under NEPA to reduce paperwork and the potential for delays. Appendix D contains a list of cross-cutters that are especially applicable to EPA construction projects, as well as other projects. If one or more of these cross-cutters appears to be impacted, it should be addressed within the CX, EA, or EIS.

**PROJECT-LEVEL
COMPLIANCE**

The NEPA review process should not be viewed as an independent activity, but rather as an integral component of a project. At the onset of a project, the NEPA review facilitates the assessment of a project-specific variables, including regulatory, environmental, and socioeconomic factors. To assist in identifying relevant project consideration, personnel overseeing the NEPA review activities should consult with the appropriate Regional NEPA Coordinator as provided in Appendix E. These individuals, who maintain access to recent NEPA documentation, can provide valuable information on NEPA-related activities.

To further ensure that NEPA review considerations are integrated within the environmental management programs, a Project-Level Compliance Worksheet provided in Appendix F can be used to prepare an initial assessment of project specific variables, such as regulatory, environmental, and socioeconomic factors. The worksheet will assist in determining what level of NEPA review is necessary for a proposed action.

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APPENDIX A
Acronyms and Glossary

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Acronyms

AA	Assistant Administrator
AEREB	Architecture, Engineering and Real Estate Branch
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CX	Categorical Exclusion
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FEIS	Final Environmental Impact Statement
FOIA	Freedom of Information Act
GSA	General Services Administration
NEPA	National Environmental Policy Act
NOI	Notice of Intent
OARM	Office of Administration and Resources Management
RA	Regional Administrator
ROD	Record of Decision
RTP	Research Triangle Park
SHEM	Safety, Health and Environmental Management
SHEMD	Safety, Health and Environmental Management Division
SHEMP	Safety, Health and Environmental Management Program
USC	United States Code

National Environmental Policy Act

Glossary

Administrative Action	A signed decision by a responsible official resulting in an award, approval, notification, cancellation, termination of use, or commitment of federal funds or property.
Categorical Exclusion (CX)	Categories of actions that do not individually, cumulatively over time, or in conjunction with other Federal, State, local or private actions have a significant effect on the quality of the human environment and which have been identified as having no such effect based on the requirements in 40 CFR §6.505. Environmental information documents, environmental assessments (EAs) or environmental impact statements (EISs) will not be required for excluded actions. A CX is prepared to document that a project will not cause significant environmental impacts.
Council on Environmental Quality (CEQ)	Created under the authority of the National Environmental Policy Act (NEPA) of 1969, this Executive Office of the President exercises an oversight function over the administration of NEPA; is responsible for issuing regulations that implement the procedural provisions of NEPA; and advises the President on environmental matters.
Cross-Cutter Legislation	Laws or regulations for which compliance is required by all Federal programs for protecting and conserving special environmental resources.
Cumulative Impact	The impact on the environment that results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal and non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.
Environmental Assessment (EA)	A concise document prepared to provide sufficient data, evidence, and analysis to determine whether an environmental impact statement (EIS) or finding of no significant impact (FNSI) is required for an action. Preparing a formal EA is not necessary in cases where the EPA determines that a CX is appropriate or when it is obvious that an EIS will be necessary.
Environmental Impact Statement (EIS)	A detailed, succinct document required if Federal actions are likely to have significant impacts on the environment. The document may be directly prepared if the project is presumed to have a significant impact or if an environmental assessment (EA) determines that an EIS should be prepared. An EIS provides the public and decision-makers with clear, written documentation of possible environmental effects.

National Environmental Policy Act

Finding of No Significant Impact (FNSI)	A document providing succinct evidence of why a proposed action will not have a significant impact on the environment. An accepted FNSI nullifies the requirement for submission of an environmental impact statement (EIS).
Major Federal Action	Any undertaking by a Federal agency that potentially has a significant effect or may be subject to Federal control or responsibility. Examples include issuing regulations, granting permits, and executing construction activities. The term "major" reinforces the degree of the impacts associated with an action (see 40 CFR 1508.18 and 1508.27 for further explanation).
Mitigation Measures	Techniques designed to minimize the impacts of development on the environment. They may include: a) avoiding the impact altogether by not taking a certain action or parts of an action; b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and e) compensating for the impact by replacing or providing substitute resources or environments.
National Environmental Policy Act (NEPA)	<p>Signed into law in 1970, NEPA has two major functions:</p> <p>53. To establish a government policy seeking to enhance the environment "by all practical means" consistent with other national policies. An "action-forcing" provision directs government agencies to prepare statements of the potential environmental effect of any "major" action considered by EPA and to study all practical alternatives.</p> <p>54. To establish the President's Council on Environmental Quality (CEQ), which enhances and encourages NEPA compliance and advises the President on environmental affairs.</p>
Notice of Intent (NOI)	A brief notice placed in the Federal Register by EPA, notifying the public that EPA is considering a major action and that an EIS will be prepared to consider the consequences of a major Federal action. The NOI describes the proposed action and possible alternatives, details the proposed scoping process (e.g., location and time of meetings), and provides the name and address of a point of contact within EPA to answer questions about the proposed action and the EIS.

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Record of Decision (ROD)	A concise public document required under 40 CFR §1505.2, stating the final decision on an action for which a final EIS has been prepared on a proposed major Federal action and the alternatives considered by EPA. A ROD states whether all precautions to avoid or minimize impacts to the environment were adopted, and if not, includes a statement explaining why precautions were not taken. RODs must be made available to the public and disseminated to parties that commented on the draft and final EIS.
Responsible Official	The individual (e.g., project officer) officially designated as having primary responsibility for the project.

APPENDIX B

NEPA Review Form for Facility Alteration or Construction Project (EPA Form 3300-16)



**National Environmental Policy Act (NEPA) Review Form
for
Facility Alteration or Construction Project**

I. General Information

Title of Project	Project Number
------------------	----------------

Project Officer's Name	Title	Phone Number
------------------------	-------	--------------

Location (city/country/state)

Part of EPA Facility? YES NO (if yes, give name of Facility)

II. Responsible Official for NEPA Review

(Responsible Official must be the Chief, Architecture, Engineering and Real Estate Branch [AEREB], if AEREB approval is required; otherwise, Responsible Official will be whoever signs the administrative action on the project [Lab Director, Regional Administrator, etc.]

Name	Title	Phone Number
------	-------	--------------

III. Contact for Environmental Review on this Project (If different from Responsible Official)

Name	Title	Phone Number
------	-------	--------------

IV. Categorical Exclusion (CX)

IV.A. Categorical Exclusion (CX) Criteria (Check YES or NO)

YES NO

- a. Project is directed solely toward minor rehabilitation of existing facility, consists of functional replacement of equipment, or consists of construction of new ancillary facility, adjacent or appurtenant to existing facility
- b. Project does not directly or indirectly affect the following: cultural resource areas; endangered or threatened species; environmentally important natural resource areas, wetlands or floodplains, etc. (If the Responsible Official requires additional detail on this criterion, see 40 CFR §6.107)
- c. Project does not cause significant public controversy and is cost effective.
- d. Planned operations to be carried out at facility will not significantly impact the human environment.

If the answer to all of these questions is YES, the project qualifies for a categorical exclusion pursuant to 40 CFR §1508.4 and 40 CFR §6.107. This form, when Item IV.A. is completed and Item IV.B. is signed, will constitute a documented categorical exclusion determination under NEPA, and no further environmental review is required.

If the answer to any of these questions is NO, an environmental assessment (EA) is required. Proceed to Item V. on next page

IV.B. Categorical Exclusion Determination

I have determined that this project is eligible for a categorical exclusion per the substantive environmental review requirements under EPA regulations at 40 CFR §6.107.

Signature of Responsible Official

Title

Date

V. Environmental Assessment (EX)

V.A. Environmental Assessment (EA) Process (Implement if proposed action did not qualify for a CX)
Summary of the Purpose and Need for the Proposed Action and Reasonable Alternatives Considered

V.B. Criteria for Preparation of an Environmental Impact Statement (EIS)

Does the project meet any of the following criteria for preparation of an EIS? (Check YES or NO.) Documentation to support items a through k should be included in an environmental assessment or in an environmental impact statement.

The Responsible Official may mark NO to any of the criteria where alternatives or mitigation measures will be implemented to avoid significant environmental impacts. This form begins the environmental assessment process and mitigation measures must be documented in an environmental assessment.

YES NO

- a. The project may significantly affect the pattern and type of land use or growth and distribution of human population. Environmental justice criteria should be considered (i.e., disproportionately high and adverse human health and environmental effects of programs, policies, and activities on minority populations and low-income populations should be appropriately identified and mitigated).
- b. The effects resulting from any structure or facility constructed or operated with respect to the proposed action may conflict with local, regional, or State land use plans or policies.
- c. The project may have significant adverse effects on wetlands, including indirect and cumulative effects, or any major part of a structure or facility constructed or operated under the proposed action may be located in wetlands.
- d. The project may significantly affect threatened and endangered species or their habitat identified by the Department of the Interior's list in accordance with 40 CFR §6.302 or a State's list, or may involve a structure or a facility located in an endangered/threatened species habitat.
- e. The project may directly cause or induce changes that significantly (a) displace human populations, (b) alter the character of the existing residential areas, (c) adversely affect a floodplain or wetland, (d) adversely affect significant amounts of important farmlands or agricultural operations on this land.
- f. The project may directly, or through induced development, have a significant adverse effect upon local ambient air quality, noise levels, surface water or ground water quality or quantity, water supply, fish, shellfish, wildlife and their natural habitats.
- g. The project may directly, indirectly, or cumulatively have significant adverse effects on parklands, preserves, other public lands or areas of recognized scenic, recreational, archaeological, or historic value.
- h. The project may significantly affect the environment through the release of organisms, or radioactive, hazardous, or toxic substances.
- i. The project involves effects upon the environment that may be highly controversial.
- j. The project involves cumulative impacts, meaning environmental effects may accumulate over time or combine with effects of other actions to create significant impacts.
- k. The project involves uncertain environmental effects or unique environmental risks that may be significant.

If the answer is NO to all of the criteria listed above, the Responsible Official should prepare an EA pursuant to 40 CFR §1501.3, §1501.4 and 40 CFR §6.105(d). The EA should include a description of any reasonable alternatives and the environmental impacts of each alternative, and mitigation measures considered in the environmental review. If the EA warrants a FNSI, the Responsible Official should prepare a FNSI pursuant to 40 CFR §1508.13 and 40 CFR §6.105(f). The NEPA Review Procedures for EPA Facilities provides guidance on how to prepare an EA and FNSI. To assist in the EA and FNSI preparation process, the EA and FNSI formats may be obtained electronically from AEREB at (202) 260-2160. The Responsible Official should allow for sufficient public review of the EA and FNSI before it becomes effective and should not take administrative action for at least 30 days after release of the FNSI.

If the answer is YES to any of the criteria above, an EIS should be prepared pursuant to 40 CFR §1508.11 and 40 CFR §6.903. A Notice of Intent announcing the preparation of an EIS should be published in the Federal Register. The NEPA Review Procedures for EPA Facilities provides guidance on how to prepare an EIS.

V.C. Determination of EA or EIS (Check the appropriate box)

- I have determined that this project is eligible for an EA per the substantive environmental review requirements under EPA regulations at 40 CFR §6.105(d).
- I have determined that this project is eligible for an EIS per the substantive environmental review requirements under EPA regulations at 40 CFR §6.903.

Signature of Responsible Official

Title

Date

VI. Suggested Outline for an Environmental Assessment

If the answers to all of the questions in Item V.B. of the NEPA Review Form for Facility Alteration or Construction Project are NO, an EA should be prepared pursuant to 40 CFR §1501.3, §1501.4 and 40 CFR §6.105(d). If the answer to any of the questions is YES, an EIS should be prepared pursuant to 40 CFR §1508.11 and 40 CFR 6.903. See the *NEPA Review Procedures for EPA Facilities* for further information on preparing an EA or EIS.

EAs are typically 10 to 50 pages in length, but it is not mandatory that an EA be a specific number of pages. It is, however, important that an EA contain the correct information to properly evaluate all impacts associated with the proposed action. The following is a suggested outline to be used as a sample format or guide in the EA preparation process. Attach additional documentation to this form if necessary. The EA format is also available electronically from AEREB.

VI.A. Purpose and Need for the Proposed Action

VI.B. Proposed Action

VI.C. Alternatives to the Proposed Action, Including the "No Action" Alternative

(It is standard to consider three alternatives, including the "no action" alternative.)

- a
- b
- c

VI.D. Baseline Conditions and the Environmental Consequences of Each Alternative

- a. Environmental consequences of the proposed action or preferred alternative
- b. Environmental consequences of alternative #2
- c. Environmental consequences of alternative #3 *(the "no action" alternative)*

In evaluating the baseline conditions and each alternative, it is standard to consider these potential impacts:

Site Characteristics – topography, geology, soils, ground water, surface water, floodplain/wetlands, biological resources, threatened/endangered species, historical/cultural resources, hazardous waste, meteorology

Community/Regional Characteristics – socioeconomic; demographics; environmental justice; housing; land use/zoning; water supply; wastewater collection, treatment and disposal; waste management; utilities/telecommunications; transportation and parking; air quality; noise

VI.E. List of Preparers and Agencies Contributing to the EA

VI. Suggested Outline for a Finding of No Significant Impact

If an EA is prepared and it is determined that the proposed action will not have a significant effect on the environment, then a FNSI must be issued. The announcement of the FNSI is typically published in a local newspaper of general circulation. EPA's NEPA regulations at 40 CFR §6.400(d) require that a FNSI be made available to the public in accordance with 40 CFR §1506.6 which lists mandatory and recommended methods to inform suggested audiences. The purpose of a FNSI is to explain why a proposed action will not have a significant impact on the environment and, if necessary, state the mitigation measures. See the *NEPA Review Procedures for EPA Facilities* for further information on preparing a FNSI

The following information should be contained within a FNSI. Attach additional documentation to this form if necessary. The EA format is also available electronically from AEREB.

VII.A. Project Location and Description

VII.B. Purpose and Need for the Proposed Action

VII.C. Environmental Consequences and Conditions

VII.D. Mitigation Measures

VII.E. Preliminary Finding (*explains why the proposed action will not have a significant effect on the environment*)

APPENDIX C
ORD Procedures Form

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Please read instructions on reverse before completing form.



United States Environmental Protection Agency
Office of Research and Development
Washington, DC 20460

Environmental Review for Extramural Projects

I. General Information

1 Descriptive Title	Grant/Contract/Cooperative Agreement No.
	<input type="checkbox"/> New Project <input type="checkbox"/> Renewal

2. Geographic Location (City/County, State)

3. Duration	Mechanism <input type="checkbox"/> Grant <input type="checkbox"/> Interagency Agreement <input type="checkbox"/> Sole-Source Contract <input type="checkbox"/> Cooperative Agreement <input type="checkbox"/> Competitive Contract
Contractor/Grantee	

II. Description of Work (Check as many as are applicable)

Laboratory Study Library/Literature Search Bench Scale Operation Other (Specify)
 Field Study Pilot Plant Construction/Operation Monitoring Study/Sample Collection

III. Environmental Review

A. Attach documentation to support the findings in items 1-12, as appropriate.

	Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. The project is conducted completely within a laboratory or other facility, and external environmental effects have been eliminated by methods for disposal of laboratory wastes and safeguards to prevent hazardous material entering the environment accidentally. If the answer is "yes" you do not need to proceed further with the environmental review. If the answer is "no" proceed by completing item 2 below.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. The project is a relatively small experiment or investigation that is part of a non-Federally funded activity of the private sector, and it makes no significant new or additional contribution to existing pollution.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. The project may significantly effect the pattern and type of land use (industrial, commercial, agricultural, recreational, residential) or growth and distribution of population
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. The project may have significant adverse effects on wetlands, including indirect and cumulative effects, or any major part of a structure or facility constructed or operated under the proposed action may be located in wetlands.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5. The project may significantly affect threatened and endangered species or their habitats identified in the Department of Interior's list, in accordance with 40 CFR §8.302 or a State's list, or a structure or a facility constructed or operated under the proposed action may be located in the habitat.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6. The project may directly cause or induce changes that significantly (a) displace human populations, (b) alter the character of the existing residential areas, (c) adversely affect a floodplain, or (d) adversely affect significant amounts of important farmlands as defined in EPA's Policy to Protect Environmentally Significant Agricultural Land.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7. The project may directly, indirectly, or cumulatively have significant adverse effects on parklands, preserves, other public lands or areas of recognized scenic, recreational, archaeological, or historic value.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8. The project may directly, or through induced development, have a significant adverse effect upon local ambient air quality, noise levels, surface water or groundwater quality or quantity, water supply, fish, shellfish, wildlife and their natural habitats.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9. The project consists of field tests involving the introduction of significant quantities of toxic or polluting agricultural chemicals, animal wastes, pesticides, radioactive materials, or other hazardous substances into the environment by ORD, its grantees, or its contractors.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10. The project may involve the introduction of species or subspecies not indigenous to the area.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11. There is a high probability of an action ultimately being implemented on a large scale and this implementation may result in significant environment impacts.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12. There is a high probability of an action ultimately being implemented on a large scale and this implementation may result in significant environment impacts.

B. Attach a list and description of any alternatives and mitigation measures considered in the environmental review.

IV. Decision

Completion and distribution of this form and supporting documentation constitutes a FNSI under 40 CFR §6.704(b)(2). If the environmental review resulted in a "yes" answer to either item 1 or 2 only; or the environmental review resulted in a "no" answer to items 3-12.
 An EIS will be warranted if the environmental review resulted in a "yes" answer to any of the items 3-12. If the Agency decides to pursue this project, a notice of the Agency's intent to prepare an EIS will be published in the Federal Register.

Project Officer	Date
Responsible Official (usually Lab Director)	Date

Instructions for Undertaking the Environmental Review for EPA Extramural Research and Development Projects and Completing EPA Form 5300-23

- 1 Form 5300-23 is to be used for the environmental review of EPA extramural research and development projects undertaken by the Office of Research and Development (ORD). This review is conducted pursuant to EPA's National Environmental Policy Act (NEPA) regulations in 40 CFR Part 6, Subpart G
- 2 This form and supporting documentation will constitute the environmental assessment (EA) and finding of no significant impact (FNSI) when it is determined that a project satisfies certain criteria listed in the form, Section IV. This form is intended only to assist the ORD project officer in complying with the requirements of NEPA. Completion of the form in no way obviates the need to obtain project permits or approvals that may be required under statutes administered by EPA, or by other local, state and federal agencies
- 3 The EPA project officer conducts the environmental review by completing the form but the responsibility for the findings belongs to a higher level EPA official, usually the laboratory director
- 4 Documentation to support the findings for each of the items (1-12) in the Environmental Review Section must be attached to the form, as appropriate, unless the items are clearly not applicable to the research activity
- 5 If a project meets the criteria listed in item 1 of the Environmental Review Section (i.e., a "yes" answer), then the project officer does not need to complete items 2-12 or subsection "B" of the Environmental Review Section. The project is then considered completed and the form may be issued as an EA/FNSI.
- 6 Item 1 of the form refers to projects which are conducted in a "contained" structure. In general a contained structure is designed to physically confine and control agents such as hazardous and toxic substances and organisms. Containment is achieved through the observation and implementation of good laboratory practices, installation of properly designed laboratory equipment and inclusion of special design features to minimize or prevent, as appropriate, escape of the agents to the environment. If the answer to item 1 is "no," the project officer must proceed to item 2
- 7 In responding to item 2, the project officer must consider whether the EPA research activity has a causal relationship with the larger non-Federal project; i.e., is the EPA activity needed or required to undertake the larger project? Where there is no causal relationship, the scope of the environmental review may be limited to only the EPA action and the project officer may mark "yes" as the answer, as long as the EPA activity would not result in any significant impacts. In determining whether the impacts are significant, the project officer must respond to items 3-12. Where a causal relationship does exist, the environmental review must be broadened to address the environmental effects of the larger project as well as the Agency action. In this case, the project officer would respond "no" to item 2 and proceed to answer items 3-12, responding to the questions in terms of the impacts resulting from the overall project.
- 8 The criteria listed in items 3 and 6(a) of the Environmental Review Section refer to human populations
- 9 NEPA requires the preparation of an environmental impact statement for a major federal action having a significant impact on the environment. Accordingly, in responding to item 10 of the form, the project officer should mark "yes" only if the introduction of a nonindigenous species or subspecies may have significant environmental effects including those effects identified in items 3-9. The project officer may also consider the environmental release of intergeneric organisms and pathogens under item 10. For additional guidance on how to address nonindigenous species and these other organisms, the project officer should consult EPA's June 26, 1986 Policy Statement on Biotechnology (51 FR 23335).
- 10 In addressing item 12 of the form, the project officer should check "yes" if the project represents a significant EPA commitment to a new technology, and that commitment could serve to limit the viability of alternative technologies. Generally, a project should be considered to involve a significant EPA commitment under item 12 if the Agency's financial investment in the project will be substantial and the project could result in the widespread adoption of a new technology
- 11 The project officer may mark "no" to any of the items 3-12 of the Environmental Review Section when there are alternatives or measures which will be undertaken to avoid significant environmental impacts. These measures must be documented and the project officer must explain how they would alter the significance of the impacts. The Agency then may issue the form as an EA/FNSI.
- 12 If a decision is made in Section IV to prepare an EIS, the project officer will be responsible for preparing a "Notice of Intent" to inform the public of the Agency's decision and to solicit input into the EIS. The Notice of Intent will be prepared in accordance with the Council on Environmental Quality's NEPA regulation in 40 CFR §1508.22 for publication in the Federal Register

APPENDIX D

**Overview of Environmental Cross-Cutting Environmental Legislation
and Executive Orders Applicable to NEPA**

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National Environmental Policy Act

Overview of Environmental Cross-Cutting Environmental Legislation
and Executive Orders Applicable to NEPA

Legislation/ Executive Order	Description and Intent	Administering Agencies	Implementing Regulations
Endangered Species Act, 16 U.S.C. 1531, <u>et seq</u>	<ul style="list-style-type: none"> Ensures that Federal agencies protect and conserve endangered and threatened species. Prevents or requires modification of projects that could jeopardize endangered/threatened species and/or destroy or adversely modify critical habitat of such species. 	<ul style="list-style-type: none"> U.S. Fish and Wildlife Service National Marine Fisheries Service 	<p>50 <u>CFR</u> Part 402</p> <p>50 <u>CFR</u> Parts 450, 451, 452, and 453</p>
The National Historic Preservation Act, 16 U.S.C. 470, <u>et seq</u>	<ul style="list-style-type: none"> Requires Federal agencies to provide the Advisory Council on Historic Preservation an opportunity for comment on undertaking, affecting properties listed or eligible for listings on the National Register for Historic Places 	<ul style="list-style-type: none"> National Park Service Advisory Council on Historic Preservation State Historic Preservation Offices 	<p>36 <u>CFR</u> Parts 60, 61, 63, 68, 79, and 800</p> <p>48 <u>FR</u> 190, Part IV</p> <p>53 <u>FR</u> 4727-46</p>
Archeological and Historic Preservation Act, as amended, 16 U.S.C. 469-469c	<ul style="list-style-type: none"> Provides for recovery or preservation of cultural resources that may be damaged by Federal construction activities Requires notification to the Secretary of Interior when unanticipated archeological materials are discovered in construction. 	<ul style="list-style-type: none"> Departmental Consulting Archeologist, National Park Service 	<p>36 <u>CFR</u> Part 800</p>
The Wild and Scenic Rivers Act, 16 U.S.C. 271 <u>et seq</u>	<ul style="list-style-type: none"> Prohibits Federal agencies from assisting in the construction of water resource projects having direct, adverse effects on rivers listed in the National Wild Scenic River System or rivers under study for inclusion in the system. 	<ul style="list-style-type: none"> National Park Service Bureau of Land Management U.S. Fish and Wildlife Service Forest Service 	<p>36 <u>CFR</u> Part 297, Subpart A</p>
The Fish and Wildlife Coordination Act, 16 U.S.C. 661 <u>et seq</u>	<ul style="list-style-type: none"> Protects fish and wildlife when Federal actions result in the control or modification of a natural stream or body of water Requires Federal agencies to consider the effect that water-related projects would have on fish and wildlife resources, take action to prevent loss or damage to these resources, and provide for the development or improvement of these resources. 	<ul style="list-style-type: none"> U.S. Fish and Wildlife Service National Marine Fisheries Service 	<p>None</p>
Executive Order 12898 Environmental Justice	<ul style="list-style-type: none"> Requires Federal agencies to adopt strategies to address environmental justice concerns within the context of agency operations. 	<ul style="list-style-type: none"> Each Federal agency must prepare its own implementing procedures 	<p>None</p>

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Legislation/ Executive Order	Description and Intent	Administering Agencies	Implementing Regulations
Coastal Zone Management Act, 16 U.S.C. Section 1451 <u>et seq.</u>	<ul style="list-style-type: none"> ● Requires Federal agencies conducting or supporting activities affecting the coastal zone to conduct/support those activities to the maximum extent possible in a manner consistent with approved state coastal management programs. 	<ul style="list-style-type: none"> ● Office of Ocean and Coastal Resource Management ● National Oceanic and Atmospheric Administration 	15 <u>CFR</u> Part 930, Subpart D 15 <u>CFR</u> Part 923
Coastal Barrier Resources Act, 16 U.S.C. 3501 <u>et seq.</u>	<ul style="list-style-type: none"> ● Protects ecologically sensitive coastal barriers along the U.S coasts. ● Prohibits new Federal expenditures or financial assistance for development within the established Coastal Barrier Resources System. 	<ul style="list-style-type: none"> ● U.S. Fish and Wildlife Service 	U.S. Department of Interior Coastal Barrier Act Advisory Guidelines
The Wilderness Act, 16 U.S.C. 1131 <u>et seq.</u>	<ul style="list-style-type: none"> ● Establishes a system of National Wilderness Areas. ● Prohibits motorized equipment, structures, installations, roads, commercial enterprises, aircraft landings, and mechanical transport in the National Wilderness Areas. 	<ul style="list-style-type: none"> ● U.S. Fish and Wildlife Service ● Bureau of Land Management ● National Park Service ● Forest Service 	43 <u>CFR</u> Parts 19 and 8560 50 <u>CFR</u> Parts 35, 219, 261 and 293
Farmland Protection Policy Act, 7 U.S.C. 4201 <u>et seq.</u>	<ul style="list-style-type: none"> ● Requires Federal agencies to consider the adverse effects of their program on farmland preservation, including the extent to which programs contribute to unnecessary and irreversible conversion of farmland to non-agricultural uses. 	<ul style="list-style-type: none"> ● Soil Conservation Service 	7 <u>CFR</u> 658
Executive Order 11990 - Protection of Wetlands	<ul style="list-style-type: none"> ● Minimizes destruction, loss, degradation of wetlands. ● Preserves and enhances natural and beneficial values of wetlands. ● Requires Federal agencies to consider alternatives to wetlands sites and limit potential damage if an activity affecting a wetland cannot be avoided. 	<ul style="list-style-type: none"> ● Each Federal agency must prepare its own implementing procedures 	40 <u>CFR</u> Part 6, Appendix A
Executive Order 11988 - Floodplain Management	<ul style="list-style-type: none"> ● Requires Federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with occupancy and modification of floodplains. 	<ul style="list-style-type: none"> ● Each Federal agency must prepare its own implementing procedures 	40 <u>CFR</u> Part 6, Appendix A

APPENDIX E

NEPA Facility Management Compliance Coordinators

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National Environmental Policy Act

NEPA Facility Management Compliance Coordinators

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Appendix F
Project-Level Compliance Worksheet

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National Environmental Policy Act

ASSESSMENT FACTORS	Regulations		Length of Impact		Effect on Environment				Mitigation Required
	Permits	Standards	Temporary (T)	Permanent (P)	None	Modestly Adverse	Significantly Adverse	Beneficial	
I. REGULATORY FACTORS									
A. Air Pollution Control (including ICFCs)									
B. Drinking Water Management									
C. Water Pollution Control									
D. Hazardous Waste Management									
E. Solid Waste Management									
F. PCB Management									
G. Underground Storage Tank Management									
H. Radioactive Materials Management									
I. Light Emissions									
II. ENVIRONMENTAL FACTORS									
A. Natural Factors									
1. Fish and Wildlife									
2. Vegetation									
3. Endangered Species									
4. Water and Hydrology									
5. Air and Noise									
6. Physiography									
7. Soils and Erosion									
8. Historical, Archaeological, Paleontological Resources									
9. Prime Farmlands									
10. Wetlands									
11. Floodplains									
12. Wild and Scenic Rivers									
13. Coastal Zone Areas									
14. Coastal Barriers Resources									
15. National Wilderness									
B. Human Factors									
1. Demography									
2. Housing									
3. Utilities									
4. Police, Fire, and Schools									
5. Social Services									
6. Recreation and Aesthetics									
7. Land Use									
8. Traffic and Transportation									
9. Quality of Life									
10. Environmental Justice									
III. SOCIOECONOMIC FACTORS									
A. Residential Dwellings									
B. Local Employment									
C. Public Health and Well-Being									
D. Relocation of Public Utilities									
E. Traffic Congestion									
F. Safety									
G. Effect on Population Trends									
H. Adverse Community Reaction to the Project									

**SAFETY, HEALTH, AND
ENVIRONMENTAL MANAGEMENT
PROGRAM GUIDE**

Guide No. 05

Issued _____

Revised _____

CLEAN AIR ACT (CAA) PROGRAM

SCOPE OF THE PROGRAM

This Program Guide provides an overview of the requirements EPA facilities must fulfill to comply with the regulations, guidance, and procedures associated with the Clean Air Act (CAA) of 1970 and the Clean Air Act Amendments (CAAA) of 1990. The CAA established National Ambient Air Quality Standards (NAAQS) and State Implementation Plan (SIP) requirements to ensure that attainment areas are protected and nonattainment areas reach attainment goals within established SIP time frames. Attainment areas are defined as those areas which meet the NAAQS for the six criteria pollutants (i.e., carbon monoxide, ozone, particulate matter, sulfur dioxide, nitrogen oxides, and lead). Nonattainment areas are defined as those areas not meeting the NAAQS for any of the six priority pollutants. SIP requirements include protection of air quality, adherence to construction and operational permits, compliance with air pollution performance standards for new or modified stationary sources, adherence to hazardous and toxic air pollutant standards, and the phase out of stratospheric ozone depleting chemicals.

The CAA also provided requirements for new air pollution sources and facilities emitting hazardous air pollutants. The CAAA provided supplemental and revised requirements to the CAA including nonattainment areas (Title I), mobile sources (Title II), air toxics including hazardous air pollutants (Title III), acid deposition control (Title IV), operational permits (Title V), stratospheric ozone protection (Title VI), enforcement (Title VII), miscellaneous

provisions (Title VIII), and clean air research (Title IX). For the purposes of this Program Guide, the most significant impact to EPA facilities is meeting the requirements identified in the SIP; new source performance standards; and Titles I, III, V, and VI of the CAAA.

REGULATORY REQUIREMENTS

The key or basic elements of the CAA Program required by law and/or EPA policy are to:

Determine the new air pollution source requirements and emission standards for hazardous air pollutants

Develop and maintain air operating permits for facility operations associated with air sources, air emissions, air control devices, and air compliance plans

Phase out Class I and II ozone depleting substances prior to the deadlines established by the statute.

AUTHORITIES

The following documents are the sources of the legal authority that establishes the applicability and requirements of this program.

Clean Air Act (CAA), 42 United States Code (USC) 7401 et seq.

Title 40 Code of Federal Regulations (CFR), Parts 50 through 99 (CAA and CAAA regulations)

Executive Order 12088, Federal Compliance with Pollution Control Standards, October 13, 1978

EPA Safety, Health, and Environmental Management Guidelines

EPA Facility Safety, Health, and Environmental Management Manual

REFERENCES

The document listed below can help you implement the CAA Program and specifically are intended for facility operations.

Profiles of State Title V Programs
developed by Stateside Associates on
April 22, 1994

IMPLEMENTATION ACTIVITIES

The following list gives an overview of the activities that this program will require. To implement and operate this program, you must:

Identify and incorporate the SIP requirements into facility operations

Identify the state nonattainment areas and develop a plan to reduce the pollutant emissions directly impacting those areas, if applicable

Be familiar with EPA's new source performance standards to determine if they apply to your operations

Identify the hazardous air pollutants used at your facility and ensure they are managed in accordance with federal and/or state requirements

Comply with the facility air operating permit(s)

Develop a plan to phase out Class I and II ozone-depleting substances (ODSs)

Follow technical and procedural standards for the management of chlorofluorocarbons (CFCs), halons, and other ODSs.

IMPLEMENTATION IMPLICATIONS

The management systems and internal controls required to implement this program include:

Procedures to ensure compliance with SIP requirements, state nonattainment areas, new source performance standards, and air operating permits

A system to monitor and manage hazardous air pollutants in an environmentally sound manner

A system to track changes to CAA regulations that may impact your operations

A system to track the phase out of Class I and II ozone-depleting substances

A system for tracking the technical and procedural requirements for the management of CFCs, halons, and other ODSs

CAA training to promote staff awareness and educate staff on specific implementation procedures.

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Section 05-02
Introduction

PURPOSE

This chapter provides policy, guidance and information to ensure that EPA facilities and operations are in compliance with applicable technical and procedural requirements of federal, state, and local air pollution control standards.

The Clean Air Act (CAA) and the Clean Air Act Amendments of 1990 give the U.S. Environmental Protection Agency (EPA) the responsibility to regulate the control of air pollution within the United States. The provisions of the CAA, as amended by the CAA Amendments of 1990, address a range of topics relating to the mitigation of air pollution. Those most relevant to EPA facilities include State Implementation Plan (SIP) requirements to protect air quality, construction and operating permit requirements, performance standards for new or modified stationary sources of air pollution standards, standards for hazardous and toxic air pollutants, and the phase out of stratospheric ozone-depleting chemicals.

This chapter of the Safety, Health, and Environmental Management Guidelines (SHEMG) emphasizes the air quality programs of the CAA as promulgated under Title 40 of the Code of Federal Regulations (CFR). Many activities at EPA facilities are affected by these regulations, which address the use, control, and release of a wide variety of air contaminants.

This chapter provides descriptive information on regulatory requirements, guidance, recommended procedures, and management tools to assist EPA facilities in complying with the CAA, as amended, and to minimize the risks from releases of air pollutants.

SCOPE

The information in this chapter is intended to ensure that EPA facility operations pose minimal risk to human health and the environment as a result of releases of air pollutants.

The CAA of 1970 established National Ambient Air Quality Standards (NAAQS) and SIP requirements to ensure that (1) attainment areas remain attainment areas and (2) nonattainment areas become attainment areas. Also included were regulations for

Clean Air Act

new air pollution sources and facilities emitting hazardous air pollutants.

In the CAA Amendments of 1990, Congress supplemented and revised existing requirements through the following pieces of legislation:

- **Title I - Nonattainment**
- **Title II - Mobile Sources**
- **Title III - Air Toxics/Hazardous Air Pollutants**
- **Title IV - Acid Deposition Control**
- **Title V - Operating Permits**
- **Title VI - Stratospheric Ozone Protection**
- **Title VII - Enforcement**
- **Title VIII - Miscellaneous Provisions**
- **Title IX - Clean Air Research.**

This chapter focuses on the CAA's legislative provisions most significantly impacting EPA operations, such as SIP requirements, new source performance standards, and Titles I, III, V, and VI.

AUTHORITY

Section 118 of the Clean Air Act (CAA), as amended in 1990; 40 CFR Parts 50 through 99; Executive Order 12088.

OBJECTIVES

The objectives of this chapter are to:

- **Ensure conformance with applicable federal, state, and local air pollution regulations**
- **Enhance awareness of CAA requirements to facilitate the implementation of effective management systems and emission reduction strategies that minimize risks to EPA employees, facilities, and the environment**

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- Clarify selected aspects of the CAA regulations that are of special relevance to EPA facilities
- Provide guidance and recommend procedures to assist EPA Safety, Health and Environmental Management managers (SHEM managers) in fulfilling their program administration responsibilities in an efficient and highly informed manner.

**RESPONSIBLE
OFFICERS**

All persons managing hazardous substances and processes at EPA facilities are responsible, to some degree, for proper management and control of potential air pollutants. Compliance with CAA regulations is primarily the responsibility of EPA facility management, the SHEM manager, and the facilities engineering staff.

REFERENCES

Topics discussed in this chapter were developed from the following sources:

- CAA of 1970
- CAA Amendments of 1990
- Published notices, proposed regulations and promulgated regulations under 40 CFR Parts 50-99
- Profiles of State Title V Programs, Stateside Associates, April 22, 1994.
- Facility Safety, Health and Environmental Management Manual, April 1996.

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Section 05-03
National Ambient Air Quality Standards - 40 CFR Part 50

INTRODUCTION

The National Ambient Air Quality Standards define levels of ambient air quality necessary to protect public health and welfare.

**NATIONAL
PRIMARY AND
SECONDARY
AMBIENT AIR
QUALITY
STANDARDS**

EPA established NAAQS which specify the allowable ambient concentrations for six priority pollutants. These pollutants were the subject of extensive evaluation by the National Institute of Occupational Safety and Health, which resulted in the development of "criteria documents," that outline the potential public health risks for the following pollutants:

- Carbon monoxide (CO)
- Ozone (O₃)
- Particulate matter (PM-10)
- Sulfur dioxide (SO₂)
- Nitrogen oxides (NO_x)
- Lead (Pb).

Aside from nitrogen oxides which are subject to a specific NAAQS, emissions of volatile organic compounds (VOCs) also act as precursors to the formation of ozone. Thus, VOCs are also regulated frequently to control ambient ozone levels. The CAA mandates that states develop SIPs to regulate emissions from stationary and mobile sources to ensure attainment and maintenance of the NAAQS. The NAAQS serve as the basis for emission limitations established in SIPs. These SIP requirements are applicable to EPA facilities for emissions of criteria pollutants and VOCs.

Areas that are not in compliance with the NAAQS may be designated as "nonattainment areas." SIPs for these areas contain more stringent requirements for emissions of the pollutants which exceed the NAAQS.

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Emission sources of criteria pollutants at EPA facilities most commonly include the following:

- Fossil fuel-fired boilers
- Emergency power generators
- Internal combustion engines (for emergency power)
- Storage tanks (for fuels and VOCs)
- Painting operations.

Guidance: EPA facilities should inventory sources of criteria air pollutants to determine the applicable permitting and regulatory air pollution control standards. The emissions inventory tools and references provided in Appendix 1 of this chapter can be used in performing air pollution source assessments at your site. Inventories should be updated periodically (e.g., annually) to account for the installation of new sources or the commencement of new project activities that will increase air pollutant contributions to the atmosphere.

Section 05-04
State Implementation Plans - 40 CFR Parts 51-52

INTRODUCTION

The CAA delegates implementation and enforcement of the Act's provisions to the states through SIPs. The SIP is the mechanism through which emission controls are imposed by the state on stationary sources to ensure compliance with the NAAQS. EPA has approved SIPs in all states.

PREPARATION, ADOPTION AND SUBMITTAL OF IMPLEMENTATION PLAN EPA has established minimum substantive and procedural requirements for SIPs. States must meet these requirements in order to obtain EPA approval of their SIPs. These requirements include:

- Procedural requirements (Subpart F)
- Control strategy (Subpart G)
- Review of new sources and modifications (Subpart I)
- Legal authority (Subpart L)

Reports (Subpart Q).

APPROVAL AND PROMULGATION OF IMPLEMENTATION PLAN

SIPs developed by individual states are codified in 40 CFR Part 52. Approval of a SIP by EPA makes its provisions enforceable by EPA, the state, and citizen suits. These provisions are known as "federally enforceable limits" and provide the basis for enforcing air pollution control mandates. Thus, EPA facilities should be aware of, and comply with, the regulatory requirements set by the SIP developed for its individual state.

SIP PERMITTING

Review of new sources and modifications in SIPs is accomplished through permitting programs. Since permitting requirements can be complex and are a critical component of air pollution control programs, a broad overview of permitting requirements typically included under SIPs is described here. Permits for stationary sources are a primary mechanism used by state regulatory agencies to administer air pollution control programs. Permits are used as a flexible tool to meet a range of objectives, including identifying and registering air pollution sources, establishing operating limitations

Clean Air Act

and technology requirements to minimize impacts on achieving the NAAQS, establishing monitoring provisions to verify achievement of permit limitations, and imposing self-reporting obligations for noncompliance with established permit provisions.

Permit application reviews are intended to prevent emissions from new sources and modifications of existing sources from causing or contributing to violations of the NAAQS. Permit application review usually consists of evaluating emissions, emissions control mechanisms, and development of operating, monitoring and reporting conditions to ensure compliance with the SIP.

The requirement to obtain a permit may be based on actual emissions or potential emissions. *Actual* emissions are defined typically as the emissions from a new or modified source after the application of any emission controls. *Potential* emissions are defined as the maximum capacity of a source to emit a pollutant when it is operating at full capacity, 24 hours a day, 365 days a year. Accordingly, even moderate capacity stationary sources may trigger requirements where states base permit thresholds on potential rather than actual emissions.

The distinction between actual and potential emissions is important since it will determine whether stationary sources at EPA facilities may be defined as major sources subject to increased permitting requirements or minor sources with reduced permit and regulatory considerations. A major source is defined under the CAA as any stationary source (or group of sources on contiguous property) that has the potential to emit 100 tons per year or more of a regulated air pollutant. Minor sources typically encompass those smaller contributors of air pollutants that do not meet the federal definition of a major source.

As a result of the potential to emit provisions, EPA facilities with combustion units, such as fossil fuel-fired boilers, may qualify as major sources based on 24-hour a day, year-round operation. However, SIPs sometimes provide for minor source permits that dictate specific operating limitations to reduce air emissions. These permit conditions represent federally enforceable limits that may eliminate the applicability of more stringent major source regulatory controls. Accordingly, EPA facilities should review the scope of regulated emission types, regulatory source definitions that are applicable to sources within their air quality control region. Specific

Clean Air Act

design and operational considerations to be determined prior to installing or modifying sources are identified in Chapter 8 of the Facility Safety, Health and Environmental Management Manual.

Minor Source Permits

The majority of permits issued by a state under its SIP are for the construction of new minor emission sources or emission increases due to modifications of existing sources. These permits normally are required for increases in actual emissions of pollutants over threshold values specified in the specific state permit regulations. SIPs may also contain provisions, such as "permit exemptions," or "permit *de minimis* levels," for processes or activities which do not require a permit. Permit *de minimis* levels are emission rates, below which permits are not required. Permit exemptions typically identify requirements for specific processes or activities which facilities may qualify for if emissions remain below specified levels.

Prevention of
Significant
Deterioration (PSD
Permits)

The PSD permit program is intended to prevent the deterioration of air quality by controlling actual and potential emission increases from new major sources or modifications. PSD permits are issued for criteria pollutants for which an area is in compliance with the NAAQS and other pollutants regulated under the CAA, including the following "significance" pollutants:

- Fluorides
- Sulfuric acid mist
- Hydrogen sulfide (H₂S)
- Total reduced sulfur (including H₂S)
- Reduced sulfur compounds (including H₂S).

Nonattainment Area
Permits

SIP nonattainment area permit programs for major sources are intended to prevent the further violations of the NAAQS in nonattainment areas by controlling actual and potential emission increases of the pollutants contributing NAAQS violations from new major sources or modifications of existing sources. Major sources typically include those stationary sources that have the potential to emit more than 100 tons per year of any pollutant regulated under the CAA. States may impose additional requirements that supplement the definition of a major source or lower emission thresholds for sources located in nonattainment areas. These types of permits may contain requirements to decrease emissions at other areas of the facility to offset any emissions increases associated with the operation of a major source.

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**Synthetic Minor
Permits**

If a facility is a major source based on its potential to emit, but will not actually emit the pollutants at levels over the major source definition thresholds, the facility may be eligible to obtain a minor source permit that provides operating conditions and restrictions limiting its emissions below major source thresholds. This type of permit is known as a synthetic minor permit. Any facility seeking such a permit should carefully evaluate its willingness to accept and comply with the necessary restrictions to obtain synthetic minor status.

Guidance: EPA facilities should maintain a copy of the applicable state and local air pollution control regulations and be aware of the types of emissions, pollutants, and emission increases which may require permits. EPA facilities also are advised to coordinate SIP source and emissions inventory requirements with those in other Clean Air Act programs under Titles I, III, V and VI. Appendix 1 of this chapter provides procedures for systematically identifying emissions sources and associated permitting requirements for air pollution sources located at EPA facilities.

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Section 05-05

**Standards of Performance for New Stationary Sources
40 CFR Part 60**

INTRODUCTION

EPA has developed new source performance standards (NSPS) for approximately 75 specific industrial categories to provide a ceiling for emissions of criteria pollutants from new sources. They are based on application of the best demonstrated technology available to reduce emissions. In addition to emission standards, NSPS include requirements for notification, performance tests, maintenance, monitoring, recordkeeping and reporting.

NSPS regulations are written in subparts for each source category. While the specific applicability requirements may differ, all are based on actual emissions from new or modified existing sources where construction began after the effective date specified in the subpart for that source category.

Laboratories are not among the industrial categories for which EPA has established an NSPS, therefore laboratories do not have an NSPS specifically applicable to them. EPA facilities, however, may have specific units, such as fossil fuel-fired combustion units or volatile liquid storage tanks that may have to comply with the specific NSPS requirements under 40 CFR Part 60, Subparts Dc and Kb.

EXAMPLES

NSPS Subpart Dc, Standards of Performance for Small Industrial, Commercial, Institutional Steam Generating Units, applies to each steam generating unit, such as a boiler, that has a maximum heat input capacity of at least 10 million Btu per hour for which construction, modification or reconstruction commenced after June 9, 1989. This subpart, found at 40 CFR 60.40c, contains emission and performance standards, as well as performance tests, monitoring, recordkeeping and reporting requirements for particulate matter and sulfur dioxide.

NSPS Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction or Modification Commenced after July 23, 1984, is found at 40 CFR 60.110(b). Subpart Kb applies to storage vessels with a storage capacity of more than 40 cubic meters (approximately 10,000 gallons) and with

Clean Air Act

VOC emission controls that vary depending on the capacity of the storage vessel.

**NSPS/PERMITTING
INTERFACE**

A facility which is subject to NSPS may also be subject to SIP construction or Title V operating permit requirements.

SIP permitting

NSPS requirements apply independently of any SIP permitting requirements, but may be referenced in permit conditions. EPA facilities should evaluate both NSPS and permitting applicability when a new source or modification may cause an increase in actual emissions

Guidance: EPA facilities should institute a review process to evaluate the permitting and NSPS implications associated with installing or modifying fossil fuel-fired boilers and volatile organic liquid storage vessels. Particular attention should be given to constructing or modifying fossil fuel-fired combustion units with a maximum design heat capacity of 10 million Btu per hour or more and volatile organic liquid storage vessels with a minimum internal volume of 10,000 gallons.

Title V Permitting

Under the EPA final rule on State Operating Permit Programs (57 FR 32295; July 21, 1992) codified at 40 CFR Part 70, NSPS sources are required to obtain a Title V operating permit. There are provisions in Part 70, however, that allow deferral of, or exemption from, the requirement to obtain an operating permit required solely due to NSPS and NESHAPs in certain circumstances including:

- Sources subject to NSPS which do not emit 100 tons per year of a regulated air pollutant, or
- Sources and source categories required to obtain a Title V operating permit solely because they are subject to Part 61, Subpart M NESHAPs for Asbestos (40 CFR 61.145).

EPA facilities should review the specific requirements relating to NSPS in the applicable Part 70 operating permit programs for their area.

Guidance: All EPA facilities must investigate whether any of the source categories apply to their facilities and comply with the applicable general and specific NSPS requirements for specific

Clean Air Act

units such as combustion units and storage tanks. EPA facilities should also identify SIP construction and Title V operating permit program requirements that are applicable to sources regulated by the NSPS.

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Clean Air Act

Section 05-06
National Emission Standards for Hazardous Air Pollutants
40 CFR Part 61

INTRODUCTION

EPA has developed health-based national emission standards for hazardous air pollutants (NESHAP) for the following pollutants:

- Asbestos (Subpart M)
- Benzene (Subpart J, L, Y, BB, and FF)
- Beryllium (Subparts C and D)
- Fugitive emissions (Subpart V)
- Inorganic arsenic (Subparts N, O, and P)
- Mercury (Subpart E)
- Radon (Subparts B, Q, R, T and W)
- Radionuclides (Subparts H, I, and K)
- Vinyl chloride (Subpart F).

NESHAP standards also include notification, emission testing, monitoring, recordkeeping, and reporting requirements. Many of these standards, however, only apply to specific processes and industrial activities.

EXAMPLES

Subpart M, National Emission Standard for Asbestos, includes various standards including requirements for demolition and renovation of buildings containing asbestos as well as labeling provisions for asbestos waste.

**NESHAP/
PERMITTING
INTERFACE**

A facility which is subject to NESHAP may also be subject to SIP construction or Title V operating permit requirements.

SIP permitting

NESHAP requirements apply independently of any SIP permitting requirements, but may be referenced in permit conditions. EPA facilities should evaluate both NESHAP and permitting applicability any time a new source or modification may cause an increase in

Clean Air Act

actual emissions of NESHAP pollutants, since regulatory agencies commonly conduct such evaluations.

Title V Permitting

Under the EPA final rule on State Operating Permit Programs (57 *FR* 32295; July 21, 1992) codified at 40 CFR Part 70, NESHAP sources are required to obtain a Title V operating permit. There are provisions in Part 70, however, that allows deferral of, or exemption from, the requirement to obtain an operating permit required strictly due to NESHAP in certain circumstances. EPA facilities should review the specific requirements relating to NESHAP in the applicable Part 70 operating permit programs for their area.

Guidance: All EPA facilities must investigate whether they emit any NESHAP pollutants, are subject to any NESHAP subparts, and comply with the applicable general and specific NESHAP requirements. EPA facilities should also identify the specific SIP construction and Title V operating permit program requirements regarding NESHAP.

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Section 05-07
Title I of the Clean Air Act Amendments of 1990
Nonattainment

NATIONAL
AMBIENT AIR
QUALITY
STANDARDS

The CAA, as amended, addresses nonattainment of the NAAQS by applying administrative controls on states to correct long-standing violations of the standards. For ozone, for example, Title I establishes five nonattainment area designations (classifications) from "marginal" to "extreme" with each nonattainment area ranked according to the severity of the violation of the ozone standard.

Title I provisions will vary depending on the type and designation of nonattainment area, as well as the specific requirements in the revised SIPs. The new nonattainment area designations may mean new counties are included in designated nonattainment area. Title I requirements may include new or revised emissions inventories, SIP conformity plans and certifications, emissions banking and trading provisions, and more stringent emission controls.

TITLE
I/PERMITTING
INTERFACE

A facility which is subject to Title I may also be subject to SIP construction or Title V operating permit requirements.

SIP permitting

The major source thresholds in sulfur dioxide, nitrogen oxide, and lead nonattainment area remain at potential emissions of 100 tons per year (tpy). The major source thresholds in ozone, PM-10, and carbon monoxide nonattainment areas, however, are variable depending on the pollutant(s) of concern and the severity of the nonattainment. Table I illustrates the new major source thresholds in these areas as a result of Title I.

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Table 1
Major Sources In Nonattainment Areas

Nonattainment Area Criteria Pollutant	Nonattainment Area Classification	Major Source Threshold (potential emissions)
ozone	marginal	100 tpy (VOCs or NOx)
	moderate	100 tpy (VOCs or NOx)
	serious	50 tpy (VOCs or NOx)
	severe	25 tpy (VOCs or NOx)
	extreme	10 tpy (VOCs or NOx)
	ozone transport region	50 tpy VOCs
PM-10	moderate	100 tpy
	serious	70 tpy
carbon monoxide (CO)	moderate	100 tpy
	serious	50 tpy*

* If EPA determines stationary sources significantly contribute to the CO air quality problem, then the regulating air pollution control agency may impose more stringent major source thresholds.

EPA facilities should note the decreases in major potential emission source thresholds in certain ozone, PM-10 and carbon monoxide nonattainment areas that could make them subject to major source permitting requirements.

The inclusion of nitrogen oxides to the major source definition in ozone nonattainment areas may also impact EPA facilities with nitrogen oxides emission sources, such as combustion units.

Guidance: EPA facilities in ozone nonattainment areas or "borderline" ozone nonattainment areas should be aware of and plan for announcements of "ozone action or alert days" when environmental conditions may contribute to a NAAQS violation. Following the recommendations given by regulatory agencies on these days not only promotes EPA as a model citizen, but could also help prevent NAAQS violations and nonattainment designations.

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Title V Permitting

Under the EPA final rule on State Operating Permit Programs (57 FR 32295; July 21, 1992) codified at 40 CFR Part 70, Title I regulated sources would be required to obtain a Title V operating permit. EPA facilities should be aware of the attainment status of their areas, their potential emissions of criteria pollutants and the specific requirements in the revised SIPs and State Part 70 programs related to Title I.

Guidance: EPA facilities should consult with state and local air pollution control authorities to determine their attainment status classification. Agency operations located in areas with nonattainment status for one or more NAAQS should devise systems to identify potential permitting and regulatory impacts associated with facility changes, both operational and engineering, that will increase emissions of these pollutants. Capital investment and new project review processes should emphasize pre-construction approval and permit considerations associated with installing or modifying air pollution sources in nonattainment areas.

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Clean Air Act

Section 05-08
Title III of the Clean Air Act Amendments of 1990
Air Toxics - 40 CFR Part 63

INTRODUCTION

Title III of the Clean Air Act Amendments of 1990 established a list of 189 hazardous air pollutants (HAPs). The list includes 172 specific chemicals, including such common substances as chlorine, methanol, methyl ethyl ketone and toluene. Seventeen compound categories also are included, such as compounds of arsenic, mercury and beryllium. The complete list of HAPs is provided in Exhibit 05-1 at the end of this chapter.

EPA plans to regulate sources of HAPs by industrial source category. EPA's current published list of HAP source categories and their regulation promulgation schedule is included as Exhibit 05-2 at the end of this chapter. EPA facilities with sources potentially regulated under Title III source categories include:

- Gasoline distribution facilities
- Solid and hazardous waste treatment, storage and disposal facilities
- Hazardous waste incinerators
- Engine test facilities
- Institutional-commercial boilers.

Sources emitting these pollutants are to be regulated based on the quantity of their potential emissions. A major source under Title III is defined to be any new or existing stationary source of HAPs, which has the potential to emit 10 tons per year of any individual HAP or 25 tons per year of any combination of HAPs. An area source is defined as any stationary source of HAPs which is smaller than a major source.

Technology-based emission standards will be required for any major source based on Maximum Achievable Control Technology (MACT) or any area source based on Generally Available Control Technology Standards (GACT). Standards (which are scheduled to be promulgated by EPA using a phased-in approach from 1990 to 2000) will be pollutant-specific standards for individual source

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categories. To achieve emissions reduction, the standards may require specific pollution control equipment, process changes raw material substitutions, production control procedures, or a combination of any or all of these.

**POTENTIAL
IMPACTS**

EPA facilities should be aware that section 112(c)(7) of the CAA, as amended, requires EPA to specifically evaluate the need to promulgate a separate source category for research and laboratory institutions. Standards for other source categories, such as those for fuel combustion and waste treatment and disposal, may also impact specific units at EPA facilities.

Emission sources of HAPs at EPA facilities include:

- Laboratory fume hoods
- Fuel loading/unloading operations
- Maintenance operations
- Combustion devices emitting one or more HAPs
- Painting operations
- Special research studies (e.g., pilot, bench or full scale hazardous waste treatment, storage or disposal).

Congress wanted to ensure that these technology-based standards were implemented and included requirements in Title III that may require states or facilities to become involved in setting MACT standards if EPA fails to promulgate all the standards on schedule. EPA facilities may be required to set or participate in either source category or site-specific MACT standards for their facilities or specific units at their facilities.

RESIDUAL RISK

Eight years after a MACT standard is established for a source category, EPA must evaluate the residual risk after MACT is applied. If this "residual risk" exceeds the risk standards, further emissions reductions (i.e., beyond MACT) must be applied. States or specific facilities may be required to participate in this evaluation of residual risk and application of additional emission reductions.

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**TITLE
III/PERMITTING
INTERFACE**

A facility that is subject to Title III may also be subject to SIP construction or Title V operating permit requirements.

SIP Permitting

Title III requirements will likely apply independently of any SIP permitting requirements, but may be referenced in permit conditions. EPA facilities should evaluate both Title III and SIP permitting applicability when a new source or modification may cause an increase in actual emissions of HAPs pollutants, since regulatory agencies will likely conduct such evaluations.

Title V Permitting

Under the EPA final rule on State Operating Permit Programs (57 FR 32295; July 21, 1992) codified at 40 CFR Part 70, Title III sources would be required to obtain a Title V operating permit. EPA facilities should be aware of their potential emissions of HAPs and State Part 70 programs related to Title III.

Guidance: All EPA facilities should identify their potential emissions of HAPs, investigate whether any of the Title III source categories apply to their facilities (see Exhibit 2), and investigate and comply with the applicable general and specific MACT requirements for their specific units contributing HAPs to the atmosphere such as hazardous waste treatment, storage and disposal units. EPA facilities should identify the specific SIP construction and Title V operating permit program requirements regarding Title III MACT or GACT standards. EPA facilities also are advised to coordinate Title III source and emissions inventory requirements with those in other Clean Air Act programs under existing SIPs and Titles I, V and VI.

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Clean Air Act

Section 05-09
Section 112(r) of the Clean Air Act Amendments of 1990
Release Prevention
40 CFR Part 68

INTRODUCTION

Clean Air Act Section 112(r), risk management planning for accidental release prevention, is intended to ensure that facilities reduce the possibility and impact of accidental chemical releases. The requirements also ensure government agencies and citizens receive information regarding a facility's potential hazards and release prevention procedures.

The rule for risk management planning would apply to facilities with more than threshold quantities of regulated substances in their processes. Many of these thresholds exceed those likely to be found in EPA research and analytical support functions.

Because Section 112(r) release prevention requirements are based on quantities of listed substances on-site and not emissions, and because this program likely will operate somewhat separately from other Clean Air Act programs, a broad overview of Section 112(r) requirements is included here. EPA facilities should be aware of and comply with the specific federal, state, and local regulatory requirements proposed and promulgated to implement Section 112(r).

**POTENTIAL
IMPACTS**

Section 112(r) requires facilities with listed hazardous substances on-site to notify EPA and develop and implement risk management plans. Risk management plan requirements include:

- A five-year site accident history
- Hazard assessment, including the effects on human health and the environment from a worst-case accident
- Accident prevention program similar to the OSHA process safety management standard
- Emergency response program.

The risk management plan is to be submitted to EPA, local emergency planning committees and other appropriate organizations, such as local fire departments. The document is

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to be available to the public through these agencies and organizations.

112(R)/
PERMITTING
INTERFACE

Section 112(r) release prevention requirements likely will apply independently of any SIP or Title V permitting requirements because Section 112(r) is based on quantities of listed substances on-site and not emissions. EPA facilities should be aware of the specific requirements in SIP and State Part 70 permitting programs related to Section 112(r).

Guidance: All EPA facilities must identify substances at their sites which are on the list of regulated substances, determine if the amount of these substances exceed threshold levels within a process, and reduce the amount of these substances below threshold level or comply with the specific federal, state, and local regulatory requirements proposed and promulgated to implement Section 112(r).

Clean Air Act

Section 05-10
Title V of the Clean Air Act Amendments of 1990
Operating Permits
40 CFR Part 70

INTRODUCTION

Title V of the Clean Air Act Amendments of 1990 requires some facilities to obtain operating permits. These operating permits essentially consist of all the applicable air pollution requirements for the facilities.

EPA facilities should evaluate the specific requirements for Title V in the Part 70 programs for their state. Table 2 illustrates sources required to obtain a Title V operating permit.

Table 2
Sources Required to Obtain a Title V Operating Permit

Source Type	Clean Air Act Program/Title	Applicability Threshold
Any source	All	Potential emissions of 100 tpy or more of any regulated pollutant
Major Sources	PSD Title I	100 tpy or 250 tpy potential emissions depending on nonattainment area status
	Title III	potential emissions of 10 tpy of a HAP or 25 tpy of any combination of HAPs
Some Sources	NSPS	All major sources. Title V compliance for some minor sources may be exempted or deferred.
Affected Sources	Title IV	Title IV acid rain provisions are not likely to be applicable to EPA facilities

OPERATING PERMIT APPLICATION

Title V operating permit applications include source, emission, control device, and operating information as well as a compliance plan. The compliance plan consists of a description of all applicable requirements, the facility's compliance status with respect to those requirements, the methods used to determine a compliance schedule for any units out of compliance and an annual compliance certification by a responsible official.

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EPA facilities required to obtain a Title V operating permit are advised to immediately prepare a complete application to obtain a permit application "shield" from enforcement by the regulatory agency. This will allow the facility to remain in compliance with the requirement to obtain an operating permit while the Title V permit application is under review.

**OTHER
POTENTIAL
IMPACTS**

Other aspects of the Title V operating permit program such as enhanced monitoring requirements under 40 CFR Part 64, annual compliance certifications, and permit fees could increase the burden and cost of Title V compliance.

**Synthetic Minor
Permits**

If a facility is a major source based on its potential to emit, but will not actually emit the pollutants at levels over the major source definition thresholds, the facility may be eligible for a minor source permit which limits its emissions below Title V (or any other major source definition based on potential to emit) thresholds. This type of permit is known as a synthetic minor permit. Any facility seeking such a permit should carefully evaluate its willingness to accept and live with the necessary retractions to obtain "synthetic minor" status.

Guidance: All EPA facilities must identify their potential emissions of regulated pollutants, applicability to Title V requirements, including other Clean Air Act programs which trigger Title V requirements. EPA facilities must determine if the amount of these emissions exceeds threshold levels and either reduce the amount of these substances below threshold levels, or comply with the specific federal, state, or local regulatory requirements and proposed and promulgated regulations to implement Title V. EPA facilities are also advised to coordinate Title IV source and emissions inventory requirements with those in other Clean Air Act programs under existing SIPs and Titles I, V, and VI.

Clean Air Act

Section 05-11
Title VI of the Clean Air Act Amendments of 1990
Stratospheric Ozone Protection
40 CFR Part 82

OZONE-
DEPLETING
SUBSTANCES
(ODSs)

Ozone-depleting substances are divided into two groups, Class I and Class II. Class I substances have a higher ozone-depleting potential and are considered more damaging to the earth's ozone layer. They include all chlorofluorocarbons (CFCs), carbon tetrachloride, methyl chloroform, halons, hydrobromofluorocarbons, and methylbromide. Class I substances are further classified into six groups. Class II substances comprise all hydrochlorofluoro-carbons (HCFCs) and include some substances originally designed as substitutes for CFCs. Class II substances also threaten the ozone layer, but to a lesser degree than the Class I substances. Exhibit 05-3 contains selections from 40 CFR Part 8, including Appendix A, a list of all Class I and Class II regulated substances and their corresponding ozone-depleting potential.

**Accelerated Phaseout
of ODSs**

Title VI mandates phaseouts of the production of products containing ozone-depleting substances. Section 604 of the statute imposes limits on the production and consumption of Class I and Class II substances. Under an accelerated schedule required by Section 606, production and consumption of most Class I substances is prohibited after December 31, 1995 (40 CFR Part 82.7). Consumption is defined as the level of production (including imports) and excludes exports of controlled substances (other than transshipments, or recycled or used controlled substances). Production means the manufacture of a controlled substance from any raw material or feedstock chemical, but does not include the following: (1) the manufacture of a controlled substance that is subsequently changed into a non-regulated substance (e.g., using CFC's to produce other consumer products), (2) the reuse or recycling of a controlled substance, (3) amounts that are destroyed by the approved technologies, and (4) amounts that are spilled or vented unintentionally (40 Part CFR 82.3) Under Section 605 of the statute, most class II substances are restricted as of January 1, 2015, and banned after January 1, 2030. Table 3 shows the CFC phaseout schedule. The final rule publishing the reduction of the baseline production and consumption allowances for the Class II substances has not been promulgated.

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Release Prohibitions: Section 608 of the CAA, as amended, prohibits venting Class I or II substances during servicing, repair, or disposal of all appliances (including motor vehicle air conditioners) and industrial process refrigeration units as of July 1, 1992 (40 CFR Part 82.154).

**Table 3
ODS Class I Phase Out Dates**

Control Period	Class I Substances in groups II and III	Class I Substances in group II (percent)	Class I substances in group IV	Class I substances in group V (percent)	Class I substances in group VI (percent)	Class I substance in group VII (percent)
1994	25	0	50	50	50	100
1995	25	0	15	30	30	100
1996	0	0	0	0	0	0
1997	0	0	0	0	0	0
1998	0	0	0	0	0	0
1999	0	0	0	0	0	0
2000	0	0	0	0	0	0
2001	0	0	0	0	0	0

Mandatory Recycling of Appliance and Refrigeration CFCs

Section 608 also requires EPA to develop regulations that reduce the use and emission of ODSs in air conditioning and refrigeration equipment. It instructs EPA to promulgate requirements maximizing the recapture and recycling of ODSs during servicing of such equipment. EPA codified these provisions and established certification requirements for both technicians and recovery and recycling equipment (40 CFR Part 82.161).

All facilities must ensure that employees or contractors are certified in accordance with EPA provisions concerning the recovery and recycling of ODSs in air conditioning and refrigeration appliances. Specifically, as of November 14, 1994, no person may open or dispose of an appliance except for an MVAC or MVAC-like appliance unless the person has been certified as a technician for that type of appliance pursuant to 40 CFR 82.161. In addition, technicians must certify to EPA that the recovery equipment used to service the appliances is capable of meeting the required levels of

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evacuation for appliances set forth in 40 CFR 82.158. The regulations also restrict the sale of Class I and Class II refrigerants to any persons unless the buyer is certified to 40 CFR Part 82, Subpart B.

Maintenance, service, and repair operations on air conditioning and refrigeration appliances must follow the required practices outlined in 40 CFR Part 82.156. EPA has instituted a system for third party referrals of violators to supplement existing CFC regulatory compliance inspections and reporting requirements.

**Motor Vehicle Air
Conditioner (MVAC)
Servicing**

Section 609, which sets standards for equipment as well as technician training, covers motor vehicle refrigerant. EPA codified the requirements of this section in 40 CFR 82 Subpart B, Servicing of Motor Vehicle Air Conditioners. This section requires the use of certified recovery and recycling equipment, outlines training and certification requirements for technicians, and restricts the sale of small containers of refrigerant (40 CFR 82.36, 82.38, and 82.40).

**Significant New
Alternative
Policy (SNAP):
Section 612**

In order to prevent inappropriate substitution of ODSs, EPA generated a list of approved substitutes (40 CFR Part 82 Subpart G, Appendix A). The list designates the approved substitutes according to application (e.g., CFC-12 centrifugal chillers, precision cleaning with CFC-113, and Halon 1211 streaming agents). An EPA rule issued on March 18, 1994 (59 FR 13043), prohibits large-scale substitution of ODSs unless the replacement can be found on the list.

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Chemical Name	Case Number
Acetaldehyde	75070
Acetamide	60355
Acetonitrile	75058
Acetophenone	98862
2-Acetylaminofluorene	53963
Acrolein	107028
Acrylamide	79061
Acrylic acid	79107
Acrylonitrile	107131
Allyl chloride	107051
4-Aminobiphenyl	92671
Aniline	62533
o-Anisidine	90040
Asbestos	1332214
Benzene (including benzene from gasoline)	71432
Benzidine	92875
Benzotrichloride	98077
Benzyl chloride	100447
Biphenyl	92524
Bis(2-ethylhexyl)phthalate (DEHP)	117817
Bis(chloromethyl)ether	542881
Bromoform	75252
1,3-Butadiene	106990
Calcium cyanamide	156627
Caprolactam	105602
Captan	133062
Carbaryl	63252
Carbon disulfide	75150
Carbon tetrachloride	56235

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Chemical Name	Case Number
Carbonyl sulfide	463581
Catechol	120809
Chloramben	133904
Chlordane	57749
Chlonne	7782505
Chloroacetic acid	79118
2-Chloroacetophenone	523374
Chlorobenzene	108907
Chlorobenzilate	510156
Chloroform	67663
Chloromethyl methyl ether	107302
Chloroprene	126998
Cresols/Cresylic acid (isomers and mixture)	1319773
Cresols/Cresylic acid (isomers and mixture)	95487
Cresols/Cresylic acid (isomers and mixture)	108394
Cresols/Cresylic acid (isomers and mixture)	106445
Cumene	98828
2,4-D, salts and esters	94757
DDE	3547044
Diazomethane	334883
Dibenzofurans	132649
1,2-Dibromo-3-chloropropane	96128
Dibutylphthalate	84742
1,4-Dichlorobenzene(p)	106467
3,3-Dichlorobenzidene	91941
Dichloroethyl ether (Bis(2-chloroethyl)ether)	111444
1,3-Dichloropropene	542756
Dichlorvos	62737
Diethanolamine	111422

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Chemical Name	Case Number
N,N-Diethyl aniline (N,N-Dimethylaniline)	121697
Diethyl sulfate	64675
3,3-Dimethyloxybenzidine	119904
Dimethyl aminoazobenzene	60117
3,3-Dimethyl benzidine	119937
Dimethyl carbamoyl chloride	79447
Dimethyl formamide	68122
1,1-Dimethyl hydrazine	57147
Dimethyl phthalate	13113
Dimethyl sulfate	77781
4,6-Dinitro-o-cresol, and salts	534521
2,4-Dinitrophenol	51285
2,4-Dinitrotoluene	121142
1,4-Dioxane (1,4-Diethyleneoxide)	123911
1,2-Diphenylhydrazine	122667
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	106898
1,2-Epoxybutane	106887
Ethyl acrylate	140885
Ethyl benzene	100414
Ethyl carbamate (Urethane)	51796
Ethyl chloride (Chloroethane)	75003
Ethylene dibromide (Dibromoethane)	106934
Ethylene dichloride (1,2-Dichloroethane)	107062
Ethylene glycol	107211
Ethylene imine (Aziridine)	151564
Ethylene oxide	75218
Ethylene thiourea	96457
Ethylidene dichloride (1,1-Dichloroethane)	75343
Formaldehyde	50000

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Chemical Name	Case Number
Heptachlor	76448
Hexachlorobenzene	118741
Hexachlorobutadiene	87683
Hexachlorocyclopentadiene	77474
Hexachoroethane	67721
Hexamethylene-1,6-diisocyanate	822060
Hexamethylphosphoramide	680319
Hexane	110543
Hydrazine	302012
Hydrochloric acid	7647010
Hydrogen fluoride (Hydrofluoric acid)	7664393
Hydroquinone	123319
Isophorone	78591
Lindane (all isomers)	58899
Maleic anhydride	108316
Methanol	67561
Methoxychlor	72435
Methyl bromide (Bromomethane)	74839
Methyl chloride (Chloromethane)	74873
Methyl chloroform (1,1,1-Trichloroethane)	71556
Methyl ethyl ketone (2-Butanone)	78933
Methyl hydrazine	60344
Methyl iodide (Iodomethane)	74884
Methyl isobutyl ketone (Hexone)	108101
Methyl isocyanate	624839
Methyl methacrylate	80626
Methyl tert butyl ether	1634044
4,4-Methylene bis(2-chloroaniline)	101144
Methylene chloride (Dichloromethane)	75092

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Chemical Name	Case Number
Methylene diphenol diisocyanate (MDI)	95954
4,4-Methylenedianiline	88062
Naphthalene	121448
Nitrobenzene	1582098
4-Nitrobiphenyl	540841
4-Nitrophenol	108054
2-Nitropropane	593602
N-Nitroso-N-methylurea	75014
N-Nitrosodimethylamine	75354
N-Nitrosomorpholine	1330207
Parathion	95476
Pentachloroittrobenzene (Quintobenzene)	108383
Pentachlorophenol	106423
Penol	108952
p-Phenylenediamine	106503
Phosgene	75445
Phosphine	7803512
Phosphorus	7723140
Phthalic anhydride	85449
Polychlorinated biphenyls (Aroclors)	1336363
1,3-Propane sultone	1120714
beta-Propiolactone	57578
Propionaldehyde	123386
Propoxur (Baygon)	114261
Propylene dichloride (1,2-Dichloropropane)	78875
Propylene oxide	75569
1,2-Propylenimine (2-Methyl azindine)	75558
Quinoline	91225
Quinone	106514

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Chemical Name	Case Number
Quinoline	91225
Quinone	106514
Styrene	100425
Styrene oxide	96093
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746016
1,1,2,2-Tetrachloroethane	79345
Tetrachloroethylene (Perchloroethylene)	127184
Titanium tetrachloride	7550450
Toluene	108883
2,4-Toluene diamine	95807
2,4-Toluene diisocyanate	584849
o-Toluidine	95534
Toxaphene (chlorinated camphene)	8001352
1,2,4-Trichlorobenzene	120821
1,1,2-Trichloroethane	79005
Trichloroethylene	79016
2,4,5-Trichlorophenol	95954
2,4,6-Trichlorophenol	88062
Triethylamine	121448
Trifluralin	1582093
2,2,4-Trimethylpentane	540841
Vinyl acetate	108054
Vinyl bromide	593602
Vinyl chloride	75014
Vinylidene chloride (1,1-Dichloroethylene)	75354
Xylenes (isomers and mixture)	1330207
Xylenes (isomers and mixture)	95476
Xylenes (isomers and mixture)	108383
Xylenes (isomers and mixture)	106423

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Hazardous Air Pollutants (HAPs)

Chemical Name	Chemical Name
Antimony Compounds	Lead Compounds
Arsenic Compounds (inorganic including arsine)	Manganese Compounds
Beryllium Compounds	Mercury Compounds
Cadmium Compounds	Mineral fibers ³
Chromium Compounds	Nickel Compounds
Cobalt Compounds	Polycyclic Organic Matter ⁴
Coke Oven Emissions	Radionuclides (including radon) ⁵
Cyanide Compounds ¹	Selenium Compounds
Glycol ethers ²	

NOTE For all listings above which contain the word "compounds" and for glycol ethers, the following applies: Unless otherwise specified, these listings are defined as including any unique chemical substance that contains the named chemical (i.e., antimony, arsenic, etc.) as part of that chemical's infrastructure.

¹ X'CN where X = H' or any other group where a formal dissociation may occur. For example KCN or Ca(CN)₂

² includes mono- and di- ethers of ethylene glycol, diethylene glycol, and triethylene glycol

R-(OCH₂CH₂)_n-OR' where

n = 1,2, or 3

R = alkyl or aryl groups

R' = R, H, or groups which, when removed, yield glycol ethers with the structure:

R-(OCH₂CH₂)_n-OH Polymers are excluded from the glycol category.

³ includes glass microfibers, glass wool fibers, rock wool fibers, and slag wool fibers, or other mineral derived fibers of average diameter 1 micrometer or less.

⁴ includes organic compounds with more than one benzene ring, and which have a boiling point greater than or eq

⁵ a type of atom which spontaneously undergoes radioactive decay.

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**Categories of Sources of Hazardous Air Pollutants
and Regulation Promulgation Schedule**

Source Category	Deadline
Engine Test Facilities	11/15/00
Industrial Boilers °	11/15/00
Institutional/Commercial Boilers °	11/15/00
Process Heaters	11/15/00
Stationary Internal Combustion Engines °	11/15/00
Stationary Turbines °	11/15/00
Primary Aluminum Production	11/15/97
Primary Copper Smelting	11/15/97
Primary Lead Smelting	11/15/97
Primary Magnesium Refining	11/15/00
Secondary Aluminum Production	11/15/97
Secondary Lead Smelting	11/15/94
Coke By-Product Plants	11/15/00
Coke Ovens: Charging, Top Side, and Door Leaks.	12/31/92
Coke Ovens: Pushing, Quenching, and Battery Stacks.	11/15/00
Ferrous Production	11/15/97
Integrated Iron and Steel Manufacturing	11/15/00
Iron Foundries	11/15/00
Steel Foundries	11/15/00
Steel Pickling—HCl Process	11/15/97
Alumina Processing	11/15/00
Asphalt Concrete Manufacturing	11/15/00
Asphalt Processing	11/15/00
Asphalt Roofing Manufacturing	11/15/00
Asphalt/Coal Tar Application—Metal Pipes	11/15/00
Chromium Refractories Production	11/15/00
Clay Products Manufacturing	11/15/00
Lime Manufacturing	11/15/00
Mineral Wool Production	11/15/97
Portland Cement Manufacturing	11/15/97
Taconite Iron Ore Processing	11/15/00
Wool Fiberglass Manufacturing	11/15/97
Oil and Natural Gas Production	11/15/97
Petroleum Refineries—Catalytic Cracking (Fluid and other) Units, Catalytic Reforming Units, and Sulfur Plant Units.	11/15/97
Petroleum Refineries—Other Sources Not Distinctly Listed.	11/15/94
Gasoline Distribution (Stage 1)	11/15/94
Marine Vessel Loading Operations	11/15/00
Organic Liquids Distribution (Non-Gasoline)	11/15/00
Aerospace Industries	11/15/94
Auto and Light Duty Truck (Surface Coating).	11/15/00
Flat Wood Paneling (Surface Coating)	11/15/00
Large Appliance (Surface Coating)	11/15/00
Magnetic Tapes (Surface Coating)	11/15/94
Manufacture of Paints, Coatings, and Adhesives.	11/15/00
Metal Can (Surface Coating)	11/15/00

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**Categories of Sources of Hazardous Air Pollutants
and Regulation Promulgation Schedule**

Source Category	Deadline
Metal Coil (Surface Coating)	11/15/00
Metal Furniture (Surface Coating)	11/15/00
Miscellaneous Metal Parts and Products (Surface Coating).	11/15/00
Paper and Other Webs (Surface Coating)	11/15/00
Plastic Parts and Products (Surface Coating).	11/15/00
Printing, Coating, and Dyeing of Fabrics	11/15/00
Printing/Publishing (Surface Coating) ^d	11/15/94
Shipbuilding and Ship Repair (Surface Coating).	11/15/94
Wood Furniture (Surface Coating)	11/15/94
Hazardous Waste Incineration	11/15/00
Municipal Landfills	11/15/00
Off-Site Waste and Recovery Operations ^f	11/15/94
Publicly Owned Treatment Works (POTW) Emissions.	11/15/95
Sewage Sludge Incineration	11/15/00
Site Remediation	11/15/00
4-Chloro-2-Methylphenoxyacetic Acid Production.	11/15/97
2,4-D Salts and Esters Production	11/15/97
4,6-Dinitro-o-Cresol Production	11/15/97
Butadiene-Furfural Cotnmer (R-11) Production ^d .	11/15/00
Captafol Production ^d	11/15/97
Captan Production ^d	11/15/97
Chloroneb Production	11/15/97
Chlorothalonil Production ^d	11/15/97
Dacthal (tm) Production ^d	11/15/97
Sodium Pentachlorophenate Production ^d	11/15/97
Tordon (tm) Acid Production ^d	11/15/97
Rayon Production	11/15/00
Spandex Production	11/15/00
Baker's Yeast Manufacturing	11/15/00
Cellulose Food Casing Manufacturing	11/15/00
Vegetable Oil Production	11/15/00
Pharmaceuticals Production ^d	11/15/97
Acetal Resins Production	11/15/97
Acrylonitrile-Butadiene-Styrene Production.	11/15/94
Alkyd Resins Production	11/15/00
Amino Resins Production	11/15/97
Boat Manufacturing	11/15/00
Butyl Rubber Production	11/15/94
Carboxymethylcellulose Production	11/15/00
Cellophane Production	11/15/00
Cellulose Ethers Production	11/15/00
Epichlorohydrin Elastomers Production	11/15/94
Epoxy Resins Production	11/15/94
Ethylene-Propylene Rubber Production	11/15/94
Flexible Polyurethane Foam Production	11/15/97
Hypalon (tm) Production ^d	11/15/94
Maleic Anhydride Copolymers Production	11/15/00

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**Categories of Sources of Hazardous Air Pollutants
and Regulation Promulgation Schedule**

Source Category	Deadline
Methylcellulose Production	11/15/00
Methyl Methacrylate-Acrylonitrile- Butadiene-Styrene Production ^d	11/15/94
Methyl Methacrylate-Butadiene-Styrene Terpolymers Production ^{d, e}	11/15/94
Neoprene Production	11/15/94
Nitrile Butadiene Rubber Production	11/15/94
Nitrile Resins Production	11/15/00
Non-Nylon Polyamides Production	11/15/94
Nylon 6 Production	11/15/97
Phenolic Resins Production	11/15/97
Polybutadiene Rubber Production ^d	11/15/94
Polycarbonates Production ^d	11/15/97
Polyester Resins Production	11/15/00
Polyether Polyols Production	11/15/97
Polyethylene Terephthalate Production ^e	11/15/94
Polymerized Vinylidene Chloride Production	11/15/00
Polymethyl Methacrylate Resins Production	11/15/00
Polystyrene Production	11/15/94
Polysulfide Rubber Production ^d	11/15/94
Polyvinyl Acetate Emulsions Production	11/15/00
Polyvinyl Alcohol Production	11/15/00
Polyvinyl Butyral Production	11/15/00
Polyvinyl Chloride and Copolymers Production	11/15/00
Reinforced Plastic Composites Production	11/15/97
Styrene-Acrylonitrile Production ^e	11/15/94
Styrene-Butadiene Rubber and Latex Production ^d	11/15/94
Ammonium Sulfate Production-Caprolactam By-Product Plants.	11/15/00
Antimony Oxides Manufacturing	11/15/00
Carbon Black Production	11/15/00
Chlorine Production ^d	11/15/97
Cyanuric Chloride Production	11/15/97
Fume Silica Production	11/15/00
Hydrochloric Acid Production	11/15/00
Hydrogen Cyanide Production	11/15/97
Hydrogen Fluoride Production	11/15/00
Phosphate Fertilizers Production	11/15/00
Phosphoric Acid Manufacturing	11/15/00
Sodium Cyanide Production	11/15/97
Uranium Hexafluoride Production	11/15/00
Ethylene Processes	11/15/00
Quarternary Ammonium Compounds Production	11/15/00
Synthetic Organic Chemical Manufacturing	11/15/92
Aerosol Can-Filling Facilities	11/15/00
Benzyltrimethylammonium Chloride Production.	11/15/00
Carbonyl Sulfide Production	11/15/00
Chelating Agents Production	11/15/00
Chlorinated Paraffins Production ^d	11/15/00
Chromic Acid Anodizing	11/15/94

Clean Air Act

**Categories of Sources of Hazardous Air Pollutants
and Regulation Promulgation Schedule**

Source Category	Deadline
Commercial Dry Cleaning (Perchloroethylene)--Transfer Machines	11/15/92
Commercial Sterilization Facilities	11/15/94
Decorative Chromium Electroplating	11/15/94
Dry Cleaning (Petroleum Solvent)	11/15/00
Ethylidene Norbornene Production ^d	11/15/00
Explosives Production	11/15/00
Flexible Polyurethane Foam Fabrication Operations.	11/15/00
Friction Products Manufacturing	11/15/00
Halogenated Solvent Cleaners	11/15/94
Hard Chromium Electroplating	11/15/94
Hydrazine Production	11/15/00
Industrial Cleaning (Perchloroethylene) Dry-to-dry machines.	11/15/92
Industrial Dry Cleaning (Perchloroethylene)--Transfer Machines.	11/15/92
Industrial Process Cooling Towers	11/15/94
Leather Tanning and Finishing Operations	11/15/00
OBPA/1,3-Diisocyanate Production ^d	11/15/00
Paint Stripper Users	11/15/00
Photographic Chemicals Production	11/15/00
Phthalate Plasticizers Production	11/15/00
Plywood/Particle Board Manufacturing	11/15/00
Pulp and Paper Production	11/15/97
Rocket Engine Test Firing	11/15/00
Rubber Chemicals Manufacturing	11/15/00
Semiconductor Manufacturing	11/15/00
Symmetrical Tetrachloropyndine Production ^d	11/15/00
Tetrahydrobenzaldehyde Production	11/15/97
Tire Production	11/15/00
Chromic Acid Anodizing	11/15/94
Commercial Dry Cleaning (Perchloroethylene)--Dry-to-Dry Machines.	11/15/92
Commercial Dry Cleaning (Perchloroethylene)--Transfer Machines.	11/15/92
Commercial Sterilization Facilities	11/15/94
Decorative Chromium Electroplating	11/15/94
Halogenated Solvent Cleaners	11/15/94
Hard Chromium Electroplating	11/15/94
Secondary Lead Smelting	11/15/00

^a Only major sources within any category shall be subject to emission standards under Section 112 unless a finding is made of a threat of adverse effects to human health or the environment for the area sources in a category. All listed categories are exclusive of any specific operations or processes included under other categories that are listed separately.

^b The markings in the "Scheduled Promulgation Date/Federal Register Citation" column of Table 1 denote the following:

- (A): amendment to a final rulemaking action
- (a): proposed amendment to a final rulemaking action
- (C): correction (or clarification) published subsequent to a proposed or final rulemaking action
- (F): final rulemaking action
- (P): proposed rulemaking action
- (R) reopening of a proposed action for public comment
- (S). announcement of a stay, or partial stay, of the rule requirements

Clean Air Act

Moved: the source category is relocated to a more appropriate industry group

Subsumed: the source category is included within the definition of another listed category and therefore is no longer listed as a separate source category

Renamed: the title of this source category is changed to a more appropriate title

Deleted: the source category is officially removed from the source category list

^e Sources defined as electric utility steam generating units under Section 112 (A)(8) shall not be subject to emission standards pending the findings of the study required under Section 112(n)(1)

^d Equipment handling specific chemicals for these categories or subsets of these categories are subject to a negotiated standard for equipment leaks contained in the Hazardous Organic NESHAP (HON), which was promulgated on April 22, 1994. The HON includes a negotiated standard for equipment leaks from the SOCMCI category and 20 non-SOCMI categories (or subsets of these categories). The specific processes affected within the categories are listed in Section XX.X0 (C) of the March 6, 1991 Federal Register notice (56 FR 9315)

^a A finding of threat of adverse effects to human health or the environment was made for each category of area sources listed. The following footnotes apply to source categories that are subject to court ordered promulgation deadlines (differing from the above listed regulatory deadlines) in accordance with a consent decree entered in *Sierra Club v. Browner*, Case No. 93-0124 (And related cases) (D.C. Dist. Ct.).

^f judicial deadline: 05/13/96

^g judicial deadline: 05/15/96

**List of Ozone-Depleting Substances
Appendices from 40 CFR Part 82**

Appendix A—Class 1 Controlled Substances

<u>Chemical</u>	<u>ODP</u>
A. Group I:	
CFCl ₃ -Trichlorofluoromethane (CFC-11)	1.0
CF ₂ Cl ₂ -Dichlorodifluoromethane (CFC-12)	1.0
C ₂ F ₃ Cl ₃ -Trichlorotrifluoroethane (CFC-113)	0.8
C ₂ F ₄ Cl ₂ -Dichlorotetrafluoroethane (CFC-114)	1.0
C ₂ F ₃ Cl-Monochloropentafluoroethane (CFC-115)	0.6
C ₂ F ₅ Cl-Monochloropentafluoroethane All isomers of the above chemicals	
B. Group II:	
CF ₂ ClBr-Bromochlorodifluoromethane (Halon-1211)	3.0
CF ₃ Br-Bromotrifluoromethane (Halon-1301)	10.0
C ₂ F ₄ Br ₂ -Dibromotetrafluoroethane (Halon-2402)	6.0
All isomers of the above chemicals	

Appendix A--Class 1 Controlled Substances

<u>Chemical</u>	<u>ODP</u>
C. Group III:	
CF ₃ Cl-Chlorotrifluoromethane (CFC-113)	1.0
C ₂ FCl ₃ - (CFC-111)	1.0
C ₂ F ₂ Cl ₄ - (CFC-112)	1.0
C ₃ FCl ₇ - (CFC-211)	1.0
C ₃ F ₂ Cl ₆ - (CFC-212)	1.0
C ₃ F ₃ Cl ₅ - (CFC-213)	1.0
C ₃ F ₄ Cl ₄ - (CFC-214)	1.0
C ₃ F ₅ Cl ₃ - (CFC-215)	1.0
C ₃ F ₆ Cl ₂ - (CFC-216)	1.0
C ₃ F ₇ Cl- (CFC-217)	1.0
All isomers of the above chemicals	
D. Group IV:	
CCl ₄ -Carbon Tetrachloride	1.1

Appendix A to Subpart A--Class 1 Controlled Substances

<u>Chemical</u>	<u>ODP</u>
E. Group V:	
C ₂ H ₃ Cl ₃ -1,1,1 Trichloroethane (Methyl chloroform)	0.1
All isomers of the above chemical except 1,1,2-trichloromethane	
F. Group VI:	
CH ₃ Br--Bromomethane (Methyl Bromide)	0.7
G. Group VII:	
CHFBR ₂	1.00
CHF ₂ Br (HBFC-22B1)	0.74
CH ₂ FBr	0.73
C ₂ HFBr ₄	0.3-0.8
C ₂ HF ₂ Br ₃	0.5-1.8
C ₂ HF ₃ Br ₂	0.4-1.6
C ₂ HF ₄ Br	0.7-1.2
C ₂ H ₂ FBr ₃	0.1-1.1
C ₂ H ₂ F ₂ Br ₂	0.2-1.5
C ₂ H ₂ F ₃ Br	0.7-1.6
C ₂ H ₃ FBr ₂	0.1-1.7
C ₂ H ₃ F ₂ Br	0.2-1.1
C ₂ H ₄ FBr	0.07-0.1
C ₃ HFBr ₆	0.3-1.5
C ₃ HF ₂ Br ₅	0.2-1.9
C ₃ HF ₃ Br ₄	0.3-1.8
C ₃ HF ₄ Br ₃	0.5-2.2
C ₃ HF ₅ Br ₂	0.9-2.0
C ₃ HF ₆ Br	0.7-3.3
C ₃ H ₂ FBr ₅	0.1-1.9
C ₃ H ₂ F ₂ Br ₄	0.2-2.1
C ₃ H ₂ F ₃ Br ₃	0.2-5.6
C ₃ H ₂ F ₄ Br ₂	0.3-7.5
C ₃ H ₂ F ₅ Br	0.9-1.4
C ₃ H ₃ FBR ₄	0.08-1.9
C ₃ H ₃ F ₂ Br ₃	0.1-3.1
C ₃ H ₃ F ₃ Br ₂	0.1-2.5

Appendix A to Subpart A--Class 1 Controlled Substances

<u>Chemical</u>	<u>ODP</u>
C ₃ H ₃ F ₄ Br	0.3-4.4
C ₃ H ₄ FBr ₃	0.03-0.3
C ₃ H ₄ F ₂ Br ₂	0.1-1.0
C ₃ H ₄ F ₃ Br	0.07-0.8
C ₃ H ₅ FBr ₂	0.04-0.4
C ₃ H ₅ F ₂ Br	0.07-0.8
C ₃ H ₆ FB	0.02-0.7

Appendix A amended at 56 FR 67371, Dec. 30, 1991; revised at 57 FR 33787, July 30, 1992;
58 FR 65062, Dec. 10, 1993]

Appendix B to Subpart A--Class II Controlled Substances

<u>Chemical</u>	<u>ODP</u>
CHFC1 ₂ -Dichlorofluoromethane (HCFC-21)	[res.]
CHF ₂ Cl-Chlorodifluoromethane (HCFC-22)	0.05
CH ₂ FCl-Chlorofluoromethane (HCFC-31)	[res.]
C ₂ HFCl ₄ - (HCFC-121)	[res.]
C ₂ HF ₂ Cl ₃ - (HCFC-122)	[res.]
C ₂ HF ₃ Cl ₂ - (HCFC-123)	0.02
C ₂ HF ₄ Cl- (HCFC-124)	0.02
C ₂ H ₂ FCl ₃ - (HCFC-131)	[res.]
C ₂ H ₂ F ₂ Cl ₂ - (HCFC-132b)	[res.]
C ₂ H ₂ F ₃ Cl- (HCFC-133a)	[res.]

Appendix B to Subpart A--Class II Controlled Substances

<u>Chemical</u>	<u>ODP</u>
C ₂ H ₃ FCl ₂ - (HCFC-141b)	0.12
C ₂ H ₃ F ₂ Cl- (HCFC-142b)	0.06
C ₃ HFCl ₆ - (HCFC-221)	[res.]
C ₃ HF ₂ Cl ₅ - (HCFC-222)	[res.]
C ₃ HF ₃ Cl ₄ - (HCFC-223)	[res.]
C ₃ HF ₄ Cl ₃ - (HCFC-224)	[res.]
C ₃ HF ₅ Cl ₂ - (HCFC-225ca)	[res.]
C ₃ HF ₅ Cl ₂ - (HCFC-225cb)	[res.]
C ₃ HF ₆ Cl- (HCFC-226)	[res.]
C ₃ H ₂ FCl ₅ - (HCFC-231)	[res.]
C ₃ H ₂ F ₂ Cl ₄ - (HCFC-232)	[res.]
C ₃ H ₂ F ₃ Cl ₃ - (HCFC-233)	[res.]
C ₃ H ₂ F ₄ Cl ₂ - (HCFC-234)	[res.]
C ₃ H ₂ F ₅ Cl- (HCFC-235)	[res.]
C ₃ H ₃ FCl ₄ - (HCFC-241)	[res.]
C ₃ H ₃ F ₂ Cl ₃ - (HCFC-242)	[res.]
C ₃ H ₃ F ₃ Cl ₂ - (HCFC-243)	[res.]
C ₃ H ₃ F ₄ Cl- (HCFC-244)	[res.]
C ₃ H ₄ FCl ₃ - (HCFC-251)	[res.]

Appendix B to Subpart A--Class II Controlled Substances

Clean Air Act

<u>Chemical</u>	<u>ODP</u>
C ₃ H ₄ F ₂ Cl ₂ - (HCFC-252)	[res.]
C ₃ H ₄ F ₃ Cl- (HCFC-253)	[res.]
C ₃ H ₃ FCl ₂ - (HCFC-261)	[res.]
C ₃ H ₃ F ₂ Cl- (HCFC-262)	[res.]
C ₃ H ₆ FCI- (HCFC-271)	[res.]
All isomers of the above chemicals	

List of Acronyms

CAA	Clean Air Act
CFC	Chloroflouorocarbon
CFR	Code of Federal Regulations
CO	Carbon Monoxide
EPA	Environmental Protection Agency
GACT	Generally Available Control Technology Standards
H₂S	Hydrogen Sulfide
HAP	Hazardous Air Pollutant
HCFC	Hydrochloroflouorocarbon
MACT	Maximum Achievable Control Technology
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
O₃	Oxygen
ODS	Ozone Depleting Substance
Pb	Lead
PM-10	Particulate Matter
SHEM	Safety, Health and Environmental Management
SHEMG	Safety, Health and Environmental Management Guidelines
SIP	State Implementation Plan
SNAP	Significant New Alternatives Policy
SO₂	Sulfur Dioxide
VOCs	Volatile Organic Compounds

CLEAN AIR ACT MANAGEMENT TOOLS

I. CAA Title V: Operating Permit Determination and Application Procedures

Several straightforward actions can be taken to promote compliance with the Operating Permits Program, Title V of the CAA. A simplified approach for determining major source status, compiling necessary records, and completing an operating permit application include the following actions:

- Step 1: Develop a Permitting Work Team Plan -** Review facility records and determine what information is available, develop a work team to facilitate application planning, and determine tasks for team members.
- Step 2: Prepare an Emission Inventory -** Conduct a laboratory inspection to identify all potential and actual point source and fugitive emissions. Compare this information with federal and state-regulated pollutants and use the data from the inspection to quantify actual and potential emissions from the whole facility assuming the facility acts like one source.
- Step 3: Perform a Compliance Audit -** Identify applicable state regulations, attainment status, permit conditions, and emission limits. Review NESHAPS and federal NSPS for each emission source and compare the laboratory's emissions against state permitting and federal standards. At this point, it will be possible to determine whether the laboratory is a major source and must complete a permit application. If the facility has the potential to emit as a major source, yet will not actually emit the regulated pollutants, the facility may qualify for a synthetic minor permit. However, such a permit will severely limit the flexibility of laboratory operations.
- Step 4: Develop an Alternate Operating Scenarios and Review Monitoring Plan -** Develop operational plans to either reduce emissions of pollutants or provide for operational flexibility. Reducing pollutant emissions below the major source classification can eliminate the requirement to complete the permit application; however, a facility alteration with significant construction changes may require a pre-construction permit as a result of NSPS. If emissions cannot be reduced below required limits and the laboratory has completed a flexible operations plan, an emissions monitoring and record keeping system must be developed and tested to ensure proper function before the laboratory commits to such a system in its permit.

Step 5: Prepare the Permit Application - Gather emission monitoring records. Ensure staff preparing the application are properly trained. Complete the application several months before the due date and conduct an internal review of the application to determine whether the application provides enough flexibility to the laboratory's operation. The duration of the permit is five years and should reflect expected changes in laboratory operations. Permit revisions are allowed, but are expected to be extremely time consuming, and lack of an approved permit can halt facility operations. The application, once completed, must be signed by a responsible official and then submitted.

II. Tools to Provide Further Detail to the Flow Charts of the Title V Application Completion Process

The following pages provide further detail of the Title V application completion process flow charts. Each tool is referenced in the flow charts. These tools provide further information or, in some cases, a strategy for conducting a certain aspect of the process. The tools are as follows:

- **Tool 1: Development of an Operating Permit Work Team**
- **Tool 2: Federal Thresholds for Major Source Screening**
- **Tool 3: Hazardous Air Pollutants Commonly Used at EPA Facilities and Selective Substitutes**
- **Tool 4: Assist in Gathering Emissions-Related Information from Your Facility**
- **Tool 5: Develop Plans for Operational Flexibility**
- **Tool 6: Possible Monitoring Techniques**

Tool 1: Development of an Operating Permit Work Team

Team Members	Responsibility
Laboratory Manager	Laboratory manager should become involved early in the process to request necessary funding and resources. Because the application must be signed by a responsible official, it is important to get an early buy-in from upper management.
Environmental Manager	Environmental managers provide the necessary technical skills to quantify emissions and understand control technologies.
Facility Engineering and Operations Personnel	Operations personnel recommend daily facility operations strategies.
Safety & Health Manager	A safety and health manager provides guidance on how changes in facility operations affect worker safety.
Research Representative	A research representative understands the future needs of the laboratory to fulfill the research mission of the laboratory and how any future changes may affect its operations and emissions.
Public Relations Staff	Because the permit application will be reviewed by the public, Indian tribes, and nearby and adjacent states, the team should include a public relations staff member to respond to questions.
State Agency Delegate	The team should include a representative from the state environmental regulatory staff to ensure the application is complete, accurate, and thorough.

Tool 2: Federal Thresholds for Major Source Screening

Operating-Permit Major Source Thresholds	
Source Type	Major Threshold, Tons/Year
Hazardous Air Pollutants (HAPs)	<ul style="list-style-type: none"> • 10 for any single HAP or 25 for aggregate HAPs
Volatile Organic Compounds (VOCs) (in Ozone-Nonattainment Areas)	<ul style="list-style-type: none"> • 10 in extreme nonattainment areas • 25 in severe nonattainment areas • 50 in serious nonattainment areas or in the North East Transport Region • 100 in the rest of the US
Nitrogen Oxides (in Ozone-Nonattainment Areas)	<ul style="list-style-type: none"> • 10 in extreme nonattainment areas • 25 in severe nonattainment areas • 50 in serious nonattainment areas • 100 in the rest of the US
PM-10 (in Serious PM-10-Nonattainment Areas)	<ul style="list-style-type: none"> • 70
Carbon Monoxide (CO) (in Serious CO-Nonattainment Areas)	<ul style="list-style-type: none"> • 50
All Others	<ul style="list-style-type: none"> • 100 for any regulated pollutant

Clean Air Act

Tool 3: Hazardous Air Pollutants Commonly Used at EPA Facilities and Selective Substitutes

Hazardous Air Pollutant	Use	Chemical Substitutes
Acetaldehyde	Solvent	Acetone 1,4 Butanediol Butyraldehyde
Benzene	Reagent Solvent	D-Limonene/Esters BTX Pyrolysis oils
Carbon tetrachloride	Solvent	Cyclohexane
Chloroform	Solvent	Cyclohexane
Ethylene glycol	Reagent	Propylene glycol Polyols
Formaldehyde	Reagent	Butanol Isopropanol
Hexane	Solvent	Cyclohexane Ethanol
Methanol	Solvent	Ethanol
1,1,1 Trichloroethane	Solvent	N-Butyl Butyrate D-Limonene
Methyl ethyl ketone	Solvent	Acetone Ethanol
Methyl isobutyl ketone	Solvent	Acetone Butanol
Naphthalene	Solvent Reagent	BTX Pyrolysis Oils
Phenol	Reagent	Cyclohexane Fast Pyrolysis Phenol
Tetrachloroethylene	Reagent Solvent	Cyclohexane
Toluene	Reagent Solvent	N-Butyl Butyrate
Vinyl chloride	Reagent	Adipic Acid Acrylic Acid
Xylene	Reagent Solvent	Glycol Ethers Anthraquinone

Bolded Substances represent chemicals that are manufactured from biomass starting materials. Such processes prevent pollution when the complete lifecycle of a chemical is considered.

Tool 4: Assist in Gathering Emissions-Related Information from Your Facility

Specific Areas	Information Checklist
Emissions Unit	<p>Written description of each emission unit:</p> <ul style="list-style-type: none"> • design specifications • age • capacity • manufacturer <p>Emission units identified as point or fugitive</p> <p>Actual and potential emission rates of all regulated pollutants</p> <ul style="list-style-type: none"> • 6 criteria pollutants • 189 hazardous air pollutants • 140 accidental-released chemicals • Others (such as CFCs) <p>For point sources, stack characteristics:</p> <ul style="list-style-type: none"> • height and diameter • exit gas velocity • temperature • distance to property line <p>Basic calculations</p>
Process	<p>Design and actual production rates and hours of operation</p> <p>Design and actual raw material and fuel usage rates</p> <p>Schematic flow diagrams</p>
Control Systems	<p>Emission unit controlled</p> <p>Type of control system (such as manufacturer, model number, age)</p> <p>Rated capacity</p> <p>Pollutant controlled</p> <p>Capture efficiency</p> <p>Control efficiency</p> <p>Reason of installation</p> <p>Written description of maintenance procedures and any work practice standards in place (including regular repair schedules and maintenance activities)</p>

Tool 5: Develop Plans for Operational Flexibility

Strategy	Description
Aim for broad permit terms	Be conservative when estimating emissions. By overestimating emissions and underestimating control-technologies efficiencies, operations will be able to meet permit requirements over a broad range of conditions.
Avoid limits on each emissions point	Whenever possible, try to group emission units into processes or operations. Then develop emissions limits for the operation, not individual emissions points.
Whenever possible, permit by chemical family, not by specific chemical	This approach may allow a facility to change materials without the need to develop additional alternate operating scenarios or obtain permit modifications.

Tool 6: Possible Monitoring Techniques

Monitoring Method	Type of Monitoring
Direct	<ul style="list-style-type: none"> • Periodic sampling • Continuous emissions monitoring systems (CEMS)
Indirect	<ul style="list-style-type: none"> • Mass balance and emissions engineering calculations (the EPA Office of Air Quality Planning and Standards (919-541-5616) maintains several air pollution models and the AP-42 emission factors) • Surrogate parameters • Work practice documentation

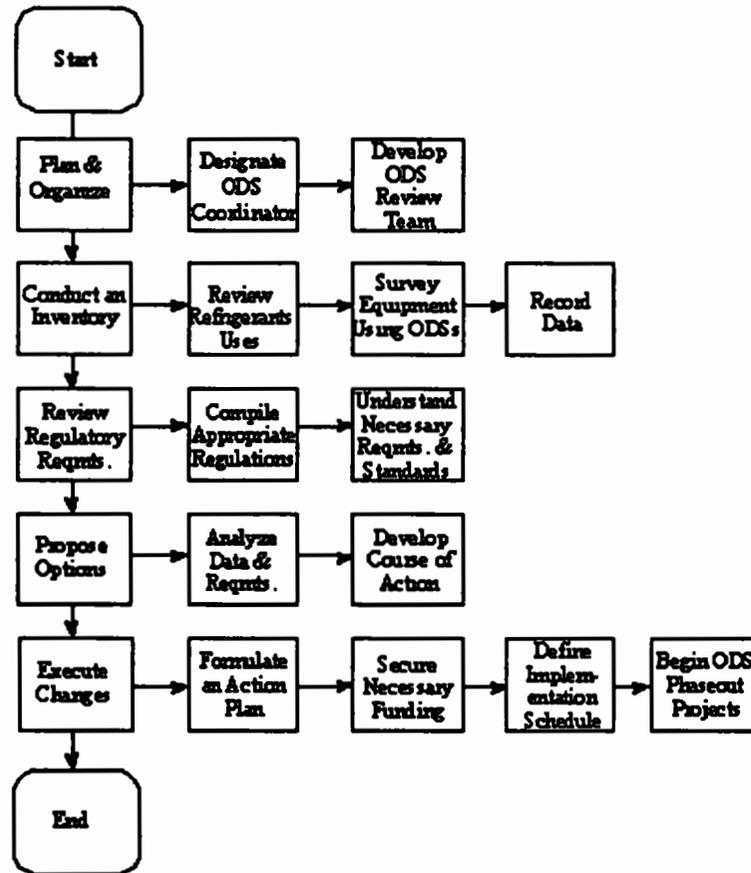
III. CAA Title VI: Similarity of Approach in Phasing Out Ozone Depleting Substances (ODSs)

Title VI of the CAA calls for a complete phaseout of the manufacture of substances that deplete stratospheric ozone, regulates their use, and suggests safe alternatives. EPA FMSSD has developed a program to begin phasing out these substances throughout the Agency's nationwide facilities in refrigeration equipment such as major HVAC systems and in laboratory refrigerators. The ODS coordinators are using a similar process to that for Title V permitting in the development of this program. Though the steps in Section I of this document seem specific for completing a Title V operating permit application, they can be generalized into the same approach the Agency is applying to the ODS reduction program

- Step 1: Plan and Organize** - In the ODS reduction program, the Agency has reviewed the current situation and developed a team to review options.
- Step 2: Conduct an Inventory** - This step is quite similar to the emissions inventory except individual pieces of equipment containing ODSs were quantified and relevant information was obtained instead of emissions sources.
- Step 3: Review the Regulatory Requirements** - In the case of ODS phaseout, Title VI of the CAA and *40 CFR 82* become the most important sources of information on current regulations. These requirements must be understood to determine, for example, the type of certification that is needed to operate and maintain the Agency's refrigeration equipment.
- Step 4: Propose Options** - Options for replacement are developed that provide cost-effective operational flexibility for a facility. The Agency's program has evaluated replacement versus conversion options and has decided to replace its chillers in the process of eliminating chlorofluorocarbons (CFCs).
- Step 5: Execute Changes** - This step mirrors the preparation of the permit application step. It is here where the process comes to completion. The planning and review has identified cost-effective options. Now budgets and timetable for procurement must be developed and the projects must be implemented, just as the operating permit application must be completed once the facility has determined that it is a major source and all its monitoring systems are in place.

EPA's internal Title VI phaseout program for ODSs is presented below to demonstrate the similarity of approaches in developing a program to control the emissions for environmentally damaging substances.

Approach for the Agency's Internal ODS Phaseout Program



**SAFETY, HEALTH, AND
ENVIRONMENTAL MANAGEMENT
PROGRAM GUIDE**

Guide No. 06

Issued 05/98

Revised _____

CLEAN WATER MANAGEMENT (CWM) PROGRAM

SCOPE OF THE PROGRAM

This Program Guide provides an overview of the requirements EPA facilities must fulfill to comply with the regulations, guidance, and procedures associated with the Clean Water Management (CWM) Program. The CWM Program was developed under the auspices of two environmental statutes, including the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act (CWA)) and the Safe Drinking Water Act (SDWA). The CWA was passed in 1972 and subsequently amended in 1987 (Water Quality Act) and 1990 (Oil Pollution Act). The CWA has five main elements, including national effluent standards, water quality standards, discharge permit program, incident or spill reporting and responses, and a grant program for publicly owned treatment works (POTW). The SDWA was enacted by Congress in 1974 and amended in 1986. The Act required EPA to set national standards for levels of contaminants in drinking water and the protection of sole-source aquifers. For the purpose of this Program Guide, the emphasis is on oil pollution prevention; discharges of hazardous substances; spill prevention, control and countermeasure (SPCC) plan requirements; pretreatment requirements; marine sanitation devices; effluent guidelines; National Pollutant Discharge Elimination System (NPDES) permitting provisions; and the acquisition, treatment, distribution, and testing of water processed for human consumption.

REGULATORY REQUIREMENTS

The key or basic elements of the CWM Program required by law and/or EPA policy are to:

- Implement pollution prevention activities including prohibiting discharges of oils to navigable waters and the development of an SPCC plan

- Comply with notification and reporting requirements under the CWA and SDWA

- Develop and adhere to NPDES permits for point source discharges resulting from facility operations

- Adhere to national pretreatment standards for wastewater discharges to the POTW

- Ensure Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs) for organics, inorganics, radionuclides, turbidity, and microbiologicals are adhered to prior to discharging offsite

- Conduct monitoring and sampling activities in accordance with the CWA and SDWA

- Keep records on file in accordance with the CWA and SDWA.

AUTHORITIES

The following documents are the sources of the legal authority that establish the applicability and requirements of this program.

- **Federal Water Pollution Control Act (i.e., CWA), 33 United States Code 1251**
- **Title 40 Code of Federal Regulations (CFR), Parts 110 through 136 and 403 through 699**
- **Safe Drinking Water Act (SDWA), 42 United States Code 300f et seq.**
- **40 CFR Parts 141 through 143**
- **Lead Contamination Control Act of 1988**
- **Executive Order 12088, Federal Compliance with Pollution Control Standards, October 13, 1978**
- **EPA Safety, Health, and Environmental Management Guidelines**
- **EPA Facility Safety, Health, and Environmental Management Manual**

REFERENCES

The documents listed below can help you implement the CWM Program and specifically are intended for facility operations.

- **Environmental Law Handbook, Government Institutes, Inc., 9th Edition, May 1987**
- **Environmental Reporter, Bureau of National Affairs**

IMPLEMENTATION ACTIVITIES

The following list gives an overview of the activities that this program will require. To implement and operate this program, you must:

- **Prohibit the discharge of oils to navigable waters**
- **Develop an SPCC plan that complies with the substantive requirements of 40 CFR Part 112**
- **Report releases of hazardous substances to the appropriate authority when their reportable quantity is equaled or exceeded**

- **Comply with the facility NPDES permit**
- **Be familiar with the pretreatment standards for wastewater discharges**
- **Be familiar with the applicable MCLs and MCLGs for contaminants regularly used and discharged at the facility**
- **Monitor and sample effluents and on-site receiving areas to ensure compliance with CWA and SDWA requirements**
- **Establish procedures for compiling and organizing facility records.**

IMPLEMENTATION IMPLICATIONS

The management systems and internal controls required to implement this program include:

- **Procedures to ensure compliance with federal, state and local CWA and SDWA requirements; NPDES permits; and national pretreatment standards**
- **A system to manage data gathered from monitoring and sampling activities**
- **A system for tracking changes to the CWA and SDWA**
- **CWM training to promote staff awareness and educate staff on specific implementation procedures.**

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Section 06-02
Clean Water Management Introduction

PURPOSE

This chapter of the Safety, Health and Environmental Management Guidelines (SHEMG) provides policy, guidance, information, and procedures for ensuring that EPA laboratories operate in full compliance with the regulations promulgated pursuant to the Federal Water Pollution Control Act, commonly referred to as the Clean Water Act (CWA), and regulations promulgated pursuant to the Safe Drinking Water Act (SDWA).

SCOPE

Sections 06-03 through 06-09 of this chapter address oil pollution prevention; discharge of hazardous substances; spill prevention, control and countermeasure (SPCC) plan requirements; National Pollutant Discharge Elimination System (NPDES) permitting provisions; pretreatment standards; marine sanitation devices; and effluent guidelines. Sections 06-10 through 06-17 address the acquisition, treatment, distribution, and testing of water processed for human consumption and related administrative issues including reporting to the relevant state, EPA and local officials and the public.

AUTHORITY

Federal Water Pollution Control Act as amended by the Clean Water Act; 40 CFR Parts 110 through 136 and Parts 403 through 699

Safe Drinking Water Act , as amended; 40 CFR Parts 141,142 and 143

Lead Contamination Control Act of 1988; Internal Agency Policy April 24, 1989

Executive Order 12088 on Federal Compliance with Pollution Control Standards, October 13, 1978

**RESPONSIBLE
OFFICERS**

Compliance with CWA and SDWA regulations is primarily the responsibility of facility management and the Safety, Health and Environmental Management (SHEM) Manager at each facility. However, the collective efforts and awareness of all laboratory staff are needed to promote sound water pollution prevention practices.

OBJECTIVES

A central objective of this chapter is to support EPA facility compliance with applicable CWA and SDWA regulations.

Moreover, this chapter is intended to provide guidance and recommendations to assist SHEM managers in implementing management systems and internal controls to ensure that EPA facilities uphold the Agency's mission of minimizing water pollution burdens to the environment and protecting the nation's drinking water supplies.

REFERENCES

Topics discussed in this chapter were developed from the

- 33 CFR Parts 151 through 159
- 40 CFR Parts 110 through 143 and Parts 400 through 699
- *Environmental Regulations and Technology: The National Pretreatment Program*, EPA/625/10-86/005, Office of Water, U.S. EPA, July 1986
- *Report to Congress on the Discharge of Hazardous Wastes to Publicly Owned Treatment Works*, EPA/530/SW-86, U.S. EPA, February 1986
- 53 FR 40562, October 17, 1988
- 53 FR 47631, November 23, 1988
- 55 FR 30082, July 24, 1990
- *Environmental Law Handbook*, Government Institutes, Inc., 9th Edition, May 1987
- *Environment Reporter*, Bureau of National Affairs.

**Section 06-03
Clean Water Act Introduction**

INTRODUCTION

This portion of the Clean Water Management chapter focuses on the requirements applicable to EPA facilities under the CWA. The purpose of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. This goal is achieved primarily through preventing and controlling discharges of pollutants to navigable waters. These measures are implemented through federal, state, and local wastewater discharge standards.

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Section 06-04
Oil Pollution Prevention - 40 CFR Parts 110-112

DISCHARGE OF OIL
(40 CFR Part 110)

Prohibited discharges of oil into navigable waters include:

- Discharges that violate applicable water quality standards
- Discharges that create an emulsion under the surface of the water
- Discharges that cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines.

It should be noted that the definition of navigable waters under the CWA has been broadly interpreted to include very small bodies of water such as tributaries, small creeks, and storm sewer systems that discharge directly to surface waters.

Demonstration Projects
(110.9)

The Regional Administrator may permit the discharge of oil for research relating to the abatement of oil pollution.

Notification (110.10)

Facilities must notify the National Response Center (1-800-424-8802) in the event of the oil discharges described above.

SPILL PREVENTION
CONTROL AND
COUNTERMEASURES
(40 CFR Part 112)

In addition to the prohibitions and reporting obligations, the CWA also establishes preventive requirements and response measures to minimize water quality impacts if spills occur. This is achieved by requiring certain facilities to prepare an SPCC. EPA facilities are required to have an SPCC plan if oil is stored on-site in excess of the following quantities:

- 42,000 gallons underground
- 1,320 gallons above ground total
- 660 gallons in any single container above ground.

The SPCC plan must include information on proper operating requirements for various facilities (e.g., bulk onshore storage tanks), necessary spill response equipment, specific response

actions for spills or leaks, inspections, security, and training requirements for facility employees (40 CFR 112.7).

**Requirements for
Preparation of SPCC
Plans (112.3)**

The SPCC plan must be certified by a registered professional engineer in order to be deemed complete.

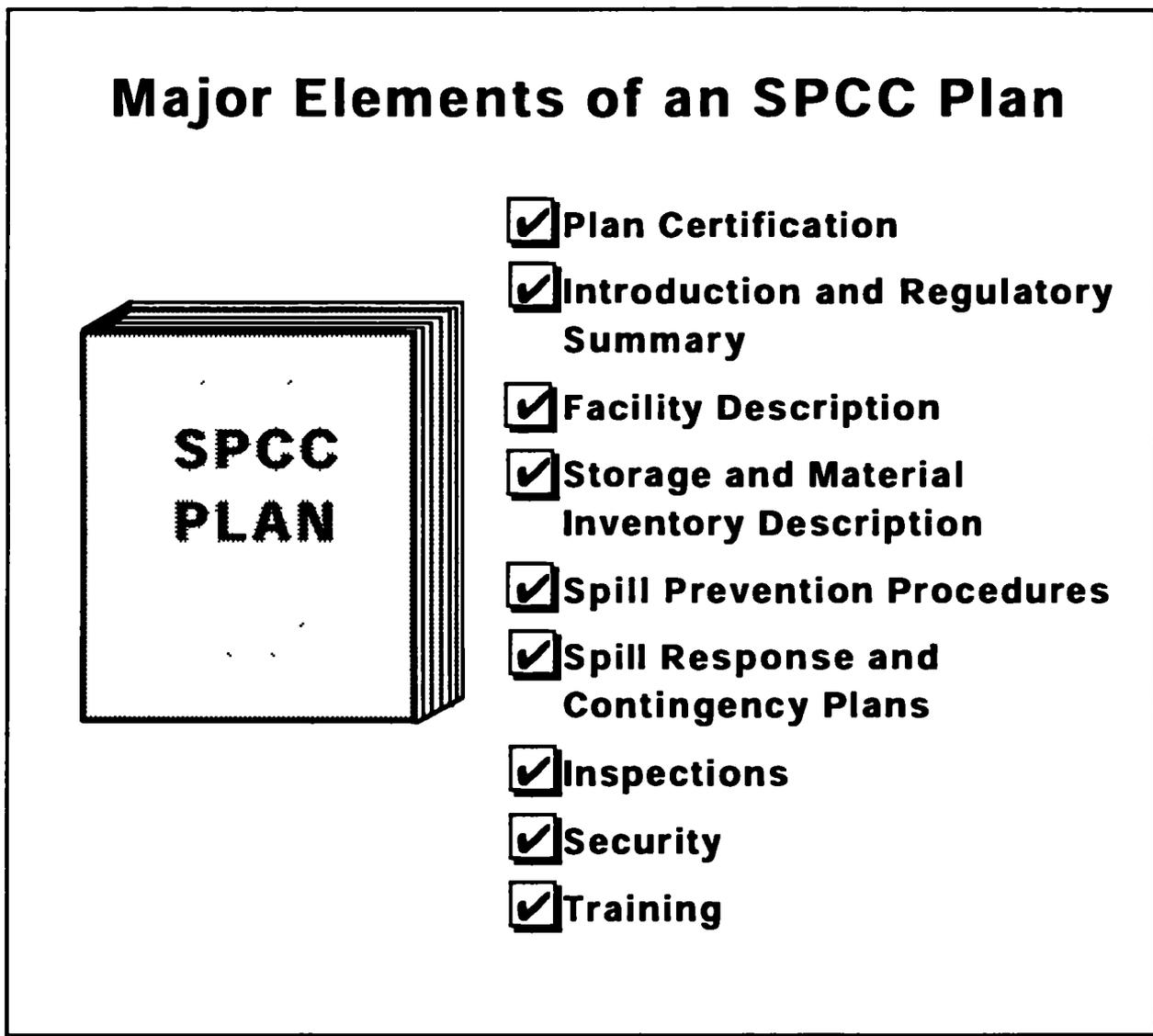
**Amendments to SPCC
Plans (112.4-5)**

An SPCC plan must be updated and amended following a discharge of more than 1,000 gallons of oil to a navigablewater, or two or more discharges to a navigable water within one year that are reportable under 40 CFR Part 110. The plan must also be amended when there is a change in the facility design, construction, operation, or maintenance that may affect possible oil discharges. In addition to reviews conducted for facility modifications or changes in operation, the SPCC plan must be reviewed at least every three years and be amended to include new technologies or spill control techniques that will reduce the likelihood of a spill event at the facility. An SPCC plan must reflect current conditions at a facility to ensure proper response in the event of a oil spill. All amendments to SPCC plans must be certified by a registered professional engineer.

**Contents of SPCC Plans
(112.7)**

The required contents of an SPCC plan are provided in 40 CFR 112.7. In order to ensure that all items in 112.7 are included in an SPCC plan, the plan should address the required items in the same order they are listed in the regulation. The major components of an SPCC plan are identified in Figure 1.

Figure 1
Major Components of an SPCC Plan



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Section 06-05
Hazardous Substances and Reportable Quantities - 40 CFR Parts 116-117

HAZARDOUS
SUBSTANCES AND
REPORTABLE
QUANTITIES
(40 CFR Parts 116-
117)

Certain substances have been designated as hazardous substances under the Clean Water Act. Reportable quantities for these substances are included in 40 CFR 117.3. If a substance in 40 CFR 117.3 also appears in 40 CFR 302.4, then the reportable (40 CFR Parts 116-117) quantity provided in Table 302.4 should be used if it differs from that in 117.3 (40 CFR 117.3). Table 302.4 identifies a greater number of hazardous substances, and includes those in Table 117.3 as a subset of the larger universe of hazardous substances regulated under Section 103(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

The regulations of 40 CFR Part 117 apply when a designated hazardous substance greater than or equal to the reportable quantity is discharged into a navigable waterway (or the associated wetlands or tributaries) or on the adjoining shoreline. The term "navigable waters" is defined in detail at 40 CFR 117.2(h)(i)(1) and has been broadly applied to include tributaries, small creeks, and storm sewer systems that discharge directly to surface waters.

The designation of hazardous substances under the CWA includes solutions or mixtures containing these substances (40 CFR 116.4). For example, the reportable quantity for ammonia is 100 pounds: a discharge of 1,000 pounds of a 10 percent ammonia solution is a reportable quantity.

NOTIFICATION

If over any 24-hour period there is a discharge of a designated (40 CFR 117.2) hazardous substance, as identified in Tables 117.3 or 302.4, 40 CFR 302.6) equal to or exceeding the reportable quantity, the facility must immediately notify the National Response Center at 800-424-8802.

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Section 06-06
National Pollutant Discharge Elimination System Permits

INTRODUCTION

The NPDES program is a system for issuing, monitoring, and enforcing permits for point source discharges of wastewaters into navigable waters of the United States. The NPDES program is established under Section 402 of the CWA. The implementing standards are codified in 40 CFR Parts 122-124. If a facility plans to discharge wastewater, including noncontact cooling waters, or sanitary wastes from any point source (e.g., a pipe, ditch, or container) into navigable waters of the United States, the operator of that facility must submit an application for a NPDES permit to an EPA Region or a state agency with an approved NPDES program. Once issued, a permit can be viewed as a license to discharge wastewaters containing specified amounts of pollutants, under specified circumstances, into navigable waters of the United States.

**GENERAL PROGRAM
REQUIREMENTS**

Any EPA facility with a point source discharge into navigable waters must obtain an NPDES permit from the EPA Regional office or an approved state authority. Exhibit 06-1 at the end of this chapter provides a list of states with authorized NPDES programs.

Exclusions (122.3)

The NPDES program provides exclusions for several types of wastewater discharges. Relevant exclusions for EPA facilities and operations include: (1) discharges to the publicly owned treatment works (POTW), (2) effluents from the engine cooling waters of EPA research vessels, and (3) discharges consisting solely of stormwater that have not contacted industrial activities.

Expired Permits (122.6)

The conditions of an expired permit remain in force until the effective date of a new permit.

**PERMIT
APPLICATION**
(40 CFR Part 122,
Subpart B)

Any EPA facility applying for an NPDES permit must submit an application 180 days prior to commencing the point source discharge. Those facilities with an NPDES permit must reapply at least 180 days prior to the expiration date of their existing permit (unless written permission for a later date is obtained from the Regional Administrator or State NPDES Program Director).

Signature to Permit

Application and Reports (122.22)

A principal executive officer (i.e., EPA Regional Administrator or EPA Laboratory Director) must sign the NPDES permit application. Discharge monitoring reports (DMRs) may be signed by an authorized representative of the laboratory director. The authorization of such an individual must be in writing.

PERMIT CONDITIONS
(40 CFR Part 122, Subpart C)

Permitted facilities must establish and maintain discharge monitoring procedures and submit DMRs to EPA (or the state authority for states with approved programs). Some NPDES permits require facilities to prepare a written operating plan which specifies monitoring procedures.

records for five years.

Results of monitoring must be maintained for a minimum period of three years.

Guidance: Since the statute of limitations applicable to permit violations is five years, however, EPA facilities should maintain monitoring

Clean Water Management

PERMIT
MODIFICATION (40
CFR Part 122,
Subpart D)

The NPDES permit may need to be modified if there are substantial alterations or additions to the facility operations occurred since the original permit issuance. The permitting authority will modify or revoke and reissue the permit accordingly. There are "anti-backsliding" provisions in the CWA that prevent renewal, reissue, or modification of the permits where effluent limitations are less stringent than those in previous permits.

TEST PROCEDURES
FOR POLLUTANT
ANALYSIS
(40 CFR Part 136)

Specific test methods must be used when monitoring NPDES discharges and are recommended for use when analyzing environmental water samples for pollutants. Tables of approved test methods procedures are contained in 40 CFR 136.3.

NPDES
STORMWATER
PERMITS

Because of the number of cases of water quality impairment caused by stormwater runoff, Congress amended the CWA in 1987 to require EPA and the states to regulate stormwater discharges. EPA promulgated standards in 40 CFR 122.26 that require certain point source stormwater discharges to be regulated in accordance with a permitting process. The following stormwater point source discharges require permits under the regulations issued by EPA:

- A discharge associated with industrial activities identified in 40 CFR 122.26(b)(14)
 - A discharge from certain municipal separate sewer systems serving a population between 100,000 and 250,000
 - A discharge that violates water quality standards.
- EPA facilities generally will only trigger permitting requirements under
- two of the industrial activities categories in 40 CFR 122.26(b)(14). Specifically, relevant activities include (1) any EPA facility conducting construction activities on an area greater than five acres or (2) an EPA facility that has a RCRA treatment, storage, or disposal permit. These facilities would be required to submit a NPDES stormwater permit application, unless a waiver is obtained from the EPA Region or State NPDES Program Director.
- There are three permit application options for industrial activities: an individual permit, a group application, or a general permit. The individual application requires topographic information, sampling data from a representative storm event, description of other non-stormwater discharges, and information on past leaks and spills. Individual permits represent the greatest administrative and oversight burden of the three types of stormwater permits. A group application may be submitted if a number of facilities have substantially similar discharges. In this case, a subset of the facilities would collect and submit quantitative data from a representative storm event. The number of facilities that would

submit sampling information varies depending on the number of facilities seeking an application. The last type of stormwater permit is a general permit, which requires the facility to submit a Notice of Intent that it is seeking coverage under a final general permit. General permits are most commonly available for new construction activities.

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Section 06-07
CWA Pretreatment Standards

NATIONAL
PRETREATMENT
STANDARDS
(40 CFR Part 403)

The pretreatment program under the Clean Water Act provides that industrial users must observe specific discharge limitations for wastewaters contributed to the POTW. Where necessary to meet these limits, facilities must pretreat wastewaters to prevent the pollutants from interfering or passing through POTWs. Two sets of national pretreatment standards are presently in effect: prohibited discharge standards (also known as general standards) and categorical pretreatment standards.

EPA promulgated new Clean Water Act regulations which significantly revised the pretreatment regulations (55 *FR* 30082; July 24, 1990). These new requirements are set forth to ensure that hazardous wastes discharged to POTWs are adequately controlled to protect human health and the environment. All new regulatory provisions relevant to EPA facilities and operations have been incorporated into this section, where appropriate.

PROHIBITED
DISCHARGE
STANDARDS
(403.5)

These standards prohibit discharges that will interfere with the POTW's operation. EPA facilities must not introduce the following pollutants into a POTW:

- Flammable or explosive pollutants including, but not limited to, wastestreams with a closed cup flashpoint of less than 140 degrees Fahrenheit (60 degrees Centigrade)
- Corrosive pollutants, including all pollutants with pH lower than 5.0 unless the POTW is designed to accommodate such discharges
- Solid or viscous pollutants which obstruct the flow to or the operation of the POTW
- Any pollutants at a flow rate or concentration which may interfere with the operation of the POTW (i.e., high biological oxygen demand (BOD) pollutants)
- Heat exceeding 104° F (40° C)
- Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin

Clean Water Management

- Any pollutants which result in presence of toxic gases, vapors, or fumes within the POTW that may cause worker health and safety problems.

The prohibited discharge standards, outlined above, apply to all facilities discharging pollutants whether or not the facility is also subject to local sewer use standards (40 CFR 403.5(a)(1)). Table 1 provides examples of EPA laboratory wastes that may exceed regulatory standards if discharged to the POTW.

**Table 1
National Pretreatment Standards Guide**

Pretreatment Standard Limitations	EPA Laboratory Wastestreams Affected
Flammable or explosive pollutants including, but not limited to, waste streams with a flashpoint of less than 140 degrees Fahrenheit (60 degrees Centigrade) using a test method identified in 40 CFR 261.21	<ul style="list-style-type: none"> • Waste elutriates from semi-volatile organic extractions • Effluent (e.g., acetonitrile, methanol, and water mixtures) from high-pressure liquid chromatography (HPLC) analyses
Corrosive pollutants (including all pollutants with a pH below 5.0, unless the POTW is designed to accommodate such discharges)	<ul style="list-style-type: none"> • Nitric acid and hydrochloric acid wastes from trace metals analyses and glassware cleaning • Spent sulfuric acid effluents from nutrient analyses (e.g., Total Kjeldahl Nitrogen) • Chemical oxidation demand (COD) wastestreams
Solid or viscous pollutants that may obstruct the flow to the POTW	<ul style="list-style-type: none"> • Environmental media samples containing solids (e.g., sediment, soils)
Pollutants, including oxygen-demanding pollutants (e.g., BOD which will cause interference with the POTW	<ul style="list-style-type: none"> • High-concentration ethylene and propylene glycol compounds
Discharges exceeding 104 degrees Fahrenheit or 60 degrees Centigrade, unless approved by the POTW	<ul style="list-style-type: none"> • Discharges exceeding these standards are uncommon at the majority of EPA facilities
Discharges of petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin that will cause interference or pass through the POTW	<ul style="list-style-type: none"> • Oil-containing samples • Wastes from machine, maintenance, and automotive shop areas
Pollutants that result in the presence of toxic gases, vapors, or fumes that pose a danger to worker health and safety	<ul style="list-style-type: none"> • Cyanide containing photographic bleaches • Other cyanide- and sulfide- bearing sample wastes and process effluents

LOCAL

ORDINANCES (403.8)

POTWs have the authority to establish their own pretreatment standards for contributors to their systems. These standards are incorporated into local sewer system ordinances or permits. Local authorities may set more stringent standards than the national standards.

Prohibitions

Guidance: EPA facilities should maintain a current copy of the local sewer-use ordinance on site, in addition to the applicable federal pretreatment regulations (40 CFR Parts 400 to 4594).

Local ordinances usually contain prohibitions more stringent and specific than those in the national pretreatment standards. SHEM Managers must carefully review these prohibitions and instruct laboratory personnel on procedures to comply with the prohibitions.

Guidance: One way to comply with the

prohibitions, both local and national, is to instruct laboratory personnel to dispose of no hazardous or toxic wastes via the laboratory sink. If an EPA facility chooses this approach, it should post a sign near each laboratory sink instructing personnel not to dispose of hazardous or toxic substances in the sink.

Monitoring

A POTW may require industrial users to perform periodic water quality effluent monitoring in accordance with sewer use ordinance or user's permit guidelines. Additionally, significant industrial users (SIUs) with discharges of more than 25,000 gallons per day are required to perform monitoring of wastewater discharges every six months. The results of the biannual monitoring must be provided to the POTW, along with a description of the nature, concentration and flow of pollutants discharged.

Guidance: EPA facilities discharging laboratory wastes to the POTW should periodically monitor its discharge to verify compliance with the POTW's pretreatment standards. This strategy will provide data that supports an affirmative defense of compliance with applicable discharge standards in the event that a POTW initiates an enforcement investigation against its industrial users.

Fines

All POTWs have the authority to assess penalties in at least the amount of \$1,000 per day for each violation of pretreatment

standards and requirements (40 CFR 403.8(f)(1)(vi)(A) and 53 FR 40612; October 17, 1988).

Spills and Releases

All EPA facilities must immediately notify the POTW of any discharge that may cause problems for the POTW or violate the prohibited discharges in 40 CFR 403.5(b) (40 CFR 403.12(f) and 53 FR 40613; October 17, 1988). Notification requirements vary; some POTWs have notification forms and require a description or analysis of the discharge, while other POTWs simply require notification by phone.

Several local ordinances require that the POTW's phone number be placed in a prominent place (i.e., on a bulletin board which employees regularly pass) in case such a release to the POTW occurs. Employees should be made aware of this notification requirement.

Guidance: EPA facilities should adopt the above posting and notification requirements regardless of whether they are not specified in their local POTW ordinance.

Spill Prevention

Many POTWs previously required industrial users to take

preventative measures to eliminate spills and other slug discharges into the system's treatment works. EPA has formalized this requirement in its revised pretreatment regulations.

Accordingly, POTWs must evaluate SIUs, at least once every two years, to determine the need to implement a slug control program. Users subject to this requirement would include those with a high risk of discharging toxic or hazardous materials into the sewer system.

Guidance: SHEM Managers should identify and inventory areas of the facility when hazardous substances may enter either the POTW or storm sewer system. These areas should be diked or bermed when there is potential for a release. For example, several EPA facilities have storm sewers located near their hazardous waste storage area or loading dock. These sewers should be protected from spills during the packing and

transport of hazardous materials. Also, floor drains located in areas where hazardous substances are located should be plugged or bermed, unless a dedicated spill catchment basin or tank is provided. If such devices are used, the facility should ensure that measures are taken to prevent spill basins and tanks from

receiving incompatible materials.

Notification

Under section 403.12(p) of the new pretreatment regulations, all industrial users were required to provide a one-time notification by February 23, 1991, to the local POTW, state, and Regional Waste Management Division Director for discharges of hazardous wastes to the POTW. All discharges, which if disposed of in a manner other than to the POTW would be considered hazardous waste in accordance with 40 CFR Part 261, are required to be reported unless the amount of these discharges is below 15 kg per month. Discharges of any quantity of acute hazardous wastes are subject to the one-time notification. Reporting requirements are divided into two tiers for dischargers of non-acute hazardous wastes: 15 -100 kg/month tier and greater than 100 kg per month tier. Discharges of between 15 and 100 kg of non-acute hazardous waste per month must provide the following information:

- Name of the hazardous waste
- EPA waste code
- Type of discharge (continuous, batch, other).

For discharges of greater than 100 kg per month, the additional information must be provided:

- Identification of hazardous constituents
- Mass and concentration of these constituents
- An estimate of the mass of hazardous constituents to be discharged during the following twelve months.

Neutralization Units

Many EPA facilities employ elementary neutralization units to neutralize corrosive discharges. These units are exempt from the federal RCRA permitting requirements for hazardous waste treatment (40 CFR 264.1(e)(6)). Local POTWs, however, may require that these neutralization units be permitted as wastewater treatment units.

Facility personnel should periodically monitor the pH of the influent and effluent of the neutralization tank to measure its effectiveness. If the tank is not proven to neutralize acids, then laboratory personnel should not rely on its effectiveness. Alternatively, they should be instructed to neutralize acids and bases prior to sink disposal. (This is especially relevant to areas where glassware is acid-washed prior to analysis for inorganics.)

Guidance: Elementary neutralization systems should be periodically monitored to measure treatment efficacy. Additionally, these systems should be placed on a preventive maintenance program to ensure proper operation (e.g., calibration of pH monitors, maintenance of acid or base discharge equipment, periodic removal and replacement of neutralization media). When replacing the neutralizing medium (eg., lime, limestone, seashells), the residue or sludge in the tank should be tested for the RCRA hazardous waste characteristics (40 CFR Part 261).

Several EPA laboratories have found this sludge to exhibit the toxicity characteristic for metals and pesticides. If the sludge is found to be a RCRA characteristic waste it must be disposed of as a hazardous waste. This may affect the facility's generator status (see RCRA Subtitle C Chapter).

During maintenance operations, laboratory wastes will have to be diverted from passing through the neutralization tank. Ideally, there should be a parallel second neutralization tank so that it will neutralize wastes while the other tank is being serviced. Most often, however, EPA labs do not have neutralization tanks in parallel. Therefore, during servicing, laboratory operations usually must be temporarily stopped. If bypassing the neutralization tank is possible, laboratory personnel should examine the POTW ordinance for requirements addressing notification prior to bypassing the tank. Several POTWs currently require such notification.

**CATEGORICAL
PRETREATMENT
STANDARDS**

(403.6)

Categorical pretreatment standards are organized by type of industry. Different requirements have been mandated for over 50 specific industry types.

EPA facilities generally do not qualify as any of the industry types for which categorical pretreatment standards have been promulgated; thus they do not have compliance responsibilities for most of these standards.

Photographic Point
Source Category (Part
459)

EPA facilities developing or printing paper prints, slides, negatives, enlargements, movie film and other sensitized material may be an exception. If a facility is processing more than 150 square meters (1,600 sq ft) per day, categorical pretreatment

standards apply to point source discharges from such operations. This rate of production (over 150 square meters/day) is unlikely to be met by any EPA operations.

Although the categorical pretreatment standard usually does not apply to photographic operations at EPA facilities, individuals working in these operations should be aware of the national and local prohibitions that apply to the wastes resulting from photographic processing. These wastes are often acidic (pH <2) and TC toxic for silver; thus they are RCRA hazardous wastes and should be managed accordingly. Acidic wastes (not TC toxic for silver) should be manifested off-site as corrosive waste or neutralized prior to sink disposal. Process waste containing silver should be manifested off-site, or the silver may be reclaimed. Individuals conducting silver reclamation (on or off-site) should be aware of the applicable RCRA requirements in 40 CFR Part 266.

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Clean Water Management

Section 06-08
CWA Regulatory Guide

CWA REGULATORY
GUIDE

Table 2 summarizes the major regulatory programs under the CWA that may impact EPA facilities and references applicable standards.

**Table 2
Clean Water Act Regulatory Guide**

Topic	Action involved	Regulatory Citation
Oil Discharges	Reporting is required for discharges of oil into navigable water that: <ul style="list-style-type: none"> • Violates water quality standards • Causes a film or sheen on the water or shoreline. 	40 CFR Part 110
Spill Prevention Control and Countermeasure Plans	SPCC plans must be developed when petroleum is being stored in quantities greater than: <ul style="list-style-type: none"> • 42,000 gallons underground • 1,320 gallons total aboveground • 600 gallons in any single aboveground container. 	40 CFR Part 112
Hazardous Substance Release Reporting	Reporting is required for releases of hazardous substances that exceed CWA reportable quantities(listed in 40 CFR Part 116) within a 24-hour period.	40 CFR Part 117
National Pollutant Discharges Elimination System Permits	NPDES permits are required for point source discharges of wastewaters into navigable waters of the United States.	40 CFR Part 122
NPDES Effluent Limitations Guidelines	These requirements apply to point source discharges of wastewaters from specific activities into navigable waters (these will not be applicable to most EPA facilities).	40 CFR Parts 405 through 471
NPDES Stormwater Discharge Permits	These requirements apply to point source discharges of stormwater that have come in contact with industrial or construction activities into navigable waters. These standards also apply to RCRA treatment, storage, and disposal facilities.	40 CFR 122.26
National General Pretreatment Standards	Discharges of wastewater and sanitary waste to the sewer system are subject to the National General Pretreatment Standards, which prohibit discharges of certain wastes to the sewer system.	40 CFR 403.5(b)
National Categorical Pretreatment Standards	Discharges of wastewater to the sewer system from specific activities are regulated under the national categorical pretreatment standards.	40 CFR Parts 405 through 471
Local Pretreatment Standards	Discharges of wastewater and sanitary wastes to the sewer system will be regulated by a municipal discharge permit or a local sewer use ordinance issued by the local sewer authority.	Municipal Discharge Permit or local Sewer Use Ordinance

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**Section 06-09
Marine Research Vessels**

OVERVIEW

This section addresses environmental regulations applicable to EPA Research Vessels (R/Vs). These requirements were not all promulgated under the CWA, nor are they all enforced by EPA.

**OIL POLLUTION
PREVENTION ON
MARINE VESSELS**
(33 CFR Parts 151-
155)

EPA research vessels must not discharge noxious liquids, including oil and oil mixtures into navigable waters. When out of port, any discharge of oil or oily mixtures is prohibited. When in port, the oily water mixture retained in the bilge may be pumped out into a secure container for ultimate disposal. Sinks or toilets must not drain directly overboard.

**MARINE
SANITATION
DEVICES**

Regulations addressing "marine sanitation devices" have been promulgated by EPA (40 CFR Part 140) and the U.S. Coast Guard (33 CFR Part 159). The Coast Guard's regulations primarily apply to the manufacture and certification of marine sanitation devices; however, 33 CFR 159.7 applies to vessel operators. Individuals operating EPA R/Vs must be sure they are in compliance with both the EPA and U.S. Coast Guard regulations.

**Coast Guard
Requirements (159.7)**

Marine sanitation devices on EPA vessels must be operable, and certified and labeled (by the manufacturer) in accordance with Coast Guard regulations.

**EPA Standards
(40 CFR Part 140)**

EPA prohibits the overboard discharge of sewage into certain freshwater lakes, and reservoirs, and rivers. Additionally, a state may prohibit the discharge of sewage into some or all of the waters within the state. Before discharging sewage overboard, individuals operating EPA vessels should be aware of the applicable prohibitions.

**TRIBUTYLTIN IN
HULL COATINGS**

Many paints used on marine vessels contain tributyltin (TBT) compounds. These compounds are antifoulants which inhibit the growth of aquatic organisms such as algae and barnacles. In January 1986, EPA initiated a Special Review of antifoulant paints containing TBT compounds. The Review was initiated on the basis of toxicity studies which indicated that TBT compounds are highly toxic, frequently at parts per trillion levels, to nontarget marine and fresh water aquatic organisms. Additionally, the Organotin Antifouling Paint Control Act of 1988 (OAPCA) was

signed by the President on June 16, 1988. This Act sets interim and permanent standards on TBT use and establishes TBT monitoring and research programs.

The partial conclusion of EPA's Special Review and the effects of OAPCA are discussed in a notice published in the *Federal Register* (53 *FR* 39022, October 4, 1988). In the notice, EPA announced that it will cancel all TBT antifouling paints registrations which do not meet the following conditions:

- Average daily release rate of 4.0 mg organotin /cm² per day or less
- Not used on non-aluminum vessels under 82 feet in length
- Classified as restricted-use pesticides (only sold to and applied by certified commercial applicators)
- Labeled in compliance with Occupational Safety and Health Administration (OSHA) regulations.

TBT-containing paints which meet the above conditions and have amended registrations in accordance with the guidelines in 53 *FR* 39037 may be used on EPA marine research vessels (if they are aluminum or longer than 82 feet). Selected paints that have been certified for use include:

- Chugoku Marine Paints, A.S. Seaflo Z-100 LE
- Sigma Coatings, 7293 Pilot LL Antifouling
- International Paints, Intersmooth Hisol SPC-AF.

Section 06-10
Safe Drinking Water Act Introduction

INTRODUCTION

The SDWA, enacted on December 16, 1974, is the basis for protecting the nation's drinking water supplies from physical, chemical, biological, and radiological contaminants that may impact public health. The Act's statutory mandates direct EPA to develop national primary drinking water regulations (NPDWRs) that set limits for contaminants in drinking water and require specific treatment techniques to ensure safe drinking water. The SDWA also directs EPA to develop underground injection regulations for protecting underground sources of drinking water.

APPLICABILITY
(141.3)

The SDWA regulations protect human health by regulating public water systems. A public water system is defined as a system that provides water for human consumption and is comprised of at least 15 service connections or serves 25 individuals daily, at least 60 days out of the year.

Public water systems are divided into community and noncommunity systems. A community water system is a public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents (this definition basically pertains to residential communities). A noncommunity water system includes those systems that do not fit the above definition (e.g., schools, factories, and mobile home parks).

Noncommunity water systems are further subdivided into transient and nontransient systems. The regulations for nontransient systems apply to a noncommunity public water system that regularly serves at least 25 of the same persons over six months of the year. The majority of EPA facilities are served by public water systems and are not subject to the SDWA regulations governing the delivery of treated drinking water. However, certain facilities do maintain on-site wells that supply water for consumption by 25 or more individuals. These operations are subject to all applicable SDWA requirements applicable to nontransient, noncommunity water systems (NTNCWSs). In addition, EPA facilities should be cognizant of other major provisions of the drinking water regulations, especially those associated with the control of drinking water contaminants typically arising from building plumbing systems (e.g., lead and copper).

VARIANCES AND EXEMPTIONS

States with primacy (enforcement authority) or EPA may issue variances or exemptions from (141.4) specific provisions of the National Primary Drinking Water Standards, including contaminant levels, monitoring schedules, and test methods. Variances and exemptions are determined by the state or regulatory agency and depend on the site-specific characteristics of the system.

Section 06-11
Maximum Contaminant Levels

MAXIMUM
CONTAMINANT
LEVELS AND
MAXIMUM
CONTAMINANT
LEVEL GOALS

(141.11-16,
141.50-52,
141.60-63)

EPA has established two types of standards for contaminants in drinking water. These are primary standards and secondary standards. Primary standards, which are discussed here, are enforceable, health-based contaminant levels. Secondary contaminants are nonenforceable guidelines established to ensure the aesthetic quality of drinking water provided by public systems and will be discussed in a later section. In regulating primary (health-based) drinking water contaminants, EPA uses two different types of levels. These are maximum contaminant level goals (MCLGs) and maximum contaminant levels (MCLs).

Maximum
Contaminant Level
Goals (MCLGs)

The MCLG is a concentration-based contaminant level that has been identified by EPA as having no adverse health effects. MCLGs are determined through extensive toxicology studies and represent a nonenforceable goal for drinking water systems. For example, the MCLG for certain known and suspected carcinogenic chemicals (e.g., vinyl chloride) is zero.

Maximum
Contaminant
Levels (MCLs)

MCLs are the enforceable primary standards established for public water systems. The MCL for a particular contaminant represents the maximum level, usually in terms of concentration, that may be present in drinking water. This level is set as close to the MCLG as possible while taking economic and technological factors into consideration.

Exhibit 2 at the end of this chapter summarizes the MCLs and MCLGs for regulated organics, inorganics, radionuclides, turbidity and microbiologicals.

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Section 06-12
Monitoring and Analytical Requirements

COLIFORM
SAMPLING (141.21)

The MCL for coliform bacteria is currently based on the affirmative determination of the presence of the organism. Formerly, the MCL for coliform bacteria was based on the density of the bacteria in water. The system size (i.e., number of individuals served by the system) determines the sampling frequency to be used for coliform evaluation.

Small systems (less than 3,300 persons served) are deemed to be in compliance if no more than one sample taken is coliform positive. The majority of EPA facilities would fall under the definition of a small system for the purpose of coliform sampling.

Routine Monitoring

The monitoring frequency for a public water system depends on the system size and type. Since EPA facilities, if subject to the SDWA regulations, are most likely to be NTNCWSs, the frequency is determined by the type of source water that is used (groundwater or surface water). For noncommunity water systems that serve 1,000 persons or less and use only ground water, the system must monitor each quarter. Noncommunity water systems that use surface water in whole or in part are required to sample in the same manner as a community water system (i.e., one sample per month for systems serving a population of 25 to 1,000 individuals).

Repeat Monitoring

If the system finds a coliform-positive sample during routine sampling, the system must collect a set of repeat samples within 24 hours. Systems that collect one or fewer samples per month must collect at least four repeat samples for each coliform positive sample found.

Repeat Sampling

Specific repeat sampling requirements are set forth in the event that a system identifies a coliform-positive sample. These requirements are increasingly more stringent if positive samples are obtained during repeat monitoring activities.

Sampling Methods

As a result of regulatory revisions, EPA facilities may now use an expanded set of analytical methods for coliform determinations. Specifically, one of four methods listed in 40 CFR 141.21(f) may be used for monitoring fecal coliform levels, including: the Multiple-Tube Fermentation (MTF) technique, the Membrane

Filter (MF) technique, the Presence-Absence (P-A) Coliform test,

or the Minimal Medium ONPG-MUG (MMO-MUG) Test. Thus, the increased number of analytical methods provide inexpensive and user-friendly coliform techniques that can be performed with minimal personnel resource demands at those EPA facilities that have drinking water supply monitoring requirements.

STANDARDIZED MONITORING FRAMEWORK

EPA initiated a standardized monitoring framework for monitoring chemical and radiological drinking water contaminants. This monitoring scheme is based on a nine-year compliance cycle. This cycle is separated into three three-year compliance periods. All systems must conduct an initial round of monitoring for all contaminants during the first three-year period of each nine-year compliance cycle. The results of this monitoring will be used to determine the required frequency of monitoring and

sampling of each cycle.

**INORGANIC
CHEMICAL
SAMPLING AND
ANALYTICAL
REQUIREMENTS**

This section identifies the sampling and analytical methods that are to be used when determining the compliance status of drinking water for the inorganic MCLs. Effective July 30, 1992, new regulations concerning the monitoring of inorganic contaminants were imposed. A critical element of these regulations was the creation of a new inorganic contaminant list in 40 CFR 141.62. The expanded inorganic contaminant list has been incorporated into the comprehensive table of regulated drinking water contaminants and MCLs provided as Exhibit 2 of this chapter.

Groundwater systems are required to take a minimum of one sample at every entry point into the distribution system. However, if an EPA facility has less than five entry points into the distribution system it may collect composite samples. Surface water systems are required to take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point which is representative of each source after treatment.

After January 1, 1993, all NTNCWSs – the most common classification of public water systems operated by EPA facilities – must analyze for asbestos, antimony, barium, beryllium, cadmium, chromium, fluoride, mercury, nickel, selenium, thallium, nitrates, nitrites and, for the purposes for the determination of compliance with 40 CFR 141.88, lead and copper (source water monitoring).
Asbestos

Monitoring for asbestos shall be performed on the first three-year compliance period of each nine-year compliance cycle. If the system believes it is not vulnerable to asbestos contamination, it may request a waiver from the state. The waiver must include information on whether the system has a potential for asbestos

contamination.

Clean Water Management

Antimony, Barium,
Beryllium, Cadmium,
Chromium, Fluoride,
Mercury, Nickel,
Selenium, Thallium
Nitrate

Ground water systems shall analyze for these contaminants every three years. The state may grant waivers for reduced monitoring provided that the waiver meets the specifications given under 141.23(c)(2-8). Effective January 1, 1993, all water systems shall monitor for nitrate. If a ground water system or surface water system meets or exceeds a nitrate concentration of 5 parts per million (ppm), then it shall monitor for nitrate on a quarterly basis. After maintaining one year of compliance (i.e., four consecutive monitoring periods), the state may reduce the monitoring to an annual basis. The exceedance of the nitrate MCL shall be determined on the average of two samples. If a sample for nitrate is exceeded, the system shall repeat the sampling within 24 hours. If the average of these two samples exceeds the MCL for nitrate, the system must notify the state.

Nitrite

All public water systems must collect one sample at each entry point to the distribution system during the first compliance period. If the level meets or exceeds 0.5 ppm, the system must sample quarterly for at least one year. Reduced monitoring requirements may be granted provided the system demonstrates that the observed level is consistently less than 1 ppm.

New Inorganic MCLs

New MCLs for barium, beryllium, cadmium, chromium, mercury, nickel, selenium, thallium, and nitrate became effective after July 30, 1992 (refer to Exhibit 2). Silver was delisted as a primary inorganic contaminant effective July 30, 1992.

Analytical methods for determining compliance with the inorganic MCLs are listed under 40 CFR 141.23 (56 *FR* 3581-3582, and 56 *FR* 30275-6).

Monitoring for
Fluoride

Samples for fluoride shall be taken at each entry point to the distribution system. The state may reduce the monitoring frequency after certain criteria have been met. The system shall be deemed out of compliance if any sample taken exceeds the MCL for fluoride.

Analytical methods
for fluoride are listed
under 40 CFR
141.23(f).

ORGANIC SAMPLING AND ANALYTICAL REQUIREMENTS
(141.24)

On January 1, 1993, a
new monitoring

framework became effective. NTNCWSs are now required to monitor for additional additional organic drinking water

contaminants. For compliance purposes, both monitoring schedules are explained below.

If, however, these contaminants are detected but the levels are consistently below the MCLs, monitoring shall continue on a quarterly basis. If the system is monitoring on a quarterly basis, compliance will be based on a running annual average.

Prior to January 1, 1993, the following monitoring protocol was required:

Small NTNCWSs (<1,000 individuals) must have analyzed for the following organic contaminants:

Vinyl chloride

Trichloroethylene
Benzene

p-
Dichlorobenzene
Carbon tetrachloride

1, 1
Dichloroethylene
1, 2 Dichloroethane

c-1, 2
Dichloroethylene

Samples must be taken at the entry points to the distribution system on a quarterly basis for at least one year. If the above listed organics are not detected after one year, monitoring can be reduced to once every five years.

Clean Water Management

Vinyl Chloride
Monitoring

Monitoring for vinyl chloride is required only for ground water systems that have detected one or more of the following organic compounds: trichloroethylene; tetrachloroethylene, 1, 2 - dichloroethane; 1, 1, 1 - trichloroethane, cis and trans 1, 2 - dichloroethylene; or 1, 1-dichloroethylene. Vinyl chloride samples shall be taken at those points that have detected any of the above organic compounds. The state, however, may impose more stringent monitoring requirements.

Starting January 1, 1993, sampling will be conducted in a similar manner as above except that the volatile organic contaminant list has been expanded (refer to Exhibit 2). Samples shall be taken at entry points to the distribution system every three months for one year. If no organics are detected, sampling shall be reduced to an annual basis. If after three years of annual monitoring no organics are detected, sampling may be further reduced to once every three

years. At any point after the initial monitoring a state may grant a waiver of these requirements to a system for up to six years. If a contaminant is detected, the system must monitor quarterly. After review by the state, a system may apply for annual monitoring.

In conjunction with these requirements, NTNCWSs must also monitor for synthetic organic contaminants (SOCs). Samples for SOCs must be taken every quarter for one year. After that time, the state may reduce the monitoring to once per compliance period (three years). If SOCs are detected, the system must continue sampling on a quarterly basis.

RADIONUCLIDES
MONITORING
(141.25, 141.26)

In addition to physical, chemical, and biological contaminants, selected radionuclides with known or suspected carcinogenic properties are regulated under the SDWA. The specific contaminants and associated MCLs are identified in Exhibit 2. The analytical methods for determining compliance with the MCLs for radionuclides are identified in 141.25.

Monitoring for Gross
Alpha Particle
Activity and Radium
226/228

Water systems shall analyze for radionuclides at least once every four years. When gross alpha particle activities exceed three pCi/l, the system must analyze for radium-226. If the system exceeds three pCi/l for radium-226, then the system shall also analyze for radium-228. The system shall also analyze for gross alpha particle activity and radium-226/228 on a yearly basis (applies only to CWSs).

**Monitoring for
Manmade
Radioactivity**

CWSs under 50 pCi/l for gross beta particle activity, 20,000 pCi/l for tritium, and eight pCi/l for strontium-90, as determined on an annual basis, shall be deemed in compliance with SDWA regulations. If radionuclide activities exceed these recommended levels, the system must analyze for these contaminants at least every two years unless the state requires more frequent monitoring.

**ALTERNATIVE
ANALYTICAL
METHODS (141.27)**

An alternative analytical method may be used if approved by EPA and the state.

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Section 06-13
Reporting and Public Notification and Recordkeeping

REPORTING
REQUIREMENTS
(141.31)

Monitoring data acquired in the process of determining compliance with the MCLs must be submitted to the state or Regional EPA, as applicable, within the first 10 days following the month the results are received. Alternatively, the data may be submitted within 10 days of the end of a required monitoring period established by the appropriate enforcement agency. The system is also required to notify the enforcement agency within 48 hours of a violation of any of the SDWA regulations, including monitoring requirements.

PUBLIC
NOTIFICATION
(141.32)

Systems in violation of primary SDWA regulations must provide a notification to the public describing the specific problem of the problem. The manner of giving notice and the time frame in which notice is required depends on the particular regulation which has been violated. EPA has developed a two-tiered system for classifying violations.

Tier 1 Violations

These violations are the most serious violations because they are directly related to potential adverse health effects. These include violations of the MCLs, treatment techniques, or the failure to comply with a schedule set forth for a variance or exemption.

Tier 1 violations can be either acute or nonacute. Acute violations are defined as those violations which pose an acute risk to human health, those that exceed the nitrate or coliform MCL, or the occurrence of a waterborne disease outbreak. States may establish different or more stringent parameters for acute violations.

Tier 2 Violations

These violations are less serious because they do not pose a direct threat to public health. Nonetheless, they are significant enough to warrant public notice. They include the failure to comply with monitoring requirements or test procedures.

Manner of Notice

The manner in which the public notice is given may vary depending on the nature of the violation. The means that are available for issuing these notices include radio, television, the local daily newspaper, regular mail, included in the water bill, hand delivery, or continuous posting in a conspicuous place. If the locale is not served by a daily or weekly paper, the notice must be hand delivered or posted.

For Tier 1 Violations:

Noncommunity water systems may notify the public through continuous posting, hand delivery or by mail every three months. Notification must be initiated within 72 hours of the violation.

For nonacute violations, the water system must provide notification in a daily or weekly newspaper within 14 days, and hand delivered or mailed within 45 days. Community water systems and noncommunity water systems that are not served by a newspaper must notify through hand delivery or mailing and also through continuous posting in the same manner as described above.

For Tier 2 Violations:

Water systems which fail to perform monitoring or have been granted a variance or exemption must inform the public by providing notification in a daily or weekly newspaper (whichever is available) within three months. This must be repeated every three months for as long as the violation exists.

Content of Notice

The notice that is given by a water system must include the following:

- A clear explanation of the violation
- Health effect information, including mandatory language that must be provided in tier 1 violations and by all systems that have been issued a variance or exemption
- Identification of the population at risk
- The steps being taken to correct the problem
- Information about the need for an alternative water supply, if any
- Preventative measures that can be taken until the violation is corrected.

**RECORD
MAINTENANCE
(141.33)**

Within the required time frames, all public water systems must retain, at or near the premises, the following records:

For 3 years:

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- Records of action taken by the system to correct violations of primary drinking water regulations

For 5 years:

- Records of bacteriological analyses
- Records concerning variances or exemptions granted to the system

For 10 years:

- Copies of any written reports or communications relating to sanitary surveys performed for the system
- Records of chemical analyses.

Guidance: EPA facilities that operate public drinking water systems should develop a centralized file to manage drinking water monitoring, reporting, and notification documentation. The records management strategy should be organized against a master index that allows for ready file access and retrieval. Preferably, a schedule reminder system should also be instituted to ensure that required reporting deadlines are consistently fulfilled.

**LEAD PUBLIC
NOTICE
REQUIREMENTS**
(141.34)

The requirements of this section should have been completed by June 19, 1988. It requires owners and operators of water systems to notify their customers of the potential of lead in drinking water. This notification was required to be provided even if there was no violation of the MCL for lead. In the April 24, 1989, memorandum issued jointly by the Offices of Drinking Water and Administration, notice was given to all EPA facilities of the potential hazards associated with lead in drinking water. Additionally, this internal policy set forth the requirement for all EPA facilities to perform lead in drinking water monitoring to verify the presence or absence of lead above the Agency's recommended action levels.

Guidance: All EPA facilities shall conduct lead in drinking water monitoring to ensure that lead levels are below the Agency's action level of 15 ug/l at the tap. New construction or plumbing system modifications should be accompanied by verification sampling.

Section 06-14
Special Regulations and Prohibition on Lead Use

MONITORING,
REPORTING, AND
PUBLIC
NOTIFICATION FOR
CERTAIN
UNREGULATED
CONTAMINANTS
(141.40)

All community and nontransient, noncommunity water systems using ground water or surface water must analyze for certain unregulated contaminants. The list of contaminants to be determined is found at 141.40(e) and (j). Small systems such as EPA facilities, however, may be exempted from these requirements provided that certain conditions are met (i.e., (141.35) documentation is provided describing the system characteristics and number of individuals served).

If sampling is required, the system must submit the results of the monitoring to the state or Regional EPA, as applicable, within 30 days.

PROHIBITION ON
USE OF LEAD
SOLDER AND FLUX
(141.43)

The Lead Contamination Control Act of 1988 required EPA to promulgate regulations restricting the use of lead-containing materials such as pipes, fittings, solders and fluxes in residential and utility water distribution systems. Only lead-free materials are allowed for construction and repairs.

Solders and fluxes that contain less than 0.2% lead are considered lead-free as well as pipes and pipe fitting that contain less than 8.0% lead. The date of enforcement for these regulations was June 19, 1988.

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**Section 06-15
Filtration and Disinfection**

**GENERAL
REQUIREMENTS**
(141.70)

This section applies to ground water systems that are under the direct influence of surface water. This type of ground water usually exhibits some of the same characteristics as surface water sources. This determination shall be made by the state. If the state determines that the water source is strictly ground water not under the influence of surface water, the system need not comply with these requirements.

Compliance is determined by:

- Compliance with filtration and disinfection standards
- Must have 99.9% deactivation of *Giardia lamblia* organisms and 99.99% deactivation for viruses
- The system must be operated by a state certified operator.

**CRITERIA FOR
AVOIDING
FILTRATION**
(141.71)

Ground water systems that are under the influence of surface water must meet three criteria in order to avoid installing filtration:

1. Source water cannot exceed 20/100 ml of fecal coliforms, total coliforms must not exceed 100/100 ml and turbidity must not exceed five Nephelometric Turbidity Units (NTU) prior to disinfection.
2. The system must provide adequate disinfection at all times, have a watershed control program, be inspected by a state-approved agent for watershed control, must not have been the site of a water-borne disease outbreak and must be in compliance with the microbiological and trihalomethane MCLs.
3. The system must not have been in violation of any previous filtration or disinfection requirements.

DISINFECTION
(141.72)

The disinfection treatment must ensure the deactivation of 99.9% of all *Giardia lamblia* organisms and 99.99% of all viruses. Also the system must make the necessary disinfectant contact time (CT) calculations to ensure that the disinfectant residue in the water

will achieve this deactivation ratio. In addition to this, the system must have redundant disinfection components or other precautions in place to ensure the microbiological safety of the water.

FILTRATION
(141.73)

If the system does not meet the criteria for avoiding filtration, then it must comply with both the requirements for providing filtration and disinfection. The approved methods for providing filtration are conventional filtration, slow sand filtration, diatomaceous earth filtration, and other filtration technologies. In all of these filtration techniques, the turbidity levels of these systems must never exceed 0.5 NTU in 95% of the samples, never more than 1 NTU in 5% of the samples, and must not at any time exceed 5 NTU.

**ANALYTICAL AND
MONITORING
REQUIREMENTS**
(141.74)

The following section describes the monitoring and analytical requirements for the surface water treatment rule. Included are references for methodology used for measuring turbidity, coliform bacteria, fecal bacteria and residual disinfectants.

**Analytical
Requirements**

State-approved labs will measure pH, temperature, turbidity and residual disinfectant. EPA-certified and state-certified labs will measure for fecal coliforms and heterotrophic plate count (HPC) bacteria. The methodology is found under 141.74(a).

**Monitoring
Requirements**

Samples for fecal and total coliform must be taken prior to disinfection. For small systems this entails taking at least one sample per week. Other criteria for compliance include daily contact time calculations, and monitoring for coliforms, disinfectant residuals and turbidity. Systems that already practice filtration may monitor for heterotrophic bacteria instead of disinfectant residuals.

**Section 06-16
Control of Lead and Copper**

**GENERAL
REQUIREMENTS**
(141.80)

Beginning July 1, 1993, all water systems must comply with the requirements set forth for the control of lead and copper in drinking water. These regulations establish treatment technique requirements for corrosion control, source water treatment and under special circumstances lead service line replacement. Also included are regulations regarding the applicability of public education for those systems that have triggered the lead and copper action levels.

**APPLICABILITY
OF CORROSION
CONTROL
TREATMENT
STEPS**
(141.81)

Since the few EPA facilities subject to SDWA regulations serve less than 3,300 individuals, only the corrosion control requirements for small water systems are applicable. After a lead or copper action level is exceeded, small systems have 18 months in which to complete a corrosion control study and 2 years to install a treatment process (after designation by the state).

**Optimized Corrosion
Control Protection**

A system is not required to complete the corrosion control steps if it can demonstrate to the state that it satisfies the following criteria:

- It meets the action levels for both lead and copper during two consecutive 6-month monitoring periods
- It has conducted equivalent corrosion control activities for a similar sized system.

**CORROSION
CONTROL
TREATMENT
REQUIREMENTS**
(141.82)

After collecting tap water samples from high risk locations, watersystems that exceed lead and copper action levels (i.e., 15 ug/l and 1.3 mg/l, respectively) must conduct corrosion control studies to determine if a water treatment technique is needed to reduce potential lead contamination.

**Corrosion Control
Studies**

Corrosion control studies include examining the effectiveness of pH, calcium adjustment, and the addition of corrosion inhibitors. Small- and medium-sized systems are only required to complete these studies if they exceed the lead and copper action levels. After evaluation, state may either approve the treatment or require the installation of alternative treatment. In addition to the recommended treatment technique, the system must also include a treatment alternative. The state will then either approve the systems recommendation or designate an alternative treatment.

Corrosion Control

Once the state has specified the optimal corrosion control technique,

Clean Water Management

Treatment

the system will have 24 months to complete the treatment installation and 12 months to collect follow-up samples and evaluation. The water system must then operate within the water quality parameters (pH, alkalinity, calcium and corrosion inhibitors) designated by the state.

SOURCE WATER
TREATMENT
REQUIREMENTS
(141.83)

If a public water system exceeds the lead or copper action level intap water, it must collect source water samples and submit the data with a treatment recommendation to the appropriate enforcement agency.

After the review of monitoring data, the state may require a water system to install one of the following treatments: ion exchange, reverse osmosis, coagulation/filtration, lime softening or any other treatment that is at least as effective. Based on this review, the state will designate the maximum permissible lead and copper concentrations for finished water entering the distribution system.

PUBLIC
EDUCATION
AND
SUPPLEMENTAL
MONITORING
REQUIREMENTS
(141.85)

All water systems must provide public education announcements to its users within 60 days of exceeding a lead or copper action level. Nontransient, noncommunity water systems will fulfill their public education requirements by distributing brochures or pamphlets and by placing posters in common areas of buildings served by the system. These notices must be repeated at least once every year for as long as the system exceeds the lead and copper action level. This notification must contain language found in 141.85(a) and (b).

MONITORING
REQUIREMENTS
FOR LEAD AND
COPPER IN
SOURCE WATER
(141.86)

To ensure safe levels of lead and copper in drinking water, the system shall conduct a materials survey of the distribution system inorder to identify a pool of sampling sites. Tap water sampling will be conducted at high-risk locations, such as homes or buildings that were recently built using lead solder or lead service lines.

Sample Collection

The system must sample at both the tap and service line. Samples that are taken from the tap must be first draw, at least one liter in volume and must have been taken after the water was in direct contact with the plumbing for at least six hours. Service line samples must be at least one liter in volume, and can be taken directly from the service line (tapping or other means) or can be taken after a change in temperature at the tap after flushing. Subsequent samples that are taken under this monitoring requirement must be taken from the same sites.

Number of Samples After the system has identified sampling sites, the system will be required to take at least one sample from each site. Systems that serve 100 persons or less must sample at five locations. Systems that serve up to 500 persons must sample from at least 10 locations.

Timing of Monitoring Small systems must monitor for at least two consecutive six-month periods beginning on July 1, 1993. After compliance for two consecutive monitoring periods has been met, the state may reduce the monitoring to annually. After three years of compliance, the state may further reduce the monitoring from annually to once every three years.

The Office of Water developed a guidance document that contains additional information on sampling for lead in drinking water in nonresidential facilities (EPA 812-B-94-002). A portion of the guidance has been copied and included as Appendix A at the end of this chapter. Complete copies of this document are available upon request through the Safe Drinking Water Act Hotline (202-260-7908) or EPA's Safety, Health and Environmental Management Division.

**MONITORING
REQUIREMENTS
FOR WATER
QUALITY
PARAMETERS
(141.87)**

Monitoring for water quality parameters is required for all water systems that have exceeded the action level requirements for lead and copper. For small systems, these samples are collected at the taps and also at the entry points to the distribution system. Systems that serve 500 persons or less shall designate one site (entry point to distribution system) for sampling. The parameters to be sampled and analyzed include pH, alkalinity, orthophosphate or silica (if used), calcium, conductivity and water temperature.

Monitoring Requirements If a water system exceeds a lead or copper action level at the tap, it is required to collect additional samples for lead and copper in accordance with 141.23 (revised January 30 and July 1, 1991). The state may require additional samples to be taken at the same sampling point(s) in which the exceedance occurred. These must be taken no later than 2 weeks after an action level has been exceeded.

Reduced Monitoring For ground water systems, monitoring can be reduced to a compliance cycle of once every nine-years if the system can demonstrate that the water entering the distribution system has been maintained below the maximum permissible lead and copper concentrations during three consecutive compliance periods (one compliance period equals three years).

Analytical methods for this subpart are listed under 141.89. EPA facilities performing lead in drinking water monitoring should note that revisions to the analytical methodology for lead by graphite furnace atomic absorption (GFAA) spectroscopy have been implemented to reduce the practical quantitation limit for these determinations.

**REPORTING
REQUIREMENTS**
(141.90)

All test results shall be submitted within the first 10 days after the end of the monitoring period.

**RECORDKEEPING
REQUIREMENTS**
(141.91)

Documents and records that are collected pursuant to the requirements of this subpart must be kept at the facility for no less than 12 years.

Section 06-17
Centralized Treatment Devices

POE DEVICES

Approval to use "point of entry" devices can be granted by (141.100)the state as a means of achieving compliance with the national primary drinking water regulations. These devices must ensure that the water being treated will meet all prescribed MCLs. Additionally, to gain approval, the water system must maintain the devices to ensure maximum treatment efficiency.

POU DEVICES
(141.101)

"Point of use" devices are not allowed means for a public water system to come into compliance with the national primary drinking water standards.

EPA facilities should note that calcium hypochlorite is commonly used in POE devices associatd with small drinking water systems. The handling of this substance should be evaluated to determine appropriate personal protective equipment requirements.

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**Section 06-18
National Secondary Drinking Water Standards (40 CFR Part 143)**

**SECONDARY
MAXIMUM
CONTAMINANT
LEVELS
(143.3)**

The secondary drinking water standards establish secondary MCLs (SMCLs) to ensure the aesthetic quality of the water such as color, odor and taste. Contaminant levels above the SMCLs are not of significance in terms of adverse health effects but may decrease the palatability of the water. The levels are not enforceable and are only to be used as guidelines. States are free, however, to adopt these standards as enforceable levels in the implementation of their own program.

Monitoring

Secondary contaminants should be monitored against the same schedules required for primary drinking water standards.

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Clean Water Management

Section 06-19
SDWA Regulatory Guide

SDWA
REGULATORY
GUIDE

Table 3 below summarizes the major regulatory programs under the SDWA that may impact EPA facilities and provides references to the applicable regulatory standards. Also included in this chart is a summary of activities at EPA laboratories that would trigger these requirements.

Table 3
SDWA Regulatory Guide

Topic	Action involved	Regulatory Citation
General applicability of SDWA	This subpart establishes key definitions under the NPDWR, scope of coverage, variances and exemptions, and regulatory effective dates.	40 CFR Part 141, Subpart A
Maximum contaminant levels (MCLs) for organic, inorganic, turbidity, and certain radioactive material	Public drinking water systems providing water for widespread consumption must meet specific maximum contaminant levels to ensure drinking water quality and protect public health.	40 CFR Part 141, Subpart B and Subpart G
Monitoring and analytical requirements for public water systems	Periodic testing and monitoring for coliform bacteria, turbidity, and certain organic and inorganic contaminants is a key aspect of the NPDWR program. The effective dates for these monitoring requirements has been phased in over a period of time.	40 CFR Part 141, Subpart C
Reporting, public notification, and recordkeeping	Reporting and public notification must be conducted for noncompliance with SDWA requirements for public water systems.	40 CFR Part 141, Subpart D
MCLGs	The NPDWR program establishes health-based water quality objectives known as MCLGs. The MCLGs provide the basis for the formulation of MCLs which take into account technological and economic constraints.	40 CFR Part 141, Subpart F
Filtration and disinfection	Specific filtration and disinfection requirements are established for public water systems supplied by a surface water source or ground water influenced by surface water sources.	40 CFR Part 141, Subpart H
Control of lead and copper in drinking water	New action levels of 0.015 mg/l for lead and 1.3 mg/l for copper were established in 1991. If these values are exceeded at the tap in 10 percent of the public water system subject to monitoring programs, corrective actions must be initiated.	40 CFR Part 141, Subpart I

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Clean Water Management

State NPDES Program Status

State	APPROVED STATE NPDES PERMIT PROGRAM	APPROVED TO REGULATE FEDERAL FACILITIES	APPROVED STATE PRETREATMENT PROGRAM	APPROVED GENERAL PERMITS PROGRAM
Alabama	10/19/79	10/19/79	10/19/79	06/26/91
Arkansas	11/01/86	11/01/86	11/01/86	11/01/86
California	05/14/73	05/05/78	09/22/89	09/22/89
Colorado	03/27/75			03/04/83
Connecticut	09/26/73	01/09/89	06/03/81	03/10/92
Delaware	04/01/74			10/23/92
Georgia	06/28/74	12/08/80	03/12/81	01/28/91
Hawaii	11/28/74	06/01/79	08/12/83	09/30/91
Illinois	10/23/77	09/20/79		01/04/84
Indiana	01/01/75	12/09/78		04/02/91
Iowa	08/10/78	08/10/78	06/03/81	08/12/91
Kansas	06/28/74	08/28/85		11/24/93
Kentucky	09/30/83	09/30/83	09/30/83	09/30/83
Maryland	09/05/74	11/10/87	09/30/85	09/30/91
Michigan	10/17/73	12/09/78	04/16/85	11/29/83
Minnesota	06/30/74	12/09/78	07/16/79	12/15/87
Mississippi	05/01/74	01/28/83	05/13/82	09/27/91
Missouri	10/30/74	06/26/79	06/03/81	12/12/85
Montana	06/10/74	06/23/81		04/29/83
Nebraska	06/12/74	11/02/79	09/07/84	07/20/89
Nevada	09/19/75	08/31/78		07/27/92
New Jersey	04/13/82	04/13/82	04/13/82	04/13/82
New York	10/28/75	06/13/80		10/15/92
North Carolina	10/19/75	09/28/84	06/14/82	09/06/91
North Dakota	06/13/75	01/22/90		01/22/90
Ohio	03/11/74	01/28/83	07/27/83	08/17/92
Oregon	09/26/73	03/02/79	03/12/81	02/23/82
Pennsylvania	06/30/78	06/30/78		08/02/91
Rhode Island	09/17/84	09/17/84	09/17/84	09/17/84
South Carolina	06/10/75	09/26/80	04/09/82	09/03/92
South Dakota	12/30/93	12/30/93	12/30/93	12/30/93
Tennessee	12/28/77	09/30/86	08/10/83	04/18/91
Utah	07/07/87	07/07/87	07/07/87	07/07/87
Vermont	03/11/74		03/16/82	08/26/93
Virgin Islands	06/30/76			
Virginia	03/31/75	02/09/82	04/14/89	05/20/91
Washington	11/14/73		09/30/86	09/26/89
West Virginia	05/10/82	05/10/82	05/10/82	05/10/82
Wisconsin	02/04/74	11/26/79	12/24/80	12/19/86
Wyoming	01/30/75	05/18/81		09/24/91
TOTALS	40	35	28	39

Clean Water Management

National Primary Drinking Water Standards

Contaminants	MCLG (mg/L)	MCL (mg/L)	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Coliform and Surface Water Treatment				
<i>Giardia lamblia</i>	zero	TT	Gastroenteric disease	Human and animal fecal waste
<i>Legionella</i>	zero	TT	Legionnaire's disease	Natural waters; can grow in water heating systems
Standard Plate Count	N/A	TT	Indicates water quality, effectiveness of treatment	
Total Coliform*	zero	<5%	Indicates gastroenteric pathogens	Human and animal fecal waste
Turbidity*	N/A	TT	Interferes with disintegration/filtration	Soil runoff
Viruses	zero	TT	Gastroenteric disease	Human and animal fecal waste
Inorganics				
Antimony	0.006	0.006	Cancer	Fire retardants, ceramics, electronics, fireworks, solder
Asbestos (>10um)	7 MFL	7 MFL	Cancer	Natural deposits; asbestos cement in water systems
Barium*	2	2	Circulatory system effects	Natural deposits; pigments, epoxy sealants, spent coal
Beryllium	0.004	0.004	Bone, lung damage	Electrical, aerospace, defense industries
Cadmium*	0.005	0.005	Kidney effects	Galvanized pipe corrosion; natural deposits; batteries, paints
Chromium* (total)	0.1	0.1	Liver, kidney, circulatory disorders	Natural deposits: mining, electroplating, pigments
Cyanide	0.2	0.2	Thyroid, nervous system damage	Electroplating, steel, plastics, mining, fertilizer
Fluoride	4.0	4.0	Skeletal and dental fluorosis	Natural deposits; fertilizer, aluminum industries, H ₂ O additive

Clean Water Management

Mercury* (inorganic)	0.002	0.002	Kidney, nervous system disorders	Crop runoff; natural deposits; batteries, electrical switches
Nickel	0.1	0.1	Heart, liver damage	Metal alloys, electroplating, batteries, chemical production
Nitrate*	10	10	Methemoglobinemia	Animal waste, fertilizer, natural deposits, septic tanks, sewage
Nitrite	1	1	Methemoglobinemia	Same as nitrate; rapidly converted to nitrate
Selenium*	0.05	0.05	Liver damage	Natural deposits; mining, smelting, coal/oil combustion
Thalium	0.0005	0.002	Kidney, liver, brain, intestinal	Electronics, drugs, alloys, glass
Volatile Organic Compounds				
Benzene	zero	0.005	Cancer	Some foods; gas, drugs, pesticide, paint, plastic industries
Carbon Tetrachloride	zero	0.005	Cancer	Solvents and their degradation products
p-Dichlorobenzene	0.075	0.075	Cancer	Room and water deodorants, and "mothballs"
1,2-Dichloroethane	zero	0.005	Cancer	Leaded gas, fumigants, paints
1,1-Dichloroethylene	0.007	0.007	Cancer, liver and kidney effects	Plastics, dyes, perfumes, paints
Trichloroethylene	zero	0.005	Cancer	Textiles, adhesives and metal degreasers
1,1,1-Trichloroethane	0.2	0.2	Liver, nervous system effects	Adhesives, aerosols, textiles, paints, inks, metal degreasers
Vinyl Chloride	zero	0.002	Cancer	May leach from PVC pipe, formed by solvent breakdown

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Other Organics				
Acrylamide	zero	TT	Cancer, nervous system effects	Polymers used in sewage/waste water treatment
Adipate (di(2-ethylhexyl))	0.4	0.4	Decreased body weight; liver and testes damage	Synthetic rubber, food packaging, cosmetics
Alachlor	zero	0.002	Cancer	Runoff from herbicide on corn, soybeans, other crops
Aldicarb*	0.001	0.003	Nervous system effects	Insecticide on cotton, potatoes, others; widely restricted
Aldicarb sulfone*	0.001	0.002	Nervous system effects	Biodegradation of aldicarb
Aldicarb sulfoxide*	0.001	0.004	Nervous system effects	Biodegradation of aldicarb
Atrazine	0.003	0.003	Mammary gland tumors	Runoff from use as herbicide on corn, and non-cropland
Carbofuran	0.04	0.04	Nervous, reproductive system	Soil fumigant on corn and cotton; restricted in some areas
Chlordane*	zero	0.002	Cancer	Leaching from soil treatment for termites
Chlorobenzene	0.1	0.1	Nervous system and liver	Waste solvent from metal degreasing processes
2,4 - D*	0.07	0.07	Liver and kidney damage	Runoff from herbicide on wheat, corn, rangelands, lawns
Dalapon	0.2	0.2	Liver, kidney	Herbicide on crops, land/aquatic weeds; rapidly degraded
Dibromochloropropane	zero	0.0002	Cancer	Soil fumigant on soybeans, cotton, pineapple, orchards
o-Dichlorobenzene	0.6	0.6	Liver, kidney, blood cell damage	Paints, engine cleaning compounds, dyes, chemical wastes
cis-1,2-Dichloroethylene	0.07	0.07	Liver, kidney, nervous, circulatory	Waste industrial extraction solvents
trans-1,2-Dichloroethylene	0.1	0.1	Liver, kidney, nervous, circulatory	Waste industrial extraction solvents

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Dichloromethane	zero	0.005	Cancer	Paint stripper, metal degreaser, propellant, extraction
1,2-Dichloropropane	zero	0.005	Liver, kidney effects; cancer	Soil fumigant; waste industrial solvents
Dinoseb	0.007	0.007	Thyroid, reproductive organ damage	Runoff of herbicide from crop and non-crop applications
Diquat	0.02	0.02	Liver, kidney, eye effects	Runoff of herbicide on land and aquatic weeds
Dioxin	zero	0.00000003	Cancer	Chemical production by-product, impurity in herbicides
Endothall	0.1	0.1	Liver, kidney, gastrointestinal	Herbicide on crops, land/aquatic weeds; rapidly degraded
Endrin	0.002	0.002	Liver, kidney, heart damage	Pesticide on insects, rodents, birds; restricted since 1980
Epichlorohydrin	zero	TT	Cancer	Water treatment chemicals; waste epoxy resins, coatings
Ethylbenzene	0.7	0.7	Liver, kidney, nervous system	Gasoline; insecticides; chemical manufacturing wastes
Ethylene dibromide	zero	0.00005	Cancer	Leaded gasoline additives; leaching of soil fumigant
Glyphosate	0.7	0.7	Liver, kidney damage	Herbicide on grasses, weeds, brush
Heptachlor	zero	0.0004	Cancer	Leaching of insecticide for termites, very few crops
Heptachlor epoxide	zero	0.0002	Cancer	Biodegradation of heptachlor
Hexachlorobenzene	zero	0.001	Cancer	Pesticide production waste by-product
Hexachlorocyclopentadiene	0.05	0.05	Kidney, stomach damage	Pesticide production intermediate
Lindane	0.0002	0.0002	Liver, kidney, nerve, immune, circulatory	Insecticide on cattle, lumber, gardens; restricted 1983
Methoxychlor	0.04	0.04	Growth, liver, kidney, nerve	Insecticide for fruits, vegetables, alfalfa, livestock, pets
Oxamyl (Vydate)	0.2	0.2	Kidney damage	Insecticide on apples, potatoes, tomatoes

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PAHs (benzo(a)pyrene)	zero	0.0002	Cancer	Coal tar coatings; burning organic matter; volcanoes, fossil fuels
Pentachlorophenol	zero	0.001	Cancer, liver and kidney effects	Wood preservative, herbicide, cooling tower wastes
PCBs	zero	0.0005	Cancer	Coolant oils from electrical transformers, plasticizers
Phthalate, (di(2-ethylhexyl))	zero	0.006	Cancer	PVC and other plastics
Picloram	0.5	0.5	Kidney, liver damage	Herbicide on broadleaf and woody plants
Simazine	0.004	0.004	Cancer	Herbicide on grass sod, some crops, aquatic algae
Styrene	0.1	0.1	Liver, nervous system damage	Plastics, rubber, resin, drug industries; leachate from city landfills
Tetrachloroethylene	zero	0.005	Cancer	Improper disposal of dry cleaning and other solvents
Toluene	1	1	Liver, kidney, nervous, circulatory	Gasoline additive, manufacturing and solvent operations
Toxaphene	zero	0.003	Cancer	Insecticide on cattle, cotton, soybeans; canceled 1992
2,4,5-TP	0.05	0.05	Liver and kidney damage	Herbicide on crops, right-of-way, golf courses; canceled 1983
1,2,4-Trichlorobenzene	0.07	0.07	Liver, kidney damage	Herbicide production, dye carrier
1,1,2-Trichloroethane	0.003	0.005	Kidney, liver, nervous system	Solvents in rubber, other organic products; chemical production wastes
Xylenes (total)	10	10	Liver, kidney, nervous system	By-product of gasoline refining, paints, inks, detergents
Lead and Copper				
Lead*	zero	TT ¹	Kidney, nervous system damage	Natural/industrial deposits; plumbing, solder, brass alloy faucets
Copper	1.3	TT ¹	Gastrointestinal irritation	Natural/industrial deposits; wood preservative, plumbing

Clean Water Management

Other Proposed (P) and Interim (I) Standards				
Beta/photo emitters (I) and (P)	zero	4 mrem/yr	Cancer	Decay of radionuclides in natural and man-made deposits
Alpha emitters (I) and (P)	zero	15 pCi/L	Cancer	Decay of radionuclides in natural deposits
Combined Radium 226/228 (I)	zero	5 pCi/L	Bone cancer	Natural deposits
Radium 226*(P)	zero	20 pCi/L	Bone cancer	Natural deposits
Radium 228*(P)	zero	20 pCi/L	Bone cancer	Natural deposits
Radon (P)	zero	300 pCi/L	Cancer	Decay of radionuclides in natural deposits
Uranium (P)	zero	0.02	Cancer	Natural deposits
Sulfate (P)	400/500	400/500	Diarrhea	Natural deposits
Arsenic*(I)	0.05	0.05	Skin, nervous system toxicity	Natural deposits; smelters, glass, electronics wastes; orchards
Total Trihalomethanes (I)	zero	0.10	Cancer	Drinking water chlorination by-products

NOTES:

* Indicates original contaminants with interim standards which have been revised

† Action Level = 0.015mg/l

pCi= picocurie - a measure of radioactivity

TT = Treatment Technique Required

+ Action Level = 1.3mg/l

MFL= Million Fibers per Liter

mrem= millirems - a measure of radiation absorbed by the body

List of Acronyms

BOD	Biological Oxygen Demand
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COD	Chemical Oxidation Demand
COS	Synthetic Organic Contaminants
CT	Contact Time
CWA	Clean Water Act
DMR	Discharge Monitoring Report
GFAA	Graphite Furnace Atomic Absorption
HPC	Heterotrophic Plate Count
HPLC	High-Pressure Liquid Chromatography
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MF	Membrane Filter
MMO-MUG	Minimal Medium ONPG-MUG
MTF	Multiple-Tube Fermentation
NPDES	National Pollutant Discharge Elimination System
NPDWR	National Primary Drinking Water Regulations
NTNCWS	Nontransient, Noncommunity Water Systems
OAPCA	Organotin Anti-fouling Pain Control Act of 1988
OSHA	Occupation Safety and Health Administration
P-A	Presence-Absence
POE	Point of Entry
POTW	Publicly Owned Treatment Works
POU	Point of Use
ppm	Parts Per Million
SDWA	Safe Drinking Water Act
SHEM	Safety, Health and Environmental Management
SHEMD	Safety, Health and Environmental Management Division
SHEMG	Safety, Health and Environmental Management Guidelines
SIU	Significant Industrial Users
SMCLs	Secondary MCLs
SPCC	Spill Prevention, Control and Countermeasure
TBT	Tributyltin

APPENDIX A

**SAFETY, HEALTH, AND
ENVIRONMENTAL MANAGEMENT
PROGRAM GUIDE**

Guide No. 07

Issued 12/97

Revised _____

ATOMIC ENERGY ACT (AEA) PROGRAM

SCOPE OF THE PROGRAM

This Program Guide provides an overview of the requirements EPA facilities must fulfill to comply with the regulations, guidance, and procedures associated with the Atomic Energy Act (AEA) of 1954. The applicability of the AEA to the EPA is based on the Nuclear Regulatory Commission (NRC) regulatory provisions contained in Title 10 of the Code of Federal Regulations (CFR), Parts 19 through 71. This Program Guide places particular emphasis on occupational radiation protection (10 CFR Part 20) and by-product material license renewal or amendments (10 CFR Part 30), as these regulations are the most relevant to EPA facilities and operations.

REGULATORY REQUIREMENTS

The key or basic elements of the AEA program required by law and/or EPA policy are to:

Develop, submit, and request license renewals or amendments for managing by-product materials, source materials, or special materials

Identify the occupational radiation protection requirements relevant to EPA facilities and workers

Determine the packaging and transportation requirements for all applicable radioactive materials.

AUTHORITIES

The following documents are the sources of the legal authority that establish the applicability and requirements of this program.

Atomic Energy Act (AEA), Public Law 83-703, 68 Statute 919

10 CFR, Parts 19 through 71 (NRC regulations)

Title 49 CFR Parts 170 through 189 (DOT hazardous material regulations)

EPA Safety, Health, and Environmental Management Guidelines

EPA Facility Safety, Health, and Environmental Management Manual

REFERENCES

The documents listed below can help you implement the AEA Program and specifically are intended for facility operations.

NRC Regulatory Guides provide methods and guidelines acceptable to NRC for meeting their requirements

NRC Generic Communications include generic letters, information bulletins and circulars, and information notices pertaining to NRC license holders

National Consensus Standards, such as those issued by the American National Standards Institute (ANSI), have been prepared for many activities related to radiation protection

National Council on Radiation Protection and Measurements (NCRP) Reports provide recommendations on a range of NCRP related topics

International Commission on Radiation Protection (ICRP) Publications are the international counterpart to the NCRP Reports

International Atomic Energy Agency (IAEA) prepares a series of reports associated with radiation protection and radioactive materials management

Radiation Protection Guidance To Federal Agencies are reports prepared and issued by EPA after approval by the President

A system to monitor radiation levels in the workplace on a regular basis

A system to track changes to NRC regulations that may impact EPA operations

Procedures to keep detailed records on the disposition of radioactive materials

AEA training to promote staff awareness and educate staff on specific implementation procedures.

IMPLEMENTATION ACTIVITIES

The following list gives an overview of the activities that this program will require. To implement and operate this program, you must:

Be familiar with the types and amounts of radioactive materials used at the facility

Properly manage radioactive materials in accordance with the NRC license conditions and applicable regulatory standards

Renew or amend the NRC license, when applicable, to reflect the current facility activities or new NRC requirements

Be familiar with the applicable occupational radiation protection requirements

Ensure radioactive materials are packaged and transported in accordance with NRC requirements.

IMPLEMENTATION IMPLICATIONS

The management systems and internal controls required to implement this program include:

An inventory system to account for all radioactive materials used on-site

Procedures to ensure radiation protection standards are publicized and adhered to

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**Section 7-02
Introduction**

PURPOSE

The Atomic Energy Act (AEA) of 1954 gave the U.S. Atomic Energy Commission (AEC) the responsibilities of regulating the commercial use of most nuclear materials (including use by other federal agencies), promoting their commercial use, and producing nuclear materials in government-owned facilities for military applications. The AEA granted broad authority to the AEC to promulgate regulations or issue orders, as required, to protect health and safety of workers, the general public, and the environment. Reorganization Plan Number 3 of 1970, which created the Environmental Protection Agency (EPA), transferred authority from the AEC to the EPA to regulate those aspects of the use of nuclear materials that impact the public or the environment.

In 1974, the Atomic Energy Commission was abolished and replaced with two separate agencies: the Energy Research and Development Administration (ERDA) and the Nuclear Regulatory Commission (NRC). ERDA carried on the mission of promoting the commercial use of nuclear materials and manufacturing nuclear materials for military use, whereas the NRC was created to exercise the mission of regulating commercial use of nuclear materials. In this transition, ERDA was given self-regulating authority for its military production mission. All ERDA authorities and responsibilities were subsequently transferred to the Department of Energy (DOE) in 1977. DOE facilities are therefore exempt from NRC regulations, and any radioactive material transferred to an EPA facility in conjunction with performing authorized DOE activity, or with any of its management and operating contractors on behalf of DOE, would be subject to regulation by DOE in accordance with the requirements specified in the contract, rather than by NRC.

SCOPE

This chapter of the Safety, Health and Environmental Management Guidelines (SHEMG) addresses the NRC regulatory provisions contained in 10 CFR Parts 19 through 71. Particular emphasis is placed on the occupational radiation protection provisions of 10 CFR Part 20, and the process for applying for byproduct material license renewal or amendment applications under 10 CFR Part 30 since these requirements most significantly impact EPA facilities and operations.

This chapter provides descriptive information on regulatory requirements, guidance, and references to assist EPA facilities in complying with the AEA and with the NRC's implementing regulations. Statutory and regulatory overlaps with programs administered by federal agencies other than the NRC are identified, but in general are addressed in detail in other SHEMG chapters.

AUTHORITY

Atomic Energy Act, as amended. Title 10 CFR Parts 1 through 71.

OBJECTIVES

The objective of this chapter is to clarify select portions of the NRC regulations that commonly apply to EPA facilities. This chapter also provides guidance and recommended procedures intended to further protect EPA employees, facilities, the general public, and the environment.

RESPONSIBLE OFFICERS

All persons who enter areas at EPA facilities where radioactive materials are used or stored are responsible, to some degree, for compliance with applicable safety and health requirements. For most EPA facilities, primary responsibilities for compliance with NRC regulations and license conditions are assigned to the Radiation Safety Committee (at facilities that are authorized to possess relatively large quantities of radioactive material), the Radiation Safety Officer (RSO), and Authorized users.

Guidance: More specific responsibilities are outlined in Section 38, Radiation Safety and Health Protection Program, of the SHEMG. The Program describes the roles, responsibilities, and interrelationships of the Safety, Health, and Environmental Management Division (SHEMD) and the Office of Radiation and Indoor Air (ORIA) at headquarters, as well as those of Regional and laboratory management, Radiation Safety Officers (RSOs), and Safety, Health, and Environmental Management Program (SHEMP) Managers.

REFERENCES

Topics discussed in this chapter were drawn from the following sources:

- 10 CFR Parts 2 through 71
- 49 CFR Parts 170 through 189
- *Federal Register* (specific volumes and page numbers cited where applicable).

This chapter of the SHEMG also references a large number of guidance documents. These include:

- NRC Regulatory Guides provide methods and guidelines acceptable to NRC for meeting the requirements of NRC regulations. Although not mandatory, they are often used by NRC Inspection and Enforcement staff as guidelines for evaluating licensee activities. Following the recommended practices in the NRC Regulatory Guides will generally result in no findings of deficiency by the NRC in the area covered by the Regulatory Guide.

Single copies of Regulatory Guides are available to licensees at no charge from the NRC Public Document Room. Contact the Public Document Room at (202) 634-3273 or (800) 397-4209 for ordering information.

- NRC Generic Communications include generic letters, administrative letters, information bulletins, information circulars, and, most commonly, information notices. Generic Communications are usually addressed to all licensees, or all holders of licenses of a particular type. They typically inform licensees of violations of NRC regulations by multiple licensees that have been found during recent inspections, indicating that there is a common misunderstanding of the intent of NRC requirements. Another frequent topic of generic communications is dissemination of information on defective equipment or services that are commonly used by licensees and that are relevant to the safe use of radioactive materials.

NRC generic communications are mailed to all applicable licensees, usually addressed to the individual that signed the application for license or the designated Radiation Safety Officer (RSO).

- National Consensus Standards, such as those issued by the American National Standards Institute (ANSI), have been prepared for many activities relevant to radiation protection. There is a standing committee within ANSI composed of members of the Health Physics Society that prepare these standards. The standards undergo extensive peer review and are also reviewed by representatives from potentially

affected users prior to promulgation, and must be reviewed and either re-affirmed or withdrawn at least every five years.

Some ANSI Standards are adopted by reference in NRC regulations or in Regulatory Guides. When referenced in regulations they become mandatory; references in Regulatory Guides are intended as guidance.

ANSI Standards are copyrighted and must be purchased from ANSI, 1430 Broadway, New York, NY 10018.

- **National Council on Radiation Protection and Measurements (NCRP) Reports** provide the recommendations of the NCRP on a range of topics consistent with their congressional charter. While they generally provide very useful information and suggestions, they must be used with caution because the NCRP makes their recommendations based solely on scientific and technical merit. They specifically do not consider socio-economic impacts or compliance with laws and regulations.

NCRP Reports are copyrighted. They may be purchased either as single copies of individual reports or by subscription from NCRP Publications, P.O. Box 30175, Washington, D C. 20014.

- **International Commission on Radiation Protection (ICRP) Publications** are the international counterpart to the NCRP Reports and cover similar subject matter. They are available for purchase in the United States from ICRP, 4201 Lexington Avenue, New York, NY 10017.
- **International Atomic Energy Agency (IAEA)** also prepares several series of reports that contain useful information or recommendations for radiation protection or radioactive materials handling. IAEA reports are available from the IAEA, Wagramerstrasse 5, P.O. Box 100, A-1400 Vienna, Austria.
- **Radiation Protection Guidance to Federal Agencies** are reports prepared and issued by the Environmental Protection Agency after approval by the President. Such guidance represents the official U.S. position on basic radiation protection criteria and standards.

The reports are generally prepared after the ICRP, NCRP, or other scientific or technical bodies have issued new recommendations. The charter of the former Federal Radiation Council, which is the authority that was transferred to and is exercised by EPA in preparing these guidance documents, specifically requires them to consider potential impacts to U.S. society and compliance with U.S. law in formulating its recommendations.

When published in the *Federal Register* (which is very infrequent), the reports mandate all Federal agencies with authority to regulate any activities that could result in significant radiation exposure to amend existing or develop new regulations as required to implement the guidance.

- National Laboratories, under the sponsorship of DOE, have produced hundreds of thousands of reports on many topics either directly or indirectly related to radiation protection and the safe handling and use of radioactive materials. Use of information or guidance in national laboratory reports is strictly voluntary.

Reports and other documents prepared by national laboratories may be purchased from the National Technical Information Service (NTIS), Springfield, VA 22161. The NTIS help desk phone number is (703) 487-4608.

- NRC Electronic Bulletin Boards were included in an aggressive program implemented in 1994 to make information more readily available to licensees and the public. An ever-increasing array of NRC documents is being made available for on-line viewing or download. The NRC Bulletin Boards are accessible by direct dial at (800) 303-9672, through the FedWorld Gateway at (703) 321-3339 or (800) 881-6842, or through the Internet at <ftp://fedworld.gov>.

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**Section 7-03
Radioactive Material Identification**

**DEFINITION OF
BYPRODUCT
MATERIAL**
(10 CFR Parts 20 and 30)

Byproduct material is defined in 10 CFR Part 20, Section 20.1003 as: (1) any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or utilizing special nuclear material; and (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by these solution extraction operations do not constitute "byproduct material" within this definition.

**Multiple Byproduct
Material Definitions**

The second part of the above definition in 10 CFR Part 20 clarifies the statutory definition in Section 11e(2) of the AEA of "the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content " Such material is also commonly referred to as mill tailings or AEA 11e(2) byproduct material.

The definition of byproduct material in Section 30.4 of 10 CFR Part 30 is "any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material." This definition excludes the second category of material defined in 10 CFR Part 20, or AEA 11e(2). An EPA laboratory might possibly encounter AEA Section 11e(2) byproduct material in environmental media samples from sites where uranium or thorium ores were processed.

From a practical standpoint, the difference in byproduct material definitions between 10 CFR Parts 20 and 30 simply means that Part 20 (Standards for Protection Against Radiation) applies to mill tailings wastes, while Part 30 (Domestic Licensing of Byproduct Material) does not. Licensing and regulation of such material is generally accomplished in conjunction with the licensing of active and inactive uranium or thorium mills under the source material license regulations at 10 CFR Part 40. An EPA laboratory possessing only an NRC license for byproduct material under 10 CFR Part 30 would not be permitted to receive, possess, or analyze a sample containing AEA 11e(2) byproduct material unless the

quantity or concentration qualified for either a general license or exemption from licensing, or a specific license for source material was obtained in accordance with 10 CFR Part 40.

**Byproduct Material
Definition Depends on
How Material Produced**

A further complication is that the definitions for byproduct material are based solely on how the material is produced rather than the nature of the material. Many of the radioisotopes in common laboratory use can be produced either as a "byproduct" of a process utilizing special nuclear material (e.g., in nuclear reactors), can also be produced in a particle accelerator. Radium-226, which is present in uranium ores, is AEA 11e(2) byproduct material if it is extracted from the ore incidental to processing, which was performed primarily to extract the uranium. However, if the uranium was not removed from the ore and it was instead processed primarily to extract the radium, then the radium is considered to be naturally occurring rather than byproduct material. Regulation of accelerator-produced or naturally occurring radioactive materials is not within the scope of the Atomic Energy Act, and such materials are not subject to NRC licensing or regulation.

Notwithstanding the issues discussed above, nearly all commercially available radioactive materials, and most radioactive materials in use at EPA facilities, are byproduct material within the meaning of 10 CFR Part 30 and will be regulated by either a general or specific byproduct material license. H-3 (tritium), C-14, P-32, S-35, Co-60, Ni-63, Tc-99, Sr-90, Cs-137, and Ir-192 used for EPA analysis and research are almost always byproduct material.

**DEFINITION OF
SOURCE MATERIAL
(10 CFR Part 40)**

Source material is defined in 10 CFR Part 40, Section 40.4 and 10 CFR Part 20, Section 20.1003, and means (1) uranium or thorium, or any combination thereof, in any chemical or physical form, or (2) natural ores containing uranium or thorium in concentrations greater than 0.05% by weight. However, material that has been enriched in the isotope U-235 is not source material.

Most EPA facilities would not normally encounter source material. Exceptions might include a laboratory analyzing environmental media samples contaminated with source material or AEA 11e(2) byproduct material that is licensed under the same regulations. However, it is most likely that the quantity or concentration of such samples would qualify for either exemption from or a general license under the regulations of 10 CFR Part 40.

Facilities that calibrate their own portable radiation measurement instruments for response to beta radiation often use a slab of uranium metal as a primary calibration standard. Possession or use of any significant quantity of uranium metal would require a 10 CFR Part 40 source material license

**DEFINITION OF
SPECIAL NUCLEAR
MATERIAL
(10 CFR Part 70)**

Special nuclear material is defined in 10 CFR Part 70, Section 70.4, and 10 CFR Part 20, Section 20.1003, and means (1) plutonium, uranium 233, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of section 51 of the Atomic Energy Act, determines to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing but does not include source material

The special nuclear material most likely to be encountered at an EPA facility is electroplated Pu-239 alpha radioactivity standards, which are commonly used to calibrate laboratory instruments for analysis of alpha radioactivity in environmental media. Since possession and use of such sources is authorized under a general license granted by 10 CFR Part 70 to any byproduct or source material licensee, it is highly unlikely that any EPA facility would ever require a specific license for special nuclear material. However, even the general license for use of electroplated sources carries with it terms and conditions (listed in 10 CFR Part 70) that facility personnel must be aware of and comply with.

**DEFINITION OF
LICENSED MATERIAL
(10 CFR Part 20)**

Licensed material, as defined in 10 CFR Part 20, Section 20.1003 means source material, special nuclear material, or byproduct material received, possessed, used, transferred or disposed of under a general or specific license issued by the NRC.

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Section 7-04
Identification of Applicable Requirements

EXISTING LICENSE(S) In general, a specific license issued to a facility is the primary governing document for purposes of determining what requirements are applicable. It is very common for licenses to exempt a facility from specific sections of regulations that would otherwise be applicable, and to specify additional terms and conditions that are more restrictive or impose requirements in addition to those contained in the NRC regulations. Therefore, it is imperative that facility management, radioactive materials program management staff, and facility employees are thoroughly familiar with the conditions of the facility license.

The applicable regulations under which a license is issued are usually specified in the license. Most EPA laboratories have specific byproduct material licenses issued in accordance with 10 CFR Parts 30 and 33. Many EPA operations also possess and use byproduct material under a general license granted by 10 CFR Part 31. These regulations must be consulted in conjunction with the license to determine applicable sections of the regulations in 10 CFR Parts 19, 20 and 21.

**ADDITIONAL NON-
AEA REQUIREMENTS**

There are a number of areas where activities with radioactive material are subject to dual regulation, or regulation under authorities other than the AEA or agencies other than the NRC. Key interfaces with other safety, health, and environmental legislative authorities are discussed below.

**Resource Conservation
and Recovery Act**

Radioactive wastes that are mixed with other types of hazardous waste or that exhibit the characteristics of a hazardous waste may be subject to dual regulation under both the AEA and the Resource Conservation and Recovery Act (RCRA). Refer to Chapter 10 of the SHEMG for a detailed discussion and guidance on compliance with the RCRA requirements governing mixed radioactive and hazardous wastes.

**Occupational Safety and
Health Act**

Under the authority of the Occupational Safety and Health Act (OSH), the Occupational Safety and Health Administration (OSHA) has issued standards for radiation safety in 29 CFR Part 1910, Section 1910.96. These standards were intended to be applicable only where a work place is not already subject to similar requirements under the AEA or other regulations. The standards were based on the 1959 edition of NRC radiation safety regulations.

in 10 CFR Part 20, and have not been revised to implement the 1987 and 1988 Guidance to Federal Agencies.

The OSHA regulations offer special implementation challenges for federal agencies such as EPA, since the OSHA safety standards are by law mandatory for application to federal employees. EPA facilities that are licensed by NRC are required to comply with both the NRC radiation protection regulations in 10 CFR Part 20 and the OSHA regulations in 29 CFR Part 1910, Section 1910.96.

Clean Air Act

The National Emission Standards for Hazardous Air Pollutants (NESHAPs), codified at 40 CFR Part 61, regulate emissions of radioactive material to the air. Subpart I of those regulations apply to NRC-licensed federal facilities. Most EPA facilities would normally be expected to be exempt from Subpart I of 40 CFR Part 61 due to the relatively small quantities of radioactive material handled. A more detailed discussion of NESHAPs and its potential applicability to EPA facilities is contained in the Clean Air Act chapter of the SHEMG.

State Authority

The AEA provides NRC with a statutory mandate to work cooperatively with the states to help them develop capabilities for regulating certain radioactive material, and for entering into agreements with the states that delegate regulatory authority. As a matter of policy, NRC retains authority to license and regulate federal facilities located within an "Agreement State." However, there is nothing in the AEA that prohibits NRC from allowing an Agreement State to regulate federal facilities. It is therefore possible that EPA facilities may in the future be licensed by a state authority rather than NRC.

Regardless of whether or not a state has actual regulatory implementation authority, AEA Section 274(l) provides that, for any facility within an Agreement State for which NRC has retained licensing authority, NRC is required to notify the state whenever it receives application for a license, license renewal, or license amendment. NRC must grant the state reasonable opportunity to comment on the application, including the opportunity to conduct public hearings prior to preparing and submitting comments.

Guidance: EPA's own Radiation Safety and Health Protection Program (see Chapter 38 of the SHEMG) provides specific guidance for EPA facilities and operations. This program supplements, and in some instances, enhances the occupational radiation protection provisions found in NRC and OSHA regulations.

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Section 7-05
Notices, Instructions and Reports to Workers - 10 CFR Part 19

POSTING OF NOTICES
TO WORKERS
(10 CFR 19 11)

Each building location where radioactive material is used or stored must be conspicuously posted with the following notices to ensure that individuals working with radiation sources or frequenting the areas, are apprised of relevant regulatory provisions, license conditions, and operating procedures:

- NRC Form 3, (Revision 6-93 or later), "Notice to Employees." Copies of NRC Form 3 may be obtained by contacting the NRC Information and Records Management Branch at (301) 492-8138).
- Title 10 CFR Parts 19 and 20. The latest published edition, revised as of January 1 each year, is available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402 (telephone number (202) 783-3238) Changes to the CFR are published in the *Federal Register*. Effective dates of the changes are as noted in the *Federal Register*. Users should note that CFR changes applicable to their license become effective and incorporated into their license upon the effective date of the new regulatory standards.
- The NRC license, license conditions or documents incorporated into a license by reference, and amendments thereto. The conditions of an NRC Materials License may contain a list of enclosures with the statement, "...the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below." The NRC considers the use of this statement as effectively incorporating the documents into the license; thus, the license is not complete unless these documents are maintained as part of the license.
- The operating procedures applicable to the licensed activities have been established to safeguard against radiation hazards.
- Any notice of violation received from the NRC and the response submitted. (Documents pertaining to violations of the license are to be posted within two days of availability

Atomic Energy Act

and remain posted for five days or until the violation has been corrected, whichever is later.)

Posted materials must be readable, current and accessible. Notices which are obscured, out of date or locked in display cases that preclude review in their entirety do not fulfill this requirement.

In lieu of posting these documents, NRC regulations allow a notice to be posted which describes the documents and states where they may be examined. Since the documents may be quite extensive, this posting alternative can greatly simplify posting and updating requirements. Note: This option does not apply to the NRC Form 3 or a Notice of Violation, which must be posted. When using the alternative posting option, keep in mind that:

- The poster must be placed wherever posting of the documents would be required
- The referenced documents should be available for review during regular duty hours of the individuals with the same degree of availability as if the documents themselves were posted for review by a passing worker
- The poster should be supplemented with a separate temporary notice when significant license changes occur. The temporary notice will alert workers that they should review the applicable document at the examining location; reliance on the poster itself would not alert workers to a significant change in conditions or procedures.

***Guidance:** A recommended approach for meeting NRC notice requirements while minimizing the burden of posting voluminous documentation is to annotate the facility's NRC Form 3s with a statement concerning the location where required notice documentation can be examined by facility employees. The statement should specifically identify the point of contact and location (i.e., room number) for reviewing the license (including amendments and relevant correspondence with the NRC), regulatory provisions in 10 CFR Parts 19-20, and operating procedures applicable to licensed activities.*

**INSTRUCTIONS TO
WORKERS**
(10 CFR 19.12)

This section of the regulations, codified at 10 CFR Part 20, requires that all individuals working in or frequenting any portion of a restricted area must be kept informed of the storage, transfer, or use of radioactive materials or of radiation in the restricted area that they enter. It also requires that all such individuals be instructed in the health protection problems associated with exposure to such radioactive materials or radiation, in precautions or procedures to minimize exposure, and in the purposes and functions of protective devices employed. Individuals are further required to be instructed in, and instructed to observe, to the extent within their control, the applicable provisions of NRC regulations and licenses for the protection of personnel from exposures to radiation or radioactive materials occurring in such areas. They must also be informed of the following: their responsibility to report promptly to the RSO or Radiation Safety Committee any condition which may lead to or cause a violation of NRC regulations and licenses or unnecessary exposure to radiation or to radioactive material; the appropriate response to warnings made in the event of any unusual occurrence or malfunction that may involve exposure to radiation or radioactive material; and the radiation exposure reports which workers may request pursuant to Section 19.13.

The extent of worker training is required to be commensurate with potential radiological health protection problems in the restricted area of the facility, and should also take in consideration the employee's duties, nature of work assignments, and responsibilities. For example, training must address facility-specific information, such as project protocols, provisions of laboratory-specific Radiation Safety Manual in effect, and any unique conditions specified in the facility license.

The NRC has provided guidance for meeting the training requirements of 10 CFR Part 19. Regulatory Guide 8.29, "Instruction Concerning Risks from Occupational Radiation Exposure," provides recommended material for training occupational radiation workers. Regulatory Guide 8.13, "Instruction Concerning Prenatal Radiation Exposure," provides recommended material for informing fertile females and their supervisors of the risks to an unborn child from occupational exposure to the mother during pregnancy. Additional guidance is available in Report 71 of the National Council on Radiation Protection and Measurements (NCRP), entitled "Operational Radiation Safety Training."

Guidance: Guidelines for implementing radiation safety training requirements are contained in Chapter 38 of the SHEMG, "Radiation Safety and Health Protection Program. The Program:

- *Provides guidance for determining the extent of training necessary for different categories of employees*
- *Assigns responsibility for development of core training materials to ORIA and SHEMD*
- *Contains recommendations for examinations and training records*
- *Provides guidance on training waivers, continuing education, and periodic refresher training*
- *Mandates that the information contained in NRC Regulatory Guide 8.13 be included in basic radiation safety training courses.*

A summary of recommended training requirements is provided in Exhibit 1 of this chapter.

Non-radiation workers and visitors who periodically or occasionally work in or visit restricted areas also need to be informed about precautions and procedures to minimize radiation exposure, purposes and functions of dosimetry devices and protective equipment issued during their stay in the area. Emergency instructions to follow in the event of an accident or other emergency during their stay should also be provided.

Non-radiation workers, such as craftsmen, providing support services to the restricted area should coordinate their activities with the RSO and Project Leader prior to beginning work. The RSO should approve the procedures to be followed by the non-radiation workers to ensure that the work does not result in the release or spread of radioactive contamination. The Project Leader should ensure that the work can be performed safely relative to project equipment and radioisotope material as well as ensuring that the project has been secured to prevent worker exposure. Non-radiation workers authorized to provide services in restricted areas should be familiar with the facility's radiation safety procedures.

**NOTIFICATIONS AND
REPORTS TO
INDIVIDUALS**
(10 CFR 19.13)

On an annual basis, the facility must provide each individual with his specific radiation exposure data, including results of measurements, analyses and calculations of radioactive material deposited and retained in the body. Each annual notification must be in writing and include the name of the licensee, name of the individual, the individual's social security number, exposure information and the statement, "This report is furnished to you under the provisions of the Nuclear Regulatory Commission regulation 10 CFR Part 19. You should preserve this report for further reference." The exposure data provided is the same as that which is maintained under 10 CFR 20.2106.

At any time, a worker may request exposure data. Within 30 days of the time of the request or 30 days from the time the exposure is determined, whichever is later, the facility must provide the worker with the information consistent with that included in the annual report of worker exposure.

At the request of a worker who is terminating employment, the facility must provide a written report of exposure received during the current year or fraction thereof at the time of termination. If results are not yet available, a written estimate of exposure may be provided with the caveat that the information is an estimate.

**EMPLOYEE REQUESTS
FOR AND
PARTICIPATION IN
NRC INSPECTIONS**
(10 CFR 19.14)

During NRC inspections, licensees and their employees are expected to cooperate with the compliance inspectors. In return, the licensee and the employees may monitor various stages of the inspection process, if they desire.

Aside from private consultations that inspectors may have with workers pursuant to 10 CFR 19.15, the licensee or designated representative may accompany inspectors during an inspection. Additionally, an individual authorized by the workers shall be afforded the opportunity to accompany inspectors during the inspection of physical working conditions. The licensee is responsible for notifying the inspectors that an individual designated by the workers wishes to accompany the inspection. Only one licensee representative and one worker representative may accompany the inspection team at one time; however, the one individual representing each may change during the course of the inspection.

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Section 7-06
Standards for Protection Against Radiation - 10 CFR Part 20

RADIATION
PROTECTION
PROGRAMS
(10 CFR 20 Subpart B)

EPA facilities that possess and use licensed radioactive material must develop, document, and implement a radiation protection program consistent with the provisions of 10 CFR Part 20. One of the guiding principles of radiation protection that the NRC endorses is that licensees must strive to maintain doses as low as reasonably achievable (ALARA). The program is required to be based on the scope and extent of licensed activities, and must cover sufficient topics to ensure compliance with all applicable provisions of 10 CFR Part 20, including: conformance with applicable license conditions; process and engineering controls to achieve occupational doses and doses to members of the public consistent with ALARA principles; precautionary procedures such as signage, posting, labeling, and package receipt/opening; waste disposal; records; and reports.

On at least an annual basis, the facility is required by the NRC regulations to conduct its own review of the radiation protection program content and implementation for the purpose of updating the program to reflect any facility or regulatory changes.

At most EPA facilities, a Laboratory Radiation Safety Manual would be used to satisfy the regulatory requirement for a documented radiation safety program. A useful source of information for ensuring that the Laboratory Radiation Safety Manual has been revised to address necessary elements of 10 CFR Part 20 is NRC Information Notice 93-3. This notice was prepared to inform licensees of recent revisions to Regulatory Guides and other NRC guidance documents that were prepared by the NRC staff specifically to assist licensees in implementing the revisions to 10 CFR Part 20.

There are many guidance documents available that are useful when preparing or revising a radiation protection program. Two of the more authoritative documents available are:

- PNL-6577, "Health Physics Manual of Good Practices for Reducing Radiation Exposure to Levels that are As Low As Reasonably Achievable." This manual, prepared by Pacific Northwest Laboratories (one of the National Laboratories, operated for the Department of Energy by Battelle Memorial Institute) is useful primarily because it contains

recommendations on a very broad range of potential radiation safety problems.

- NCRP Report No. 59, "Operational Radiation Safety Program." This report is likely to be useful for EPA facilities because it was prepared primarily from a small laboratory perspective. Although somewhat dated, the manual contains extensive bibliographical references for additional guidance and information. It also presents an extensive discussion of the relative roles of a Radiation Safety Committee, Radiation Safety Officer, and Authorized Users.

**OCCUPATIONAL DOSE
LIMITS**
(10 CFR 20 Subpart C)

Occupational doses to individuals shall be maintained below the limits specified in 10 CFR Part 20:

Adults - whole body (the most limited of):

Total effective dose equivalent of 5 rem, or

Sum of deep-dose equivalent and committed dose equivalent to any internal organ or tissue other than the lens of the eye of 50 rem

Adults - eyes

Eye dose equivalent of 15 rem

Adults - skin or extremity

Shallow-dose equivalent of 50 rem

Adults - uranium toxicity

Soluble uranium intake 10 mg per week

Minors - any exposure

10% of adult limits

Embryo/Fetus (Declared Pregnant Woman)

Deep-dose equivalent to declared pregnant woman or dose to embryo/fetus from radionuclides in the embryo/fetus and woman of 0.5 rem

Any doses in excess of the above limits must be subtracted from the limits the individual may receive for planned special exposures during the current year and the individual's lifetime.

Guidance: Guidance for implementing ALARA requirements for EPA workers are contained in the SHEMG Chapter 38, "Radiation Safety and Health Protection Program. The Program sets an Administrative Control Limit of 0.5 rem per year. Additionally, EPA suggests an Action Reference Level of 0.05 rem be established for each worker each quarter of the year. Upon exceeding the 0.05 rem limit in a quarter, the circumstances leading to the exposure must be reviewed guidance for implementing personnel exposure monitoring requirements.

In addition to the specifications of 10 CFR Part 20, several NRC Regulatory Guides have been issued to assist in demonstrating compliance with the specified limits. Regulatory Guide 8.9, "Acceptable Concepts, Models, Equations, and Assumptions for a Bioassay Program," describes accepted methods of estimating intake of radionuclides using bioassay measurements. The guide also endorses the methods described in ICRP Report No. 54 and NCRP Report No. 87. Regulatory Guide 8.32, "Criteria for Establishing a Tritium Bioassay Program," describes an acceptable bioassay program where tritium is a radionuclide of concern.

Regulatory Guide 8.34, "Monitoring Criteria and Methods to Calculate Occupational Radiation Doses," provides guidance on when monitoring is required and how to determine doses from intake of radionuclides. Examples are provided in the appendix to the guide. Regulatory Guide 8.36, "Radiation Dose to the Embryo/Fetus," lays out guidance on calculating doses from intakes of radionuclides in the special case where a pregnant woman is involved.

**RADIATION DOSE
LIMITS FOR MEMBERS
OF THE PUBLIC**
(10 CFR 20 Subpart D)

Doses to the public shall be maintained below the following limits:

Individual (excluding sanitary sewage disposal doses)

0.1 rem (a facility can apply to NRC to have this limit raised to 0.5 rem on a case by case basis)

Dose rate in unrestricted area from external sources

0.002 rem per hour

Note that even if the license allows members of the public to have access to the facility, the exposure limits for the public apply to those areas.

Guidance: EPA facilities should orient visitors who are at risk of exposure on safety hazards and precautions, and have visitors sign an informed consent form reflecting their comprehension of the risks involved. The form would not constitute a waiver of the lab's responsibility to control exposure to the visitor. Dosimetry may be provided depending on the areas entered, and an action level of 100 mrem is established for immediate notification of the visitor and consideration of counseling.

**SURVEYS AND
MONITORING**
(10 CFR 20 Subpart F)

Licensed facilities must conduct surveys on a regular basis to ensure that dose limits for workers and the public are maintained within acceptable ranges. Any equipment used to perform quantitative radiation measurements must be calibrated periodically, and the calibrations recorded in a log or automated database.

Individuals that are likely to receive doses in excess of 10% of the limits specified by NRC, including the limits on pregnant women and minors, and individuals entering high or very high radiation areas must be assigned individual monitoring devices. Also, any individual likely to receive an intake of radionuclides in excess of 10% of the limits specified in Appendix B to Part 20 and minors or declared pregnant women likely to receive an intake of 0.05 rem CEDE must be monitored for radioactive material intake.

Guidance: Facilities using radioactive materials should increase the frequency of monitoring on pregnant women due to the tighter dose restrictions. See Chapter 38 of the SHEMG for EPA requirements on monitoring during pregnancy.

Dosimeters that are sent for processing must be processed and evaluated by an accredited lab. The accreditation must be from the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute of Standards and Technology. EPA requires that the dosimetry processor contact the facility immediately in the event that a regulatory- or program-specified limit is exceeded.

Regulatory Guide 8.2, "Guide for Administrative Practices in Radiation Monitoring," endorses ANSI N13.2-1969 as providing acceptable guidance for monitoring program administrative practices. Regulatory Guide 8.4, "Direct-Reading and Indirect-Reading Pocket Dosimeters," indicates that ANSI N13.5 provides an acceptable basis for selection and use of pocket dosimeters for detecting X and gamma radiation. The guide also supplements the ANSI standard with provisions for testing, acceptability of individual dosimeters, and use in mixed radiation fields.

Regulatory Guide 8.25, "Air Sampling in the Workplace," provides recommendations on air sampling to meet 10 CFR Part 20 requirements.

**CONTROL OF
EXPOSURE FROM
EXTERNAL SOURCES**
(10 CFR 20 Subpart G)

If a licensed facility has any high radiation areas, defined as an area that has the potential to expose an individual to 0.1 rem in an hour at a distance of 30 centimeters, one or more of the following steps must be taken to control access:

- A control device that, upon entry, reduces the radiation level to below the "high" category
- A control device that energizes a conspicuous visible or audible alarm warning the individual and the supervisor of the entry
- Entrance ways are locked, except during periods when access is required. Positive control must be maintained over each entry
- Continuous direct or electronic surveillance that is capable of preventing unauthorized entry
- An alternative method approved by the NRC.

Note that any control method used must not prevent exit from a high radiation area.

One exception to the access control requirements is when an area is deemed a high radiation area due to materials being packaged for transport and DOT container labeling. These packages cannot remain in the area for more than three days and must not present a dose rate in excess of 0.01 rem per hour at 1 meter from the surface.

If a facility contains any very high radiation areas (i.e., 500 rads at 1 meter in 1 hour), additional controls must be put in place (e.g., radiation limiting devices, alarms, locked entry ways).

**CONTROLS TO
RESTRICT INTERNAL
EXPOSURE**
(10 CFR 20 Subpart H)

Section 20.1701 requires licensees to use, to the extent practical, process or other engineering controls (e.g., containment or ventilation) to minimize the concentrations of radioactive material in air. When it is not practical to apply process or other engineering controls to regulate the concentrations of radioactive material in air to values below those that define an airborne radioactivity area, the licensee is required, consistent with maintaining the total effective dose equivalent ALARA, to increase monitoring and limit intakes by controlling access, limiting exposure times, using respiratory protection equipment, or through other controls.

It should be noted that Section 20.1703 imposes controls and restrictions on use of individual respiratory protection equipment that are more stringent than those required by OSHA. Although NRC requires that a respiratory protection program comply fully with all OSHA requirements, the following additional requirements (some of which are optional rather than mandatory under 29 CFR Part 1910.134 and/or ANSI Z88.2) must also be met:

- Surveys and bioassays, as appropriate, to evaluate actual intakes, are mandatory whenever respirators are used
- Licensees must issue a written policy statement on respirator usage that covers topics specified in the regulations
- Licensees must notify, in writing, the Regional NRC Administrator at least 30 days before the date that

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respiratory protection equipment is first used under the provisions of Section 20.1703.

In EPA laboratories, airborne concentrations of radioactive materials in restricted areas are usually because of special research initiatives, accidents or equipment failures.

Under normal circumstances, sealed sources do not present an airborne contamination hazard. Chemically bound foil sources, such as those used in electron capture devices for gas chromatographs, can liberate airborne radioactive contamination if overheated; liquid sources may become airborne through uncontrolled evaporation, ventilation system failures and spills.

As a general rule, any process or equipment that may liberate airborne radioactive contamination (e.g., Inductively Coupled Plasma analysis of radiolabelled compounds) which cannot be addressed by general ventilation should be evaluated to determine the need for local exhaust ventilation. The use of local ventilation minimizes releases within the laboratory and facilitates compliance with airborne radioactivity control limits.

Work surfaces for activities using liquid radionuclide solutions should be sealed (rather than porous), amenable to cleaning and covered with absorbent plastic-backed paper or similar material to minimize the spread of contamination in the event of a minor spill. Such operations should be conducted in well maintained laboratory hoods, equipped with charcoal filters to control releases of radiolabelled materials.

Laboratory hood inadequacies, through either mechanical or electrical problems, may represent potential sources of airborne contamination. Typical problems which can result in the release of gases and vapors to the laboratory include: slipping belts, arcing motors, improperly balanced systems, equipment obstructing hood air flows, incorrectly installed fans, missing exhaust screens that allow birds to build obstructions in the exhaust pipe, and rain caps or other devices which cause excessive back pressure.

The following mitigative actions are generally required where airborne radioactive contamination has or can be expected to occur:

- Where employees may be exposed to airborne concentrations of radioactive materials in restricted areas, the licensee must implement suitable air measurements and,
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as appropriate, other methods for detecting and determining airborne concentrations of radioactivity

- The licensee must maintain records of occurrences, evaluations and actions taken in a clear and readily identifiable form for summary review and evaluation
- Respiratory protective equipment used to limit the inhalation of airborne radioactive material must be certified by the National Institute for Occupational Safety and Health/Mine Safety and Health Administration. Individuals using such equipment should be included in a respiratory protection program meeting the requirements of 29 CFR 1910.134.

Emphasis should be placed on preventing airborne radioactive contamination through proper use of engineering controls such as fume hoods. A frequently overlooked maintenance procedure that can be the cause of fume hood failure to control airborne radioactive contamination is the periodic replacement of installed charcoal filters. Without timely replacement, the filters can experience breakthrough with release of contamination to the environment, or cause excessive back pressure resulting in release into the laboratory.

CAUTION: These filters may have to be disposed of as hazardous and/or radioactive waste. Procedures should be developed and material, including contamination of surfaces in unrestricted areas with radioactive material.

Regulatory Guide 3.2, "Efficiency Testing of Air-Cleaning Systems Containing Devices for Removal of Particles," endorses the test methods contained in ANSI N101.1-1972 for assessing the filtration efficiency of particulate air cleaning devices. ANSI N101.1 was subsequently withdrawn by the American National Standards Institute and replaced with ANSI/ASME N510, entitled "Testing of Nuclear Air Treatment Systems."

Regulatory Guide 8.15, "Acceptable Programs for Respiratory Protection," along with NUREG-0041 "Manual of Respiratory Protection Against Airborne Radioactive Material," provide guidance on respiratory protection programs.

**STORAGE AND
CONTROL OF
LICENSED MATERIAL**
(10 CFR 20 Subpart I)

10 CFR Part 20, Subpart I contains requirements for storage and control of licensed material. It requires licensees to secure from unauthorized removal or access licensed materials that are stored in controlled or unrestricted areas. It also required licensees to control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area when it is not in storage.

It is important to understand that there is currently no de minimus quantity or concentration or radioactive material that is exempt from these requirements. The requirements in this Subpart apply to any and all forms of licensed radioactive material, including contamination of surfaces in unrestricted areas with radioactive material.

**PRECAUTIONARY
PROCEDURES**
(10 CFR 20 Subpart J)

Subpart J of 10 CFR Part 20 contains requirements for posting areas and labeling containers to apprise personnel that radiation hazards or radioactive material are present. It also contains requirements for monitoring packages containing radioactive material that are received by the facility to ensure that no damage to packaging integrity has occurred during transit that could pose unexpected radiological hazards.

Section 20.1901 of 10 CFR Part 20 contains physical specifications for signs used to post areas. It requires that signs have magenta, purple, or black words and symbols on a yellow background. This section also has specifications for the radiation symbol that is required on signs. Internal NRC guidance recommends the purchase of radiation symbol signs that conform to the specifications in ANSI N2.1.

Section 20.1902 contains requirements for posting of radiological areas. Signs must be posted conspicuously and must contain the wording specified in the regulations. Separate signs are required for radiation areas, high radiation areas, very high radiation areas, airborne radioactivity areas, and areas or rooms in which licensed material is used or stored.

Section 20.1903 provides exceptions to posting requirements in the following situations:

- Areas or rooms containing radioactive materials for periods of less than 8 hours do not have to be posted with signs, if the materials are constantly attended during these periods

and precautions are taken to limit the exposure of individuals to radiation or radioactive materials, and the area or room is subject to the licensee's control

- A room or area is not required to be posted with a caution sign because of the presence of a sealed source unless the radiation level at 30 centimeters from the surface of the source container or housing exceeds five millirem per hour.

Section 20.1904 contains requirements for labeling containers of licensed material. It specifies required wording and minimum information necessary to permit individuals handling or using the containers, or working in the vicinity of the containers, to take precautions to avoid or minimize exposures. It also requires that labels be removed or defaced prior to disposing of empty uncontaminated containers or removing them to unrestricted areas.

Exemptions to labeling requirements are provided in Section 20.1905 and include:

- Containers holding small quantities of licensed material or material of very low concentration (numerical values are specified in the regulation)
- Containers attended by an individual who takes precautions to limit the exposure of nearby individuals
- Containers in transport and packaged and labeled in accordance with the regulations of the Department of Transportation
- Containers that are accessible only to individuals authorized to handle or use them, or to work in the vicinity of the containers.

Section 20.1906 requires licensees to establish and maintain procedures for receiving and opening packages containing radioactive material. Guidance for developing procedures to implement these requirements is provided in NRC Regulatory Guide 7.3, "Procedures for Picking Up and Receiving Packages of Radioactive Material. The licensee is also required to ensure that the procedures are followed and that due consideration is given to special instructions for the type of package being opened.

As a minimum, all packages known to contain radioactive material must be monitored for radioactive contamination and radiation levels if there is evidence of degradation of package integrity, such as packages that are crushed, wet, or damaged. The monitoring must be performed as soon as practical, but not later than 3 hours after receipt if received during normal working hours, or not later than 3 hours from the beginning of the next working day if received after working hours. If excessive radiation or contamination levels are found, the licensee must immediately notify the carrier and the NRC Regional office.

Licensees transferring special form sources in licensee-owned or licensee-operated vehicles to and from a work site are exempt from the contamination monitoring requirements of the regulation, but are not exempt from the requirement for measuring radiation levels to ensure that the source is still properly lodged in its shield. This provision could apply to certain types of X-ray fluorescence devices.

WASTE DISPOSAL
(10 CFR 20 Subpart K)

The disposal of NRC licensed material is a controlled process that requires the licensee to use one of the following procedures:

- Transfer to an authorized recipient
- Decay in storage
- Release in effluents within the limits in 10 CFR Part 1301
- Disposal by release into sanitary sewerage
- Treatment or disposal by incineration

Disposal of certain specified wastes as if they were not radioactive.

As specified in Section 20.2007, nothing in this subpart relieves the licensee from complying with other applicable federal, state, and local regulations governing any other toxic or hazardous properties of the radioactive materials that may be disposed of under this subpart. Depending on the type, activity, origin, physical state, and composition of the radioactive material being disposed of, the NRC, EPA, or both may have regulatory jurisdiction for disposal of wastes. The licensee is responsible for knowing and complying with the applicable regulations (NRC, EPA, Agreement States, and

local jurisdictions) for the waste it generates. Guidance on managing the hazardous waste aspects of mixed wastestreams is provided in the RCRA chapter of the SHEMG.

Section 20.2002 of 10 CFR Part 20 provides the method for obtaining NRC approval of proposed disposal procedures other than those authorized in the regulations. These procedures would also be used to gain approval of a proposal to treat radioactive waste by incineration.

Requirements governing disposal by release into sanitary sewerage are contained in Section 20.2003. These regulations:

- Require that the material be soluble, and
- Impose monthly concentration limits, and annual limits on the quantity of radioactive material that can be disposed to the sewer.

In addition to NRC regulatory standards, local sewer use ordinances should be consulted to determine if special discharge notifications or discharge limitations are imposed on radiological wastewater contributions to the sanitary sewer.

Guidance: EPA facilities should institute a disposal log system for radioactive waste discharges to the sanitary sewer. Disposal logs such as Exhibit 2 to this chapter should be used to collect information on the following:

- Type and activity levels of radioactive material discharges
- Quantity of discharges
- Date of discharges
- Monthly roll-up of discharge quantities.

The laboratory's Radiation Safety Manual or separate memoranda should establish and communicate a formal policy to ensure conformance with sewer disposal log completion procedures and documentation requirements.

Section 20.2004 establishes requirements for treatment or disposal of licensed material by incineration. As it applies to most EPA facilities, incineration would only be permitted for liquid

RECORDS

(10 CFR 20 Subpart L)

Subpart L of 10 CFR Part 20 contains a number of requirements related to radiation safety program records. Section 20.2101 specifies standard units of measure that must be used in recording certain numerical values, and requires that clear distinctions be made in records among the various quantities required to be recorded.

Section 20.2102 stipulates that licensees maintain records radiation of protection programs, including provisions of the program which must be maintained until the license is terminated, and records of audits of the program which must be maintained for three years.

Section 20 2103 requires the facility to maintain records of the results of surveys and calibrations required by Sections 20.1501 and 20.1906(b) for three years. The following records must be retained until the Commission terminates the license requiring the record:

- Results of surveys to determine the dose from external sources if used in the absence of or in combination with individual monitoring data, in the assessment of individual dose equivalents
- Results of measurements and calculations used to determine individual intakes of radioactive material and in the assessment of internal dose
- Results of air sampling, surveys, and bioassays required pursuant to Section 20.1703(a)(3) (i) and (ii)
- Results of measurements and calculations used to evaluate the release of radioactive effluents.

Section 20.2104 requires that a good faith effort be made to obtain records of prior occupational dose for each individual that is allowed to enter a restricted area. Whether records can be obtained or not, a determination of year to date exposure is required.

The licensee may accept, as a record of the occupational dose that the individual received during the current year, a written signed statement from the individual, or from the individual's most recent employer for work involving radiation exposure, that discloses the nature and the amount of any occupational dose that the individual may have received during the current year. It is also permissible to obtain reports of the individual's dose equivalent(s) from the most

recent employer for work involving radiation exposure, or the individual's current employer (if the individual is not employed by the licensee) by telephone, telegram, electronic media, or letter.

This section also requires licensees to record the exposure history of each individual on NRC Form 4, or other clear and legible record. The form or record must show each period in which the individual received occupational exposure to radiation or radioactive material and must be signed by the individual who received the exposure.

Section 20.2105 contains requirements for records of planned special exposures. In the highly unlikely event that a planned special exposure occurs at an EPA facility, this section of the regulations should be consulted.

Section 20.2106 requires each licensee to maintain records of doses received by all individuals for whom monitoring was required. These records must include, when applicable:

- The deep-dose equivalent to the whole body, eye dose equivalent
- Shallow-dose equivalent to the skin, and shallow-dose equivalent to the extremities
- The estimated intake or body burden of radionuclides, the committed effective dose equivalent assigned to the intake or body burden of radionuclides, the specific information used to calculate the committed effective dose equivalent, and the total effective dose equivalent when required by Section 20.1202
- The total of the deep-dose equivalent and the committed dose to the organ receiving the highest total dose.

This section also specifies that record entries are to be made at least annually and be recorded on NRC Form 5 or equivalent. It further requires that records of dose to an embryo/fetus with the records of dose to the declared pregnant woman. The declaration of pregnancy shall also be kept on file, but may be maintained separately from the dose records.

Additional records include the Section 20.2107 requirement to maintain records until license termination sufficient to demonstrate compliance with the dose limits for individual members of the public. Section 20.2108 requires records of waste disposal.

REPORTS

(10 CFR 20 Subpart M)

Subpart M of 10 CFR Part 20 specifies the requirements for reporting to NRC, namely:

- Theft or loss of licensed material (Section 20.2201)
- Events involving byproduct, source, or special nuclear material possessed by the licensee that may have caused or threaten to cause radiation exposures to individuals in excess of limits (Section 20.2002)
- Reports of exposures, radiation levels, and concentrations of radioactive material exceeding limits (Section 20.2203)
- Reports of planned special exposures (Section 20.2004)
- Reports of individual monitoring (Section 20.2006).

Depending on the potential severity of an event, some incidents require immediate telephone reporting with follow-up written reports, while others require only written reports within a specified time interval.

Because these regulations are extremely detailed and many apply only to certain types of licensees or under specified conditions, each EPA facility should review them carefully for applicability and include procedures for implementing them in the laboratory's Radiation Safety Manual.

Section 7-07
Reporting of Defects and Non-Compliance - 10 CFR Part 21

The regulations at 10 CFR Part 21 apply to all licensees and certain unlicensed vendors. The requirements of this part are intended to ensure that equipment deficiencies or failures that could create a substantial safety hazard are reported to the NRC. The reporting enables the NRC to determine if a defect is generic in nature so that appropriate measures can be taken to ensure protection of public health and safety.

EVENTS OR
CONDITIONS THAT
REQUIRE REPORTING
(10 CFR 21.1)

Reporting of noncompliance is required if a facility, activity, or basic component fails to comply with the Atomic Energy Act or any NRC rule, regulation, order, or license related to substantial safety hazards.

Reporting of defects is required if a facility, activity, or basic component contains defects which could create a substantial safety hazard.

A substantial safety hazard means the loss of a safety function to the extent that there is a major reduction in the degree of protection provided to ensure public health and safety. A substantial safety hazard exists if there is a potential for moderate exposure to, or release of, licensed material.

Guidelines for determining moderate exposure are as follows:

- Greater than 25 rem (whole body or its equivalent to other body parts) to occupationally exposed workers in a period of a year or less
- Exposure of 0.5 rem (whole body or its equivalent to other body parts) to an individual in an unrestricted area in a period of a year or less.

A guideline for determining potential for release of licensed material is as follows:

- Release of materials in amounts reportable under the provisions of 10 CFR 20.2203(a)(3)(ii).

It is unlikely that an EPA facility would ever encounter a situation that would meet the definition of "substantial safety hazard."

However, some devices containing relatively high activity sealed radioactive sources, such as certain X-ray fluorescence equipment, could cause radiation exposures that would meet the criteria for reporting if a design or manufacturing defect were present.

**REPORTING
PROCEDURES**
(10 CFR 21.21)

Defects and noncompliance must be evaluated to determine whether or not a substantial safety hazard exists as soon as practicable and, in all cases, within 60 days of discovery.

If the evaluation above cannot be completed within 60 days, an interim report should be prepared and submitted to the NRC through the director or responsible officer of the facility. This interim report should:

- Describe the defect or noncompliance that is being evaluated
- State when the evaluation will be completed
- Be submitted in writing within 60 days of discovery.

The facility director or responsible officer must be informed as soon as practicable, and in all cases, within five working days after the completion of the evaluation if a defect or noncompliance exists.

The facility director or responsible officer must notify the NRC when he or she obtains information indicating a defect or noncompliance as follows:

- Initially, by facsimile at (301) 816-5151 or by telephone at (301) 816-5100 within two days following receipt of the information by the director or responsible officer
- Written notification within 30 days following receipt of the information by the director or responsible officer.

The written report by the director or responsible officer must include the following:

- Name and address of the individual or individuals informing the NRC

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- Identification of the facility, activity, or basic component which contains the defect or noncompliance
- Nature of the defect or noncompliance and the safety hazard which is created or could be created
- The date on which the information of the defect or noncompliance was obtained
- In the case of a basic component, the number and location of all such components in use at the facility
- The corrective action that has been, is being, or will be taken; the name of the individual responsible for the action; and the length of time that has been or will be taken to complete the action
- Any advice related to the defect or noncompliance that has been, is being, or will be given to purchasers or licensees.

**PROCUREMENT
DOCUMENTS**
(10 CFR 21.31)

Procurement documents must indicate that the provisions of 10 CFR Part 21 apply, when the procurement is for items or services that are associated with licensed activities, and in which a defect or failure to comply with any NRC requirement could create a substantial safety hazard.

**MAINTENANCE OF
RECORDS**
(10 CFR 21.51)

A written record of evaluations of all defects and noncompliance identified by the facility must be prepared and maintained for a minimum of five years.

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Section 7-08
Rules of General Applicability to Domestic Licensing of
Byproduct Material -10 CFR Part 30

GENERAL
REQUIREMENTS FOR
BYPRODUCT
LICENSES
(10 CFR Part 30)

Part 30 prescribes rules applicable to facilities that manufacture, produce, transfer, receive, acquire, own, possess, or use byproduct material. The regulations in this part describe types of licenses and procedures for obtaining licenses. In addition, there are requirements for the renewal and amendment of an existing license.

The application procedures for a specific license are addressed in Part 30.32 and include:

- Preparing and submitting to the NRC the application in duplicate on NRC Form 313, "Application for Material License," in accordance with the instructions in 10 CFR 30.6
- For an application involving a sealed source or device that contains a sealed source, identifying the source or device by manufacturer and model number as registered with the NRC
- Having the application signed by the applicant, licensee or duly authorized person
- Arranging for payment of the application fee
- Answering any questions the NRC has to assist them in determining whether the application should be granted or whether a license should be modified or revoked.

Renewals are filed on NRC Form 314 and amendments on NRC Form 313; these are filed in accordance with 10 CFR 30.32.

Apart from licensing procedures, Part 30 contains requirements regarding notification to the NRC and record keeping. The NRC must be notified of changes in emergency plans, license expiration, and contamination events. Records must be maintained that are important to decommissioning, and that show the receipt, transfer, and disposal of licensed byproduct material.

TYPES OF LICENSES
(10 CFR 30.31)

Licenses for byproduct material are of two types: general and specific. Specific licenses are issued to named persons upon applications filed pursuant to the regulations in 10 CFR Parts 30, 32 through 36, and 39. 10 CFR Part 30 primarily establishes generic license application procedures, notification, and recordkeeping requirements, whereas Parts 32 through 36 and 39 contain supplementary technical license requirements for different types of byproduct material uses and applications. General licenses are effective without the filing of applications to the NRC or the issuance of licensing documents to particular persons.

EPA facility licenses typically contain several standardized conditions that are adopted from the general license requirements in 10 CFR Part 31. In particular, licenses authorizing the use of sealed sources for use in calibration and analytical equipment frequently incorporate requirements for conducting leak tests and physical inventories on a semiannual basis. Further, records of these activities must be retained pursuant to license compliance for three years after the next required leak test or the byproduct materials are transferred or disposed.

Guidance: EPA facilities should identify the required frequency for performing leak tests and physical inventories under the conditions of their NRC license. A scheduling and "tickler" system should be instituted to ensure conformance with established frequency requirements for performing leak tests and physical inventories. Documentation of these activities should also be maintained, preferably in chronological order, to substantiate compliance with license requirements and to facilitate effective review of program records in the event of an NRC inspection.

SITUATIONS
REQUIRING A
LICENSE
AMENDMENT

(10 CFR Part 30, Sections
30.32, 30.33, and 30.34)

The application and supporting documents provided to the NRC for a license to conduct licensed activities normally become incorporated into the license by reference. Approval of the license is contingent upon the laboratory operating in accordance with these representations. Unless the license states otherwise, the laboratory must operate in accordance with the procedures and equipment as described in the original license application until such time as the laboratory provides changes to the NRC and receives written approval to institute the changes.

Common errors made by byproduct licensees involving failure to apply for a license amendment or renewal include:

- Implementing personnel changes in key positions such as the Radiation Safety Officer
- Inattention to the license expiration date resulting in failure to file a timely renewal application
- Relocating or expanding the use or storage of radioactive material to buildings, rooms, or areas that were not specified in the original license application
- Replacing a device containing a sealed radioactive source with a model, or one made by a different manufacturer, other than as specified in the original license application
- Changes in mission or initiation of new projects that necessitate using different isotopes or larger quantities of radioactive material than currently specified in the license
- Implementing revisions to the facility Radiation Safety Manual, or other procedures that were submitted with the license application and incorporated into the license by reference, without prior NRC approval.

**PROCEDURES FOR
APPLYING FOR A
LICENSE RENEWAL
OR AMENDMENT**

(10 CFR Part 30, Sections 30.32, 30.37, and 30.38)

The major points to remember in filing for a license renewal are that:

- Renewals are to be filed on Form NRC 314. Even though the NRC has acted upon renewals filed by letter rather than the form, the form is specified as the renewal mechanism in 10 CFR Parts 30.32 and 30.37. NRC staff have indicated that they prefer the form to be used for renewals
- Renewals filed not less than 30 days prior to expiration remain in effect until the NRC acts on the renewal application.

Failure to file a timely license renewal may place the laboratory in the position of operating without a license. This can be grounds for revocation of the license.

Renewal applications require re-submittal of all information required for an initial license application. NRC Regulatory Guide 10.7, "Guide for the Preparation of Applications for Licenses for Laboratory and Industrial Use of Small Quantities of Byproduct Material," specifies the types and level of detail of information that are considered acceptable by the NRC staff for providing them with sufficient information to make determinations on license applications for the types of activities with radioactive materials encountered at EPA facilities.

Guidance: Prospective NRC licensees and EPA facilities with existing NRC licenses should consult with Exhibit 3, Licensing Process, when determining license application, amendment, and renewal requirements under the NRC regulations.

The major points to remember in filing for a license amendment are that:

- Amendments are to be requested using Form NRC 313. Even though the NRC has acted upon amendments filed by letter rather than the form, the form is specified as the amendment mechanism in 10 CFR Parts 30.32 and 30.38. Discussions with the NRC staff has indicated that they prefer the use of the form for amendments
- Amendments should be filed in a timely manner.

The facility should specify both the changes desired in the license and the reasons for the changes in the amendment application. The changes must not be implemented until the amendment is approved by the NRC. When a change has been forced by events not under the control of the licensee, a telephone call to the NRC Regional Office (followed up by an amendment application) is recommended to preclude being cited for a violation of the license.

No fee is required to accompany an application for renewal or amendment of a license, except as provided in 10 CFR 170.31.

The individual preparing the license application should ensure that representations and information provided with the application are correct and complete since both may be incorporated into the license by reference.

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For an application for an NRC license to be approved, including all renewal and amendment applications, the application must address the following:

- The application is for a purpose authorized by the AEA
- Proposed equipment and facilities for the proposed licensed activities are adequate to protect health and minimize danger to life or property
- Training and experience of proposed users are adequate
- The proposed use will not significantly affect the environment; if a significant effect is expected additional requirements must be met.

**REPORTING
REQUIREMENTS**

(10 CFR Part 30, Sections
30.50 and 30.55)

This section of 10 CFR Part 30 requires licensees to report certain incidents involving radioactive material to the NRC. Licensees are required to notify the NRC as soon as possible, but not later than 4 hours after the discovery of an event that prevents immediate protective actions necessary to avoid exposures to radiation or radioactive materials that could exceed regulatory limits, or releases of licensed material that could exceed regulatory limits (events may include fires, explosions, toxic gas releases, etc.).

Licensees are also required to notify the NRC within 24 hours after the discovery of any of the following events involving licensed material:

- An unplanned contamination event that requires access to the contaminated area, by workers or the public, to be restricted for more than 24 hours, involves a quantity of material greater than five times the lowest annual limit on intake specified in Appendix B of 10 CFR Part 20
- An event that requires unplanned medical treatment at a medical facility of an individual with spreadable radioactive contamination on the individual's clothing or body
- An unplanned fire or explosion damaging any licensed material or any device, container, or equipment containing licensed material when the quantity of material involved is

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greater than five times the lowest annual limit on intake specified in appendix B of 10 CFR Part 20 and the damage affects the integrity of the licensed material or its container

Initial notification is to be made by telephone to the NRC Operations Center. To the extent that the information is available at the time of notification, the information provided in these reports must include the caller's name and call back telephone number, a description of the event, including date and time, the exact location of the event, the isotopes, quantities, and chemical and physical form of the licensed material involved, and any personnel radiation exposure data available. A written follow-up report is required within 30 days.

Licensees authorized to possess tritium are also required to report promptly by telephone any incident involving a known or suspected attempt to commit a theft or unlawful diversion of more than 10 curies of such material at any one time or more than 100 curies of such material in any one calendar year. The initial report shall be followed within fifteen (15) days by a written report submitted to the appropriate NRC Regional Office which sets forth the details of the incident and its consequences

Guidance: Guidance for internal reporting within EPA and for consultation prior to notifying NRC is contained in the SHEMG, Chapter 38, "Radiation Safety and Health Protection Program. The guidance calls for internal reporting of a broader range of occurrences than is required by NRC regulations.

**TRANSFERS OF
LICENSED MATERIAL**
(10 CFR Part 30, Sections
30.41 and 30.51)

Section 30.41 of 10 CFR Part 30 prohibits the transfer of licensed material to any individual or organization that is not authorized to receive it, and contains specific methods that licensees are required to use to verify that the intended recipient is authorized prior to making the transfer. In general, it is necessary to obtain a copy of the intended recipient's license, certification from the recipient that they are authorized to receive the material, or confirmation from the appropriate licensing authority (NRC or Agreement State) that the recipient is authorized.

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Section 30.51 requires licensees to maintain records of the receipt, transfer, and disposal of byproduct material. Unless otherwise specified in a specific facility license:

- Records or receipt of byproduct material must be maintained for at least three years following transfer or disposal of the material
- Records of disposal must be retained until NRC terminates the license.

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Section 7-09
General Domestic Licenses for Byproduct Material - 10 CFR Part 31

**GENERAL DOMESTIC
LICENSES FOR
BYPRODUCT
MATERIAL**
(10 CFR Part 31)

10 CFR Part 31 establishes general licenses for the possession and use of byproduct material contained in certain items and a general license for ownership of byproduct material. This part also describes the requirements of each of the general licenses, and the records that must be maintained for measuring, gauging, and controlling devices as described by the general license.

**ITEMS AND
MATERIALS LICENSED**
(10 CFR Part 31 Sections
31.3, 31.5, and 31.8)

A general license for byproduct material is any license granted by 10 CFR Part 31. General licenses are granted by the regulation itself, without application to NRC, and there will not usually be any documentation at the facility to indicate that the general license exists.

A general license permits laboratories to transfer, receive, acquire, own, possess, and use byproduct material that is incorporated in static elimination devices and ion generating tubes.

A general license permits laboratories to transfer, receive, acquire, own, possess, and use byproduct material contained in devices designed and manufactured for the purpose of detecting, measuring, gauging or controlling:

- Thickness
- Density
- Level
- Interface location
- Radiation
- Leakage
- Qualitative or quantitative chemical composition
- Producing light or an ionized atmosphere.

A general license also allows laboratories to own, receive, acquire, possess, use and transfer americium-241 in the form of calibration or reference sources. However, this applies only to persons in a non-Agreement State or any government agencies that hold a specific license issued pursuant to 10 CFR Part 30.

**TERMS AND
CONDITIONS OF
LICENSE**

(10 CFR Part 31 Sections
31.3, 31.5, and 31.8)

Static elimination devices must not contain more than 500 microcuries of polonium-210 per device. Ion generating tubes must not contain more than 500 microcuries of polonium-210 per device or more than 50 millicuries of tritium per device.

Measuring, gauging and controlling devices are required to meet the following conditions:

- Labels, which bear the statement that removal is prohibited, cannot be removed from the device
- Instructions and precautions provided on the labels must be implemented
- The device must be tested for leakage and proper operation of the on-off mechanism and indicator, if any, at no longer than 6-month intervals or as indicated on the label. This does not apply to devices containing krypton; tritium; not more than 100 microcuries of other beta and/or gamma emitting material; or not more than 10 microcuries of alpha emitting material. Additionally, this does not apply to devices being held in their original shipping container
- Testing, installation, servicing, and removal from installation involving the radioactive material, its shielding or containment shall be performed either in accordance with label instructions or by a person holding a specific license to perform such activities
- Records showing compliance with the activities indicated above are to be maintained as specified in the following section
- Upon failure of or damage to the shielding or on-off mechanism or upon detection of 0.005 microcurie or more of removable radioactive material, the device will be

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removed from service until repaired by the manufacturer or person holding a specific license for repairs; or disposed of by transfer to a person holding a specific license to receive the material contained in the device

- Such failure, damage or leakage must be reported to the NRC Regional Office within 30 days
- The device must not be abandoned or exported
- Transfer or disposal of the device is only by transfer to a person having specific license pursuant to 10 CFR Parts 30 and 32
- Such transfer, unless to receive a replacement device, must be reported to the NRC Regional Office within 30 days
- Transfer to another general licensee can only occur if the device remains in use or is held in storage in the original shipping container.

There must be no more than five microcuries of americium-241 in any one location of storage or use. In addition, the source or storage container for americium-241 must bear a label containing the following statement:

- The receipt, possession, use and transfer of this source, Model --, Serial No. --, are subject to a federal license and the regulations of the United States Nuclear Regulatory Commission or of a State with which the Commission has entered into an agreement for the exercise of regulatory authority. Do not remove this label.

**CAUTION- RADIOACTIVE MATERIAL - THIS
SOURCE CONTAINS AMERICIUM-241. DO NOT
TOUCH RADIOACTIVE PORTION OF THIS SOURCE.**

----- (Name of manufacturer or initial transferor)

Americium-241 must be handled as follows:

- The source shall not be transferred, abandoned, or disposed of except by transfer to a person authorized by 10 CFR Part 31.8 or an Agreement State

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- The source must be stored in a closed container that is adequately designed and constructed
- The source cannot be used for purposes other than calibration of radiation detectors or the standardization of other sources.

Manufacture, import, and export of americium-241 are not authorized by the general license.

**RECORDS FOR
MEASURING,
GAUGING, OR
CONTROLLING
DEVICES**
(10 CFR Part 31.5)

Records must show the names of persons performing, and dates of, testing, installing, servicing, and removing radioactive material and its shielding from the facility

Unless the source or device has been transferred or disposed of, records must be retained as follows:

- Each record of a test for leakage or radioactive material must be retained for three years after the next required leak test
- Each record of a test of the on-off mechanism and indicator must be retained for three years from the date of the recorded event.

Section 7-10
Specific Domestic Licenses of Broad Scope for Byproduct Material - 10 CFR Part 33

**SPECIFIC DOMESTIC
LICENSES OF BROAD
SCOPE**
(10 CFR Part 33)

Part 33 prescribes requirements for the issuance of specific licenses of broad scope for byproduct material and certain regulations governing holders of such licenses. The provisions of this part are in addition to, but do not substitute, the regulations in 10 CFR Part 32.

**TYPES OF SPECIFIC
LICENSES**
(10 CFR Part 33.11)

There are three types of licenses specified in 10 CFR 33.11. They differ by form of byproduct material and quantity allowable by the license. Laboratories must base their choice upon the type and quantity of byproduct material they expect to need for the accomplishment of their mission.

A "Type A specific license of broad scope" authorizes receipt, acquisition, ownership, possession, use, and transfer of any chemical or physical form of the byproduct material specified in the license, but not exceeding quantities specified in the license. The quantities specified are usually in the millicurie range.

A "Type B specific license of broad scope" authorizes receipt, acquisition, ownership, possession, use, and transfer of any chemical or physical form of the byproduct material specified in 10 CFR Part 33.100, Schedule A. The possession limit for a Type B broad license is as follows:

- If only one radionuclide is possessed, the limit is the quantity specified for that radionuclide in 10 CFR Part 33.100, Schedule A, Column I
- If two or more radionuclides are possessed, the limit must be found deterministically. For each radionuclide, determine the ratio of the quantity possessed to the applicable quantity specified in 10 CFR Part 33.100, Schedule A, Column I, for that radionuclide. The sum of the ratios for all radionuclides possessed must not exceed unity.

A "Type C specific license of broad scope" authorizes receipt, acquisition, ownership, possession, use, and transfer of any

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chemical or physical form of the byproduct material specified in 10 CFR Part 33.100, Schedule A. The possession limit for a Type C broad license is as follows:

- If only one radionuclide is possessed, the limit is the quantity specified for that radionuclide in 10 CFR Part 33.100, Schedule A, Column II
- If two or more radionuclides are possessed, the limit must be found deterministically. For each radionuclide, determine the ratio of the quantity possessed to the applicable quantity specified in 10 CFR Part 33.100, Schedule A, Column II, for that radionuclide. The sum of the ratios for all radionuclides possessed must not exceed unity.

As shown by these characteristics, the Type A license has the broadest range for tailoring the license authorizations to the laboratory's needs. The Type B license provides for a broad range of radionuclides but has limitations on the quantities that may be possessed. The Type C license has a similar broad range but provides for only 1/100th of the quantity that may be possessed under a Type B license.

**TERMS AND
CONDITIONS OF
SPECIFIC LICENSES**
(10 CFR Part 33.17)

Unless specifically authorized pursuant to other parts of 10 CFR, laboratories licensed under broad scope shall not perform the following activities:

- Conduct tracer studies in the environment involving direct release of byproduct material
- Receive, acquire, own possess, use, transfer, or import devices containing 100,000 curies or more of byproduct material in sealed sources used for irradiation of materials
- Conduct activities for which a specific license issued by NRC under 10 CFR Parts 32, 34, or 35 is required
- Add or cause the addition of byproduct material to any food, beverage, cosmetic, drug or other product designed for ingestion or inhalation by a human being.

Type A licenses allow byproduct material to be used only by individuals approved by the Radiation Safety Committee. Similarly, Type B licenses allow byproduct material to be used only by or in direct supervision of the RSO. Byproduct material in a Type C license may only be used by individuals who satisfy the requirements of 10 CFR Part 33.15.

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Section 7-11
Domestic Licensing of Source Material - 10 CFR Part 40

DOMESTIC LICENSING
OF SOURCE
MATERIAL
(10 CFR Part 40)

The regulations in 10 CFR Part 40 establish procedures and criteria for the issuance of licenses to receive title to receive, possess, use, transfer, or deliver source and byproduct materials. The regulations in this part also establish requirements for the physical protection of import, export, and transient shipments of natural uranium. Licenses for source material and byproduct material are of two types: general and specific.

GENERAL LICENSES
(10 CFR Parts 40.25 and
40.26)

Licenses for long-term care and custody of residual radioactive material at disposal sites are general licenses. General licenses are effective without the filing of applications with NRC.

A general license allows use and transfer of not more than 15 pounds of source material at any one time for research development, educational, commercial, or operational purposes. If authorized to transfer pursuant to this license, more than 150 pounds of source material cannot be received in any one year.

A general license is also offered for the possession of a transient shipment of natural uranium, other than in the form of ore or ore residue, in amounts exceeding 500 kilograms. NRC must be notified of transient shipments and include the information required in 10 CFR Part 40.23.

A general license under 10 CFR Part 40 permits EPA facilities to receive, acquire, possess, use, or transfer depleted uranium contained in industrial products or devices for the purpose of providing a concentrated mass in a small volume of the product or device. Form NRC 244 must be filed as specified in 10 CFR Part 40.25. Activities under this general license must include the following:

- Depleted uranium shall not be introduced into a chemical, physical, or metallurgical treatment or process
- Depleted uranium cannot be abandoned
- Transfer or disposal must only be by transfer in accordance with 10 CFR Part 50.51

Atomic Energy Act

- Within 30 days of any transfer, a report should be filed in writing to NRC.

A general license also allows EPA facilities to receive title to own or possess byproduct material as defined in 10 CFR Part 40.26 without regard to form or quantity

SPECIFIC LICENSES
(10 CFR Parts 40.31 and
40.34)

Specific licenses for source material are issued upon applications filed pursuant to the regulations in 10 CFR Part 40. Applications are filed by using Form NRC 313.

Each application to possess uranium hexafluoride in excess of 50 kilograms in a single container or 100 kilograms total requires a specific license and must contain the information specified in 10 CFR Part 40.31.

Each application for a specific license to manufacture industrial products and devices containing depleted uranium must contain the information specified in 10 CFR Part 40.34.

**CONDITIONS OF
SPECIFIC LICENSES**
(10 CFR Part 40.35)

The following apply to the terms and conditions specified under specific licenses issued pursuant to 10 CFR Part 40:

- The level of quality control required by the license in the installation of the depleted uranium into the product or device must be maintained
- Each unit must be labeled to identify the manufacturer of the device; the number of the license which the device was manufactured or initially transferred; the fact that the device contains depleted uranium; the quantity of depleted uranium in the device; and that the device is subject to a general license
- Before being installed in each device, "Depleted Uranium" must be impressed through plating or covering
- A copy of the general license and of Form NRC 244 must be furnished to each person to which source material is being transferred

- All transfers must be reported to the Director, Office of Nuclear Material Safety and Safeguards, NRC and responsible Agreement State Agency, if applicable

Records must be kept showing the name, address, and a point of contact for each general license to whom depleted uranium is transferee.

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Section 7-12
Domestic Licensing of Special Nuclear Material - 10 CFR Part 70

**DOMESTIC LICENSING
OF SPECIAL NUCLEAR
MATERIAL**
(10 CFR Part 70)

The regulations at 10 CFR Part 70 establish procedures and criteria for the issuance of licenses to receive title to, own, acquire, deliver, receive, possess, use, and transfer special nuclear material. Licenses of special nuclear material are of two types: general and specific; the different licenses are described in this section.

Special nuclear material is defined in 10 CFR Part 70, Section 70.4, and means (1) plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the NRC, pursuant to the provisions of the Atomic Energy Act, determines to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material.

GENERAL LICENSES
(10 CFR Part 70.19)

A general license provided in 10 CFR Part 70 is effective without the filing of applications with NRC or the issuance of licensing documents.

For a laboratory that holds a specific license issued by NRC that authorizes receipt, possession, use, or transfer of byproduct material, source material, or special nuclear material, a general license is issued to receive title to, own, acquire, deliver, receive, possess, use, and transfer plutonium in the form of calibration or reference sources. This general license applies only to calibration or reference sources which have been manufactured or initially transferred in accordance with the specifications contained in a specific license, and does not authorize the manufacture, import, or export of calibration or reference sources containing plutonium.

Plutonium calibration sources are the major form of special nuclear material likely to be used by EPA facilities. Even when used under general license, facility personnel need to be aware that they must comply with the conditions of license specified in the regulations:

- The general license is subject to the provisions of Sections 70.32, 70.50, 70.51, 70.52, 70.55, 70.56, 70.61, 70.62, and 70.71, and to the provisions of 10 CFR Parts 19, 20 and 21

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- Possession, at any one time, at any one location of storage or use, of more than 5 microcuries of plutonium in such sources is prohibited
- Receipt, possession, use or transfer of such sources is prohibited unless the source, or the storage container, bears a label which includes the following statement or a substantially similar statement which contains the information:

"The receipt, possession, use and transfer of this source, Model ---, Serial No. ---, are subject to a general license and the regulations of the United States Nuclear Regulatory Commission or of a State with which the Commission has entered into an agreement for the exercise of regulatory authority. Do not remove this label."

**CAUTION-RADIOACTIVE MATERIAL-THIS SOURCE
CONTAINS PLUTONIUM. DO NOT TOUCH RADIOACTIVE
PORTION OF THIS SOURCE.**

(Name of Manufacturer or Initial Transferor)

- Sources shall not be transferred, abandoned, or disposed of except by transfer to a person authorized by a license from the NRC or an Agreement State to receive the source
- Except when the source is being used, it must be stored in a closed container adequately designed and constructed to contain plutonium which might otherwise escape during storage
- The source must not be used for any purpose other than the calibration of radiation detectors or the standardization of other sources.

SPECIFIC LICENSES
(10 CFR Parts 70.32 and
70.39)

The majority of EPA analytical and research operations will not require a specific license for special nuclear material. Requirements for specific licenses are described in 10 CFR Part 70, and are issued upon applications filed pursuant to the regulations. Guidance for preparing applications for special nuclear material licenses of less than critical mass quantities are available in Regulatory Guide 10.3.

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If the laboratory were to hold a license to possess and use special nuclear material in a quantity exceeding one effective kilogram, except for use as sealed sources, it must maintain and follow:

- A program for control and accounting of special nuclear material pursuant to 10 CFR Parts 70 and 74
- A measurement control program for special nuclear material pursuant to 10 CFR Parts 70 and 74
- Records of changes to the material control and accounting program made without prior NRC approval for a period of five years from the date of the change. A report is required: within two months if the change pertains to uranium-233, uranium enriched to 20 percent or more of uranium-235, or plutonium, except plutonium containing 80 percent or more by weight of the isotope 238; or within six months if the uranium enrichment is less than 20 percent, or plutonium has greater than 80 percent of plutonium-238
- A safeguards contingency plan pursuant to 10 CFR Part 32
- Reporting requirements pursuant to 10 CFR Part 70.50

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Section 7-13
Packaging and Transportation of Radioactive Material - 10 CFR Part 71

GENERAL
REQUIREMENTS FOR
TRANSPORTATION OF
LICENSED MATERIAL
(10 CFR Part 71, Sections
71.5, 71.10, 71.43 and
71.47)

10 CFR Part 71 is applicable to individuals who package licensed byproduct material and arrange for transportation to other locations beyond the laboratory boundary.

The laboratory staff must consider the requirements of 10 CFR Part 71 and Parts 20, 21, 30, 39, 40, 70, and 73, as appropriate, during packaging and transport of licensed material.

10 CFR Part 71, Section 71.5 requires that all shipments of licensed material comply with applicable requirements of Department of Transportation regulations in 49 CFR Parts 170 through 189. Even though some DOT regulations may not be strictly applicable because the shipment is not in interstate or foreign commerce or may not be transported by civil aircraft, the NRC regulations in Section 71.5 require that the shipment must conform to the DOT regulations to the same extent as if the regulations were applicable.

Exemptions to the 10 CFR Part 71 regulations are provided in Section 71.10 for a package containing radioactive material having a specific activity not greater than 0.002 microcuries/ gram, no more than a Type A quantity, or americium or plutonium in special form and limited quantity.

The general standards for packages addressed in Section 71.43 would normally be applicable to shipments received or made by EPA laboratories. The general standards for packages used to ship byproduct material address:

- Minimum outside package dimensions
- Indicators of tampering
- Internal containment systems
- Reactivity of package components and contents
- Restrictions and requirements related to features for venting
- Test standards.

Section 71.47 establishes standards for external radiation on packages. For EPA laboratory shipments, the radiation level must not normally exceed 200 millirem per hour at any point on the external surface of the package, and the transport index must not exceed 10.

**OPERATING
CONTROLS AND
PROCEDURES FOR
PREPARING
PACKAGES OF
LICENSED MATERIAL
FOR
TRANSPORTATION
(10 CFR 71 SubPart G)**

Subpart G of 10 CFR Part 71 provides regulatory standards on operating controls and procedures to be followed when shipping licensed material. These provisions apply to all licensees who transport licensed material or deliver licensed material to a carrier for transport. Several of the major requirements are addressed in the following paragraphs.

Section 71.85 requires that, prior to using a package to ship radioactive material, the package must be verified to be free of obvious defects and that required markings are present.

Section 71.87 requires that, prior to each shipment, the licensee must determine that the packaging is proper and in good condition for the contents to be shipped. External radiation levels must be within specified limits, and the level of removable contamination on the package surface must be as low as reasonably achievable. Sufficient wipe tests must be taken of the package to yield a representative assessment of the removable contamination. A table in this section or the regulations gives the limits on acceptable radioactivity as determined by these tests. NRC requires that instruments used to assess removable contamination or radiation levels on packages be calibrated for the type of measurement being performed, and sufficiently sensitive to detect contamination at the levels specified in the regulation.

Section 71.89 requires the shipper to ensure that any special instructions needed to open the package have been sent or otherwise made available to the consignee prior to delivery of the package to a carrier for transport.

Section 71.91 requires that records of license material shipments must be maintained for a period of at least three years after shipment. This section also specifies the minimum information that is required for these records.

NRC Regulatory Guide 7.7, "Administrative Guide for Verifying Compliance with Packaging Requirements for Shipments of Radioactive Material", provides recommendations for practices considered acceptable by the NRC for meeting the requirements of 10 CFR Part 71, Subpart G.

Atomic Energy Act

Section 7-14
Tables and Exhibits

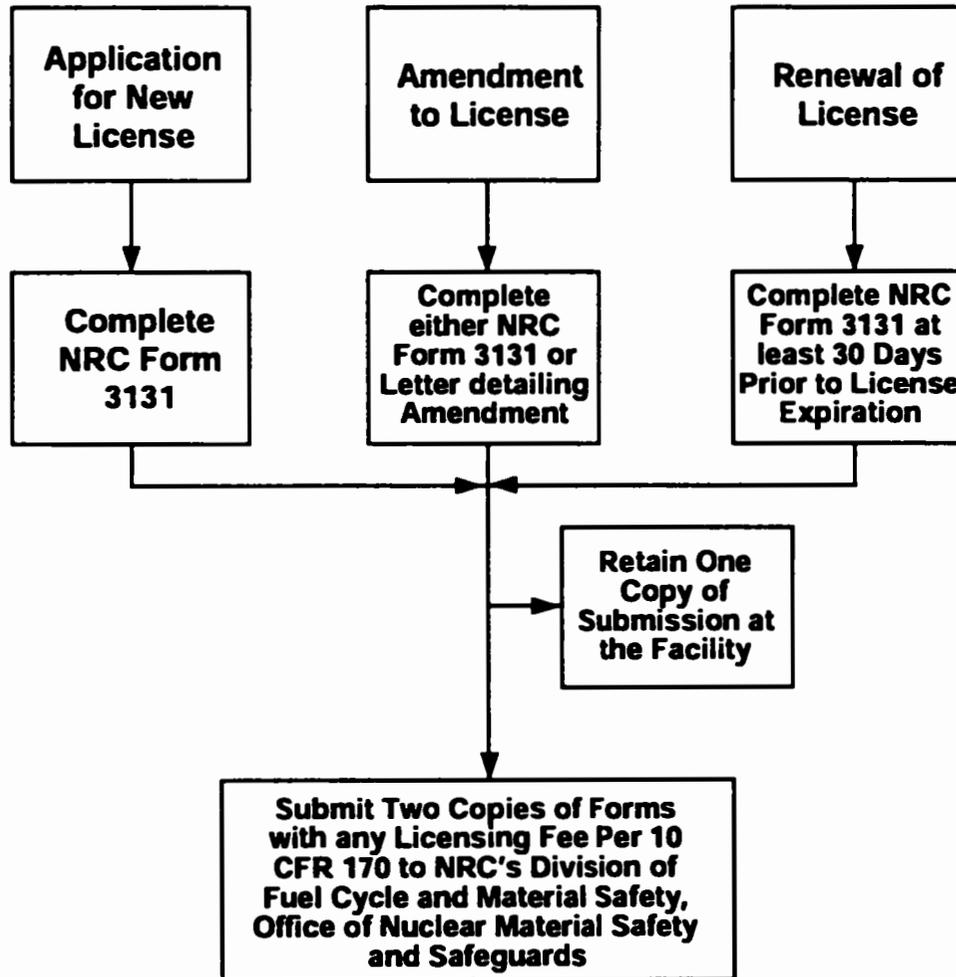
Exhibit 1
Radiation Safety Training Guidelines

Training Category	Training Audience/Frequency	Training Elements
<p>Basic Radiation Safety Training</p>	<ul style="list-style-type: none"> • Each worker prior to, or at the time of, enrollment into a formal monitoring and dosimetry program • Biennial refresher training 	<ul style="list-style-type: none"> • Overview of EPA and Laboratory Radiation Safety and Health Protection Program • Fundamentals of ionizing radiation and its biological effects • Basic concepts of radiological protection • Understanding of special considerations related to prenatal radiation exposure
<p>Advanced Radiation Safety Training</p>	<ul style="list-style-type: none"> • Initial training is mandatory for: <ul style="list-style-type: none"> - Individuals engaging in emergency response activities potentially involving ionizing radiation exposures - Individuals engaging in field work where significant potential for exposure exists - Immediate supervisors of field workers who routinely engage in assignments potentially involving ionizing radiation exposures - Individuals responsible for recognizing and requesting expert radiation safety and health physics support - Safety, Health and Environmental Management Program Managers and Radiation Safety Officers prior to assuming radiation program management duties • A biannual refresher course is recommended for the above categories of individuals. 	<p>The training objectives at the advanced level are to.</p> <ul style="list-style-type: none"> • Familiarize personnel with EPA and NRC-accepted procedures and techniques for conducting radiation surveys. Hands on familiarization with survey equipment and materials should be included • Educate personnel regarding the criteria for securing expert radiation safety or health physics consultation • Teach personnel to adopt work practices and supervisory techniques for ensuring that worker exposure is consistent with ALARA principles.

Exhibit 2
Sewer Disposal Inventory Log

Date of Disposal	Laboratory/ Room Number	Authorized User (Initials)	Radioscope/ Activity Level	Volume of Discharge
Monthly Totals (per individual radioisotope)				

Exhibit 7-3
NRC Licensing Process
(Per 10 CFR and Regulatory Guide 10.7)



**SAFETY, HEALTH, AND
ENVIRONMENTAL MANAGEMENT
PROGRAM GUIDE**

Guide No. 08

Issued 12/97

Revised _____

**FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT (FIFRA)
PROGRAM**

SCOPE OF THE PROGRAM

This Program Guide provides an overview of the requirements EPA facilities must fulfill to comply with the regulations, guidance, and procedures associated with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) of 1947, as amended. FIFRA gave EPA the statutory authority to regulate pesticides. All federal agencies must comply with the provisions of FIFRA. The major provisions of FIFRA are registration and classification procedures, disposal and storage of pesticides and containers, worker protection standards, the certification of pesticide applicators, and experimental use permits. Most EPA facilities contract pesticide services. EPA must ensure that all contractors comply with FIFRA. Contractors may store pesticides at an EPA facility and require EPA to dispose of the pesticides. Therefore, EPA facility staff must be familiar with the proper storage and disposal procedures. Although rare, some EPA laboratories experiment with pesticides. These facilities must follow registration and classification procedures and apply for experimental use permits.

REGULATORY REQUIREMENTS

The key or basic elements of the FIFRA Program required by law and/or EPA policy are to:

- Register applicable pesticide products
- Dispose of or store pesticides, pesticide containers, or pesticide container residue properly

- Specify appropriate training and certification requirements for all pesticide applicators in all service contracts
- Maintain documentation on-site verifying that commercial applicators have proper certification.

AUTHORITIES

The following documents are the sources of the legal authority that establishes the applicability and requirements of this program.

- 7 United States Code (USC) 136-136y, Federal Insecticide, Fungicide, and Rodenticide Act (1947) as amended in 1988
- Title 40 Code of Federal Regulations (CFR), Parts 150-172 (Pesticide Programs)
- *EPA Safety, Health, and Environmental Management Guidelines.*

REFERENCES

The documents listed below can help you implement the FIFRA program.

- North Carolina Agricultural Extension Service, Pesticides and Water Quality Fact Sheets
- State of Michigan, Office of Waste Reduction Services, Waste Reduction Checklist Fact Sheet

- California Department of Health Services, Toxic Substance Control Program Alternative Technology
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Docket (Pesticides Docket)
- Government Institutes, Inc., Environmental Law Handbook, 13th Edition, April 1995.

Participate in Agency-sponsored training forums and reviewing other training materials

Maintain an archive of FIFRA-related information that can be made available for public review.

IMPLEMENTATION ACTIVITIES

The following list gives an overview of the activities that this program will require. To implement and operate this program, you must:

Develop an on-site system for maintaining records of pesticide applications and applicator certificates

Provide EPA pesticide applicators or commercial pesticide contractors with compatibility information in selecting personal protective equipment (PPE)

Provide technical direction and input to support the implementation of integrated pest management (IPM) procedures

IMPLEMENTATION IMPLICATIONS

The management systems and internal controls required to implement this program include:

- Procedures to ensure that EPA pesticide applicators or commercial pesticide contractors register, store and dispose of pesticides properly
- A system to track pesticide applications at facilities
- Procedures to ensure that certifications for all pesticide applicators are current
- Procedures to determine if all pesticide applicators use the appropriate PPE
- A centralized FIFRA documentation archive
- FIFRA training to promote and ensure staff awareness and educate staff on specific implementation procedures.

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Section 08-02
Introduction

PURPOSE

This chapter provides policy, guidance, information and procedures for complying with federal, state, and local regulations on pesticide management.

SCOPE

This chapter addresses pesticide use at EPA facilities and covers both research involving pesticides and actual on-site pesticide applications.

AUTHORITY

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA); 40 CFR Parts 152-172; Executive Order 12088.

OBJECTIVES

The objectives of this chapter are to:

- Ensure that facility pesticide research and application operations conform to applicable federal, state, and local pesticide management regulations
- Increase awareness of FIFRA requirements to facilitate the implementation of effective management systems that minimize pesticide risks to EPA employees, facilities, and the environment
- Clarify selected aspects of the FIFRA standards applicable to EPA facilities.

RESPONSIBLE OFFICER

The use and disposal of pesticides at EPA facilities should be monitored by the Safety, Health, and Environmental Manager. For pesticide use that is related to research, the Safety, Health, and Environmental Manager should coordinate with the primary investigator on the project to ensure proper identification and classification of pesticide reagents and wastes.

REFERENCES

Topics discussed in this chapter were developed from the following sources:

Federal Insecticide, Fungicide, and Rodenticide Act

- 7 USC 136-136y, Federal Insecticide, Fungicide, and Rodenticide Act (1947) as amended in 1988
- 40 CFR Parts 152-172
- Preambles from proposed and final FIFRA regulations
- Environmental Law Handbook, Government Institutes, Inc. 13th Edition, April, 1995.

Section 08-03
Pesticide Registration and Classification Procedures - 40 CFR Part 152

INTRODUCTION

The requirements and criteria for the registration and re-registration of pesticide products under FIFRA section 3 and associated regulatory activities affecting registration are outlined in 40 CFR Part 152.

**PESTICIDE
REGISTRATION AND
CLASSIFICATION
PROCEDURES**

Pesticide products containing the active ingredients listed in Exhibit 08-1 at the end of this chapter have been classified for restricted use and are limited to use by or under the direct supervision of a certified applicator.

Guidance: EPA contract personnel should ensure that all pesticide service contracts specify the appropriate training and certification requirements for the pesticide applicators.

From analysis of EPA SHEMD audit reports and corrective action tracking information, certified applicators at EPA facilities primarily were found to support industrial, institutional, structural, and health-related pest control. Requisite training for these applicators includes:

- *Practical knowledge of a wide variety of pests, including their life cycles, types of formulations appropriate for their control and methods of application that avoid contaminating food, damaging and contaminating habitat, and exposing people and pets to the pesticides*
- *Practical knowledge of specific factors that may lead to a hazardous condition, including continuous exposure in the various situations encountered in this category*
- *Practical knowledge of the environmental conditions related to this particular activity.*

EPA contract personnel also should require that certified applicators provide a list of all pesticides to be used at the EPA facility, the corresponding MSDS for each pesticide, and a current list of references.

Section 08-04
Disposal and Storage of Pesticides and Containers - 40 CFR Part 165

INTRODUCTION

This part establishes regulations and procedures for the safe disposal or storage of packages and containers of pesticides, and for the safe disposal or storage of excess amounts of pesticides.

PROCEDURES NOT RECOMMENDED

EPA facilities should ensure that persons do not dispose of or store (or receive for disposal or storage) pesticides, pesticide containers, or pesticide container residue in a manner that:

- Is inconsistent with the manufacturer's product label
- Involves open dumping or open burning on land (unless allowed by state or local regulations)
- Involves discharge to publicly owned treatment works (POTWs) or navigable waters regulated by the Clean Water Act, unless the discharge is covered by, and in compliance with, applicable pretreatment standards or an National Pollution Discharge Elimination System (NPDES) permit
- Violates any applicable state or federal pollution control standard.

RECOMMENDED PROCEDURES FOR PESTICIDE DISPOSAL

Organic pesticides (not including organic mercury, lead, arsenic, and cadmium) should be disposed of by one of the options listed below:

- Incineration at a permitted treatment, storage, and disposal facility (TSDF) or municipal solid waste incinerator that meets the requirements for a pesticide incinerator and that ensures complete destruction, and is in compliance with Clean Air Act emission regulations
- Land disposal at specially designated landfills if incineration is not available.

Metallo-organic pesticides (not including mercury, lead, arsenic and cadmium) may be disposed of by one of the options listed below:

- Appropriate physical or chemical treatment to recover heavy metals, followed by incineration or land disposal if incineration is not available
- Other chemical degradation or deep well injection methods after consultation with the Regional Administrator.

All organic, inorganic, and metallo-organic pesticides including organic mercury, lead, arsenic, cadmium, and all inorganic pesticides may be disposed of by one of the options listed below:

- Chemical deactivation to convert the waste to nonhazardous with recovery of heavy metal compounds
- Encapsulation and burial in a specially designed landfill if chemical deactivation is not available.

DISPOSAL OF CONTAINERS

Pesticides come in various containers, including bags, boxes, and plastic buckets. After using all of the product, the containers may still have residues harmful to human health and the environment. Therefore, the containers need to be disposed of properly to mitigate any risks. Many of the pesticides only will be used in small quantities at EPA facilities and may be disposed of by contractors. EPA facilities should ensure through contractual language that these provisions are adhered to by the contractor.

Group 1 containers are combustible containers that previously contained organic or metallo-organic pesticides (not including organic mercury, lead, arsenic, or cadmium). These containers should be disposed of by one of the options listed below:

- Incineration in a pesticide incinerator
- Land disposed in a specially designated landfill if incineration is not available.

Group 2 containers are non-combustible containers that previously held organic or metallo-organic pesticides (not including organic mercury, lead, arsenic, or cadmium). These containers should be managed by one of the options listed below:

- Triple rinsing with an appropriate solvent and returning the containers in good condition to either the manufacturer or

to a drum reconditioner for reuse with the same chemical class of pesticide

- Triple rinsing with an appropriate solvent and puncturing them to allow drainage followed by transport to a facility for scrap metal recycling or disposal.

Group 3 containers are both combustible and non-combustible containers that previously contained organic mercury, lead, arsenic, or cadmium. These containers should be managed by:

- Triple rinsing with an appropriate solvent and puncturing them to allow drainage with final disposal in a sanitary landfill
- Encapsulating and burying them in a specially designated landfill if triple rinsing is not performed

STORAGE OF PESTICIDES AND CONTAINERS

Residues and rinse liquids should be added to spray mixtures in the field. If this is not appropriate, they should be disposed of in the manner prescribed for each of the above specified types.

These guidelines are applicable only to those pesticides classified as highly toxic or moderately toxic and whose labels are required to bear the signal words "danger," "poison," or "warning" or the skull and crossbones symbol. Home and garden pesticides, and pesticides classified as slightly toxic, are not covered under these guidelines. EPA should inventory and monitor its storage facilities even if pesticide application is performed by a contractor.

Storage Facilities

Pesticide storage facilities should be designed to ensure that:

- Pesticides are maintained in a well ventilated room or building that is equipped with fire protection
- Storage areas have adequate security with locks and fences
- Identification signs should be placed on rooms, buildings, and fences to advise of the contents and warn of hazardous nature
- Provisions for personnel and equipment decontamination are in place

- Washwater from decontamination procedures is collected and managed as a pesticide waste.

Operational Procedures

Storage areas should be operated to ensure that:

- Containers are stored with labels plainly visible
- Pesticides are segregated by formulation and stored under a sign with the name of the formulation
- Complete inventories with number and identity of containers in storage are maintained
- Containers are inspected regularly for corrosion and leaks, and absorbent spill materials are available.

Safety Measures

Pesticide storage areas should be managed to ensure that:

- Food, drink and tobacco products are not used or stored in the pesticide area
- Protective gloves are worn by personnel applying or handling pesticides (refer to Exhibit 08-2, Pesticide Compatibility Information Chart, at the end of this chapter for assistance in selecting gloves made from the proper material)
- Hand washing is required prior to eating or smoking and immediately after loading or transferring pesticides
- Periodic physical examinations are performed for personnel using organophosphate or N-alkyl carbamate.

Protective Clothing

Personnel handling or applying pesticides should be equipped with:

- Protective clothing when handling concentrated pesticides
- Respirators or gas masks when handling certain pesticides to protect from absorption of the pesticides through skin and inhalation of fumes. Respirators or gas masks with proper canisters approved for the particular type of exposure noted in the label directions should be used.

(Refer to Exhibit 08-2, Pesticide Compatibility Information Chart, for assistance in selecting protective clothing and respirators.)

**PESTICIDE -
RELATED WASTE
STORAGE AND
DISPOSAL**

All remaining wash water from rinsing pesticide containers and other pesticide-related waste should be managed as excess pesticides and disposed of as such. These wastes should not be disposed of by adding them to an industrial effluent stream if (1) like wastes are not already part of the effluent stream, and if (2) the addition would result in a violation of the standards established pursuant to sections 304 and 307 of the Federal Water Pollution Act as amended. Exhibit 08-3 at the end of this chapter provides a list of suggestions for safe storage.

Section 08-05
Worker Protection Standards and Certification of Pesticide Applicators -
40 CFR Parts 170-171

INTRODUCTION

Workplace practices designed to reduce the risks of illness or injury resulting from occupational exposure are discussed in 40 CFR Part 170. Requirements for certifying pesticide applicators are discussed in 40 CFR Part 171.

WORKER
PROTECTION
STANDARDS
SUBPART A -
PROVISIONS

Under FIFRA (7 U.S.C. 136 *et seq.*) section 12(a)(2)(6), it is unlawful for any person "to use any registered pesticide in a manner inconsistent with its labeling."

This part outlines the training and certification requirements for commercial applicators of restricted use pesticides.

CERTIFICATION OF
PESTICIDES
APPLICATORS

Guidance: EPA contract personnel should ensure that all pesticide service contracts specify the appropriate training and certification requirements for the pesticide applicators. Facilities should maintain documentation on-site verifying that commercial applicators of pesticides at their facilities are certified by their state, county or municipality. At a minimum, contractor pesticide applicators should meet training provision specified by certification in accordance with 40 CFR Part 170 Subparts B & C as well as any additional training provisions required by a certification issued pursuant to 40 CFR 171.

Exhibit 08-4, Sample Pesticide Applicator Record Book, provides an example of an on-site log used for maintaining records of pesticide applicators.

Section 08-06
Subpart A - Federal Issuance of Experimental Use Permits -
40 CFR Part 172

INTRODUCTION

This part outlines the procedures for persons wishing to accumulate information necessary to register pesticide products not registered or register pesticide products for a different use under Section 3 of FIFRA.

Guidance: This part is primarily applicable to persons applying to register pesticides. EPA facilities conducting special projects related to pesticide registrations may be subject to the following provisions under this section.

GENERAL REQUIREMENTS

Experimental use permits are required when persons seek to gather information necessary to register a new pesticide or register a previously approved pesticide for a new use.

SCOPE OF REQUIREMENTS

Experimental use permits are not required when substance or mixture of substances is put through greenhouse or laboratory tests or limited field trials for the sole purpose of determining the substance's value as a pesticide or determining its toxicity or other properties. To receive this exclusion, facilities should not exceed the following experiment limits:

- For the purposes of paragraphs (b)(1)(ii) and (b)(1)(iii) of this section, the following types of experimental tests are presumed not to need an EUP:
 - A small-scale test involving use of a particular pesticide that is conducted on a cumulative total of no more than 10 acres of land per pest, except that:
 - When testing for more than one target pest occurs at the same time and in the same locality, the 10 acre limitation shall encompass all of the target pests.
 - Any food or feed crops involved in, or affected by, such tests (including, but not limited to, crops subsequently grown on such land which may reasonably be expected to contain residues of the tested pesticides)

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shall be destroyed or consumed only by experimental animals unless an appropriate tolerance or exemption from a tolerance has been established under the Federal Food, Drug, and Cosmetic Act (FFDCA) for residues of the pesticide.

- A small-scale test involving the use of particular pesticide that is conducted on a cumulative total of no more than 1 surface acre of water per pest, except that:
 - When the testing for more than one target pest occurs at the same time and in the same locality, the 1 acre limitation shall encompass all of the target pests.
 - Waters which are involved in or affected by such tests are not used for irrigation purposes, drinking water supplies, or body contact recreational activities.
 - Testing shall not be conducted in any waters which contain or affect fish, shellfish, plants, or animals taken for recreational or commercial purposes and used for food or feed, unless an appropriate tolerance or exemption from a tolerance has been established under the FFDCA for residues of the pesticide.

- Animal treatment tests involving the use of a particular pesticide that are conducted only on experimental animals, which will not be used for food or feed, unless an appropriate tolerance or an exemption from a tolerance has been established for animal products and byproducts under the FFDCA for residues of the pesticide.

***Guidance:** Facilities requesting an experimental use permit should submit an application in triplicate to the Registration Division, Office of Pesticide Programs, EPA, Washington, DC 20460 as far in advance as possible of the intended shipment date. Permits are usually approved for one year. Extensions may be requested.*

Contents of the applications should follow the requirements in 40 CFR section 172.4 and include the following:

- *General information including name, address, purpose and objectives of proposed testing, a description of the proposed testing procedure, description and specific results of any appropriate prior testing of the product conducted by the applicant, and proposed method of storage and disposition of any unused experimental use pesticide and its container*
- *Requirement for tolerance if the experimental use pesticide may result in residue that can reasonably be expected to result in or on food or feed, the applicant should follow the requirements under 40 CFR 172.4(2) including the submission of evidence that a tolerance or exemption has been established, submission of a petition proposing an establishment of a tolerance or exemption of a tolerance under section 408 of the federal Food, Drug and Cosmetic Act or exemption of a regulation under section 409 of the Food, Drug and Cosmetic Act.*

Section 08-07
Pesticide Regulations Under Other Federal Statutes

INTRODUCTION

Federal statutes other than FIFRA include provisions regulating pesticides. These statutes may involve regulatory authority under other federal agencies. Below is a summary of the other federal statutes that regulate pesticides.

**FOOD, DRUG, AND
COSMETICS ACT
(FDCA)**

FDCA enables EPA to set tolerances for pesticide residues in food. Tolerances are usually set two orders of magnitude below the level at which the pesticide has a demonstrated adverse effect on experimental animals.

**CLEAN AIR ACT
(CAA)**

Pesticides may be regulated under section 112 of the CAA pertaining to hazardous air pollutants (HAPs). Hazardous air pollutants are defined as substances which "no ambient air quality standard is applicable and which in the judgment of the Administrator may cause or contribute to an increase in mortality or an increase in severe irreversible or incapacitating reversible illness." The aerosols resulting from pesticide application may be considered HAPs in some cases, but this section of the CAA has not been applied to pesticides thus far.

**FEDERAL WATER
POLLUTION
CONTROL ACT OF
1972 (FWPC)**

At least three provisions of the FWPC are applicable to pesticides. Under section 301, pesticide manufacturers must apply for discharge permits if they release effluent into any body of water. Hazardous and ubiquitous pesticides may be controlled under section 307 governing "toxic substances." Within one year of being listed as a "toxic substance," industrial users are required to achieve the special discharge standards set for the chemical. Section 208 identifies and oversees agricultural pollution, regulated at the state level.

**SOLID WASTE
DISPOSAL ACTS
(SWDA)**

Section 204 of the SWDA, as amended by the Resource Conservation and Recovery Act of 1976, gave EPA limited authority to conduct research, training, demonstrations, and other activities regarding pesticide storage and disposal. RCRA gave EPA an important tool for controlling the disposal of pesticides, particularly the waste from pesticide manufacturers.

**OCCUPATIONAL
SAFETY AND
HEALTH ACT (OSHA)**

EPA and the Department of Labor share overlapping authority under FIFRA and OSHA for protecting agricultural workers from pesticide hazards. In 1990, EPA and the Department of Labor

concluded a memorandum of understanding (MOU) to facilitate joint enforcement of their laws.

**FEDERAL
PESTICIDES
MONITORING
PROGRAM**

Federal agencies work together to monitor the impact of pesticides to human health and the environment. The Food and Drug Administration (FDA) and the United States Department of Agriculture (USDA) assist EPA in monitoring pesticide residues in food. The FDA poison control center compiles current statistics on chemical poisoning in people. The USDA Animal and Plant Health Inspection Service conducts spot checks on pesticides in meats and poultry based on samples taken at slaughter houses. The Department of Interior (DOI) samples pesticide residues in fish and performs experiments to determine the effects of pesticides introduced into aquatic environments. DOI also conducts periodic nationwide water sampling. The National Oceanic and Atmospheric Administration monitors aquatic areas for pesticide levels. The Department of Transportation records accidents involving pesticides in shipping and distribution.

**ADDITIONAL
INFORMATION**

Several organizations have been established to provide the government and the public with additional information on pesticides. Exhibit 08-5 provides a selected list of these contracts.

Section 08-08 Integrated Pest Management

INTRODUCTION

Integrated pest management (IPM) programs combine chemical, cultural, and biological practices into one program to manage pest populations. IPM stresses non-chemical forms of pesticide management. IPM incorporates preventive practices, such as timely planting, crop rotation, and surveying fields for pest density; remedial practices, such as timely and spot spraying of pesticides only when required; and guidelines for considering economic thresholds, which are reached when pests damage enough crops to make growing the crops uneconomical. These practices reduce the amount of chemicals used by applying pesticides only when necessary at the minimum effective rate.

APPROACHES

EPA has joined with the USDA under a Memorandum of Understanding signed in August 1994 to provide more biological and cultural methods of pest management which can reduce risks to human health and the environment, reduce pesticide resistance, and ensure economical agricultural production. Working with pesticide users, USDA and EPA have identified priority crop/pest combinations that are vulnerable to having limited efficacious pest management tools. USDA has established a competitive grants program for these priority research needs and EPA has committed to expediting the registration of new pesticide products which result from this research.

EPA should work with its pesticide contractors to ensure that they are employing integrated pest management approaches when servicing EPA facilities. The following chart provides suggested IMP techniques that can reduce the overall quantity of pesticides applied at EPA facilities.

Integrated Pest Management Approaches

✓	Identify and monitor pests
✓	Develop a pesticide needs inventory
✓	Landscape with indigenous plants which promotes natural pest resistance
✓	Practice soil sampling
✓	Purchase pesticides in containers with design features that prevent spilling and leaking through splashing and dripping
✓	Buy only the amount of pesticide needed
✓	Use first in first out procedures for storage to avoid shelf life issues
✓	Use less persistent, leachable pesticides (consult EPA's list of leachable pesticides)
✓	Use contact pesticides that do not need to be incorporated into the soil
✓	Do not exceed recommended application rates
✓	Avoid excess mixing of pesticides
✓	Keep applicator equipment properly calibrated to control pesticide droplet size and deposition
✓	Add dyes to the pesticides to facilitate uniform application and monitoring rates
✓	Select an appropriate pesticide mixing/loading area, avoiding high runoff areas, to reduce damage to the environment from spills
✓	Practice spot application of pesticides

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Pesticides Classified for Restricted Use ¹

Active Ingredient	Formulation	Criteria Influencing Restriction
Acrolein	<ul style="list-style-type: none"> ● Sole active ingredient, no mixtures registered 	<ul style="list-style-type: none"> ● Inhalation hazard to humans. Residue effects on avian species and aquatic organisms
Acrylonitrile	<ul style="list-style-type: none"> ● In combination with carbon tetrachloride, no registrations as the sole ingredient 	<ul style="list-style-type: none"> ● Accident history of both acrylonitrile and carbon tetrachloride products
Aldicarb	<ul style="list-style-type: none"> ● As sole ingredient ● No mixtures registered 	<ul style="list-style-type: none"> ● Accident history
Allyl alcohol	<ul style="list-style-type: none"> ● All formulations 	<ul style="list-style-type: none"> ● Acute dermal toxicity
Aluminum phosphide	<ul style="list-style-type: none"> ● Sole active ingredient, no mixtures registered 	<ul style="list-style-type: none"> ● Inhalation hazard to humans
Azinphos methyl	<ul style="list-style-type: none"> ● All liquids with concentration greater than 13.5 percent (pct) ● All other formulations 	<ul style="list-style-type: none"> ● Same as above
Calcium cyanide	<ul style="list-style-type: none"> ● Sole active ingredient, no mixtures registered 	<ul style="list-style-type: none"> ● Same as above
Carbofuran	<ul style="list-style-type: none"> ● All concentrate suspensions and wettable powders 40% and greater ● All granular formulations ● All granular and fertilizer formulations 	<ul style="list-style-type: none"> ● Acute inhalation toxicity
Chlorfenvinphos	<ul style="list-style-type: none"> ● All concentrate solutions or emulsifiable concentrates 21% and greater 	<ul style="list-style-type: none"> ● Acute dermal toxicity
Chloropicrin	<ul style="list-style-type: none"> ● All formulations greater than 2% ● All formulations ● All formulations 2% and less 	<ul style="list-style-type: none"> ● Acute inhalation toxicity ● Hazard ton non-target organisms

¹ Adopted from the table in 40 CFR § 152.175.

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Active Ingredient	Formulation	Criteria Influencing Restriction
Clonitralid	<ul style="list-style-type: none"> • All wettable powders 70% and greater • All granulars and wettable powders • Pressurized sprays 0.55% and less 	<ul style="list-style-type: none"> • Acute inhalation toxicity • Effects on aquatic organisms
Cycloheximide	<ul style="list-style-type: none"> • All formulations greater than 4% • All formulations 0.027 to 4% • All formulations 0.027 and less 	<ul style="list-style-type: none"> • Acute dermal toxicity
Demeton	<ul style="list-style-type: none"> • 1 pct fertilizer formulation, 1.985 pct granular formulation • All granular formulations, emulsifiable concentrates, and concentrated solutions 	<ul style="list-style-type: none"> • Domestic uses: Acute oral toxicity. Acute dermal toxicity • Non-domestic outdoor uses. Residue effects on avian and mammalian species
Dicrotophos	<ul style="list-style-type: none"> • All liquid formulations 8% and greater 	<ul style="list-style-type: none"> • Acute dermal toxicity. Residue effects on avian species (except for tree injections)
Dioxathion	<ul style="list-style-type: none"> • All concentrate solutions or emulsifiable concentrates greater than 30% • Concentrate solutions or emulsifiable concentrates 30% and less and wettable powders 25% and less • All solutions 3% and greater • 2.5% solution with toxaphene and malathion 	<ul style="list-style-type: none"> • Acute dermal toxicity • Same as above

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Active Ingredient	Formulation	Criteria Influencing Restriction
Disulfoton	<ul style="list-style-type: none"> • All emulsifiable concentrates 65% and greater, all emulsifiable concentrates and concentrate solutions 21% and greater with fensulfonthion 43% and greater, all emulsifiable concentrates 32% and greater in combination with 32% fensulfonthion and greater • Non-aqueous solution 95% and greater. • Granular formulations 10% and greater 	<ul style="list-style-type: none"> • Same as above Acute inhalation toxicity • Acute dermal toxicity • Acute inhalation toxicity
Ethoprop	<ul style="list-style-type: none"> • Emulsifiable concentrates 40% and greater • All granular and fertilizer formulations 	Acute dermal toxicity
Ethyl parathion	<ul style="list-style-type: none"> • All granular and dust formulations greater than 2 pct, fertilizer formulations, wettable powders, emulsifiable concentrates, concentrated suspensions, concentrated solutions. • Smoke fumigants • Dust and granular formulations 2 pct and below 	<ul style="list-style-type: none"> • Inhalation hazard to humans. Acute dermal toxicity. Residue effects on mammalian, aquatic, avian species • Inhalation hazard to humans • Other hazards - accident history
Fenamiphos	<ul style="list-style-type: none"> • Emulsifiable concentrates 35% and greater 	<ul style="list-style-type: none"> • Acute dermal toxicity
Fonofos	<ul style="list-style-type: none"> • Emulsifiable concentrates 44% and greater • Emulsifiable concentrates 12.6% and less with pebulate 50.3% and less 	<ul style="list-style-type: none"> • Acute dermal toxicity
Methamidophos	<ul style="list-style-type: none"> • Liquid formulations 40% and greater • Dust formulations 2.5% and greater 	<ul style="list-style-type: none"> • Acute dermal toxicity; residue effects on avian species Residue effects on avian species

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Active Ingredient	Formulation	Criteria Influencing Restriction
Methidathion	<ul style="list-style-type: none"> • All formulations • All formulations 	<ul style="list-style-type: none"> • Same as above
Methomyl	<ul style="list-style-type: none"> • As sole active ingredient in 1 pct to 2.5 baits (except 1 pct fly bait) • All concentrated solution formulations • 90 pct wettable powder formulations(not in water soluble bags) • 90 pct wettable powder formulations (in water soluble bags) • All granular formulations • 25 pct wettable powder formulations • In 1.24 pct to 2.5 pct dusts as sole active ingredient and in mixtures with fungicides and chlorinated hydrocarbon, inorganic phosphate and biological insecticides 	<ul style="list-style-type: none"> • Residue effects on mammalian species. • Other hazards - accidents history • Same as above
Methyl Bromide	<ul style="list-style-type: none"> • All formulations in containers greater than 1.5 lb. • Containers with no more than 1.5 lb of methyl bromide with 0.25 pct to 2.0 pct chloropicrin as an indicator • Container with not more than 1.5 lb having no indicator 	<ul style="list-style-type: none"> • Same as above • Same as above

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Active Ingredient	Formulation	Criteria Influencing Restriction
Methyl parathion	<ul style="list-style-type: none"> • All dust and granular formulations less than 5 pct • Microencapsulated • All dust and granular formulations 5 pct and greater and all wettable powders and liquids. 	<ul style="list-style-type: none"> • Other hazards-accident history. All foliar applications restricted based on residue effects on mammalian and avian species • Residue on effects on avian species. Hazard to bees • Acute dermal toxicity. Residue effects on mammalian and avian species
Nicotine (alkaloid)	<ul style="list-style-type: none"> • Liquid and dry formulations 14% and above • All formulations • Liquid and dry formulations 1.5% and less 	<ul style="list-style-type: none"> • Acute inhalation toxicity • Effects on aquatic organisms
Paraquat (dichloride) and paraquat bis(methyl sulfate)	<ul style="list-style-type: none"> • All formulations and concentrations except those listed below • Pressurized spray formulations containing 0.44 pct Paraquat bis(methyl sulfate) and 15 pct petroleum distillates as active ingredients • Liquid fertilizers containing concentrations of 0.025 pct paraquat dichloride and 0.03 percent atrazine; 0.03 pct paraquat dichloride and 0.37 pct atrazine, 0.04 pct paraquat dichloride and 0.49 pct atrazine 	<ul style="list-style-type: none"> • Other hazards. Use and accident history, human toxicological data.
Phorate	<ul style="list-style-type: none"> • Liquid formulations 65% and greater • All granular formulations 	<ul style="list-style-type: none"> • Acute dermal toxicity • Residue effects on avian species (applies to foliar applications only) • Residue effects on mammalian species (applies to foliar application only) • Effects on aquatic organisms

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Active Ingredient	Formulation	Criteria Influencing Restriction
Phosphamidon	<ul style="list-style-type: none"> • Liquid formulations 75% and greater • Dust formulations 1.5% and greater 	<ul style="list-style-type: none"> • Acute dermal toxicity • Residue effects on mammalian species • Residue effects on avian species
Picloram	<ul style="list-style-type: none"> • All formulations and concentrations except tordon 101R. • Tordon 101R forestry herbicide containing 5.4 pct picloram and 20.9 pct 2,4-d 	<ul style="list-style-type: none"> • Hazard to non-target organisms (specifically non-target plants both crop and non-crop)
Sodium Cyanide	<ul style="list-style-type: none"> • All capsules and ball formulations 	<ul style="list-style-type: none"> • Inhalation hazard to humans
Sodium fluoroacetate	<ul style="list-style-type: none"> • All solutions and dry baits 	<ul style="list-style-type: none"> • Acute oral toxicity. Hazard to non-target organisms. Use and accident history
Strychnine	<ul style="list-style-type: none"> • All dry baits, pellets and powder formulations greater than 0.5 pct • All dry baits, pellets and powder formulations • All dry baits, pellets and powder formulations 0.5 pct and below • Same as above 	<ul style="list-style-type: none"> • Acute oral toxicity. Hazard to non-target avian species. Use and accident history • Hazard to non-target organisms • Same as above
Sulfotepp	<ul style="list-style-type: none"> • Sprays and smoke generators 	<ul style="list-style-type: none"> • Inhalation hazard to humans
Zinc Phosphide	<ul style="list-style-type: none"> • All formulations 2% and less • All dry formulations 60% and greater • All bait formulations • All dry formulations 10% and greater 	<ul style="list-style-type: none"> • Acute inhalation toxicity • Hazard to non-target organisms • Acute oral toxicity

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Pesticide Compatibility Information Chart

Restricted Pesticide	*Personal Protection	**Respirator Recommendation	Incompatible Substances
Acrolein	Clothing: Any poss Goggles: Any possi Wash: Immed contam Eyewash (flamm)	NIOSH/OSHA 2.5 ppm: SA:CF/PAPROV 5 ppm: CCRFOV/GMFOV/SCBAF/SAF §: SCBAF:PD,PP/SAF:PD,PP:ASCBA	Oxidizers, acids, alkalis, ammonia, amines (Note: polymerizes readily unless inhibited)
Acrylonitrile	Clothing: Repeat Goggles: Reason prob Wash: Immed wet Quick Drench	NIOSH SCBAF:PD,PP/SAF:PD, PP:ASCBA	Strong oxidizers, acids & alkalis; bromine; amines (Note: may polymerize spontaneously or when heated in presence of strong alkali unless inhibited)
Allyl alcohol	Clothing: Any poss/liq/Repeat Goggles: Reason prob Wash: Immed contam Quick Drench	NIOSH/OSHA 50 ppm: SA:CF/PAPROV 100 ppm: CCRFOV/GMFOV/SCBAF/ SAF/PAPRTOV 150 ppm: SAF:PD,PP §SCBAF:PD,PP/SAF:PD,PP: ASCBA	Strong oxidizers, acids, carbon tetrachloride
Azinphos methyl	Clothing: Reason prob Goggles: Reason prob Wash: Immed contam Quick Drench	NIOSH/OSHA 2 mg/m3: SA/SCBA/CCROVDMFu 5 mg/m3: PAPROVDMFu/SA:CF 10 mg/m3: CCRFOVHiE/PAPRTOVHiE/SAT CF/SC BAF/SAF/GMFOVHiE 20 mg/m3: SA:PD,PP §: SCBAF, PD,PP/SAF:PD,PP:ASCBA	Strong oxidizers, acids
Chloropicrin	Clothing: Any poss Goggles: Any poss Wash: Immed contam Eyewash, quick drench	NIOSH/OSHA 2.5ppm: SA:CF/PAPROV 4 ppm: SCBAF/SAF/CCRFOV/GMFOV §: SCBAF:PD, PP/SAF:PD, PP: ASCBA	Strong oxidizers (Note: With strong initiation, the heated material under confinement will detonate)
Demeton	Clothing: Any poss Goggles: Any poss Wash: Immed contam Eyewash, quick drench	NIOSH/OSHA 1 mg/m3: SA/SCBA 2.5 mg/m3: SA:CF 5 mg/m3: SCBAF/SAF/SAT: CF 20 mg/m3: SA:PD:PP §: SCBAF:PD, PPP/SAF:PD, PP: ASCBA	Strong oxidizers, alkalis, water
Endrin	Clothing: Any poss Goggles: Any poss Wash: Immed contam Eyewash, quick drench	NIOSH/OSHA 1 mg/m3: CCROVDMFu/SA/SCBA 2.5 mg/m3: SA:CF/PAPROVDMFu 5 mg/m3: CCRFOVHiE/SCBAF/SAF/GMFOVHiE/P APRTOVHiE/SAT:CF 100 mg/m3: SA:PD,PP 200 mg/m3: SAF:PD, PP §SCBAF:PD, PP/SAF:PD,PP:ASCBA	Strong oxidizers, strong acids, parathion

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Restricted Pesticide	*Personal Protection	**Respirator Recommendation	Incompatible Substances
EPN	Clothing: Any poss Goggles: Any poss Wash: Immed contam Eyewash, quick drench	NIOSH/OSHA 5 mg/m3: SA/SCBA 12.5 mg/m3: SA:CF 25 mg/m3: SCBAF/SAF/SAT:CF 50 mg/m3: SA:PD,PP §SCBAF:PD,PP/SAF:PD,PP:ASCBA	Strong oxidizers
Hydrocyanic acid	Clothing: Any poss Goggles: Any poss Wash: Immed contam Eyewash, quick drench	NIOSH/OSHA 47 ppm: SA/SCBA 50 ppm: SA:CF/SCBAF/SAF §: SCBAF:PD,PP/SAF:PD,PP:ASCBA	Amines, oxidizers, acids, sodium hydroxide, calcium hydroxide, sodium carbonate, water, caustics, ammonia (Note: Can polymerize at 122-140jF)
Methyl Bromide	Clothing: Any poss Goggles: Reason prob Wash: Immed wet Quick drench	NIOSH SCBAF:PD,PP/SAF:PD,PP:ASCBA	Aluminum, magnesium, strong oxidizers (Note: Attacks aluminum to form aluminum trimehtul which is spontaneously flammable)
Nicotine (alkaloid)	Clothing: Any poss Goggles: Any poss Wash: Immed contam Eyewash, quick drench	NIOSH/OSHA 5 mg/m3: SA/SCBA 12.5 mg/m3: SA:CF 25 mg/m3: SCBAF/SAF/SAT:CF 35 mg/m3: SAF:PD,PP § SCBAF: PD,PP/SAF; PD, PP:ASCBA	Strong oxidizers, acids
Sodium Cyanide	Clothing: Any poss Goggles: Any poss Wash: Immed contam Eyewash, quick drench	NIOSH/OSHA 50 mg/m3: SA/SCBA §: SCBAF: PD, PP/SAF:PD,PP:ASCBA	Strong oxidizers, such as acids, acid salts, chlorates & nitrates
Sodium fluoroacetate	Clothing: Any poss Goggles: Reason prob Wash: Immed contam Quick drench	NIOSH/OSHA 0.25 mg/m3. DM 0.5 mg/m3: DMXSQ/SA/SCBA 1.25 mg/m3: PAPRDM/SA:CF 2.5 mg/m3: PAPRTHIE/SCBAF/SAF HIEF/SAT:CF 5 mg/m3: SA:PD,PP §: SCBAF:PD,PP/SAF:PD,PP:ASCBA	None
Strychnine	Clothing: Repeat Goggles: NR Wash: Prompt contam	NIOSH/OSHA 0.75 mg/m3: DM 1.5 mg/m3: DMXSQ/SA/SCBA 3 mg/m3: PAPRDM/SA:CF/HIEF/SCBAF/SAF §: SCBAF:PD,PP/SAF:PD/PPASCBA	Strong oxidizers

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Restricted Pesticide	*Personal Protection	**Respirator Recommendation	Incompatible Substances
TEPP	Clothing: Any poss Goggles: Any poss Wash: Immed contam Eyewash, quick drench	NIOSH/OSHA 0.5 mg/m ³ : SA/SCBA 1.25 mg/m ³ : SA:CF 2.5 mg/m ³ : SCBAF/SAF/SAT/CF 10 mg/m ³ : SA:PD,PP §: SCBAF:PD,PP/SAF:PD,PP:ASCBA	Strong oxidizers, alkalis, water (Note: Hydrolyzes quickly in water to form pyrophosphoric acid)

§ — Emergency or planned entry into unknown concentrations or IDLH conditions
If concentration is not noted, recommendation applies to all concentrations

*Legend to Personal Protection Recommendations

Clothing — Workers should wear appropriate equipment to prevent:

- Any poss — Any possibility of skin contact
- Repeat — Repeated or prolonged skin contact
- Reason prob — Reasonable probability of skin contact
- Any poss/liq/repeat — Any possibility of liquid contact and repeated or prolonged vapor contact with skin

Goggles — Workers should wear eye protection when:

- Any poss — Any possibility of eye contact
- Reason prob — Reasonable probability of eye contact

Wash — Workers should wash:

- Immed contam — Immediately wash when skin becomes contaminated
- Immed wet — Immediately wash when skin becomes wet
- Prompt cont — Promptly wash when skin becomes contaminated

**Legend to Respirator Recommendations

Acronym	Definition
SA	Supplied air respirator
SCBA	Self-contained breathing apparatus
HIEF	Air-purifying, full-face piece respirator with a high efficiency particulate filter
CCRFOV	Any chemical respirator with full-face piece and organic vapor cartridge(s)
CCRFOVHIE	Any chemical respirator with full-face piece and organic vapor cartridge(s) in combination with a high-efficiency particulate filter
CCROVDMFu	Any chemical respirator with full-face piece and organic vapor cartridge(s) in combination with a dust, mist, and fume filter
DM	Any dust and mist respirator
DMXSQ	Any dust and mist respirator except single-use and quarter-mask respirators
GMFOV	Any air-purifying, full-face piece respirator (gas mask) with a chin-style, front- or backmounted organic vapor canister
GMFOVHIE	Any air-purifying, full-face piece respirator (gas mask) with a chin-style, front- or backmounted organic vapor canister having a high-efficiency particulate filter
HIEF	Any air-purifying, full-face piece respirator with high efficiency particulate filter
PAPRDM	Any powered, air-purifying respirator with a dust and mist filter
PAPRHIE	Any powered, air-purifying respirator with a high efficiency particulate filter
PAPROV	Any powered, air-purifying respirator with organic vapor cartridges
PAPROVDMFu	Any powered, air-purifying respirator with organic vapor cartridge(s) in combination with a dust, mist, and fume filter
PAPRTOV	Any powered, air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s)
SAF	Any supplied air respirator with a full facepiece
SAF:PD,PP	Any supplied air respirator with a full facepiece and is operated in a pressure-demand or other positive pressure mode
SAF:PD,PP:ASC	Any supplied air respirator with a full facepiece and is operated in a pressure-demand or other positive pressure mode in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive pressure mode
BA	
SA:PD,PP	Any supplied air respirator operated in a pressure-demand or other positive pressure mode
SAT:CF	Any supplied air respirator that has a tight-fitting facepiece and is operated in a continuous flow mode
SCBAF	Any self-contained breathing apparatus with a full facepiece
SCBAF:PD,PP	Any self-contained breathing apparatus with a full facepiece and is operated in a pressure-demand or other positive pressure mode

Suggestions for Safe Storage

Several straightforward actions can be taken to ensure pesticides are stored safely at EPA facilities. The following simple checklist identifies several of these safe practices.

- ✓ Keep pesticide materials in a locked room or cabinet.
- ✓ Store containers in an upright position and off the ground.
- ✓ Glass bottles should always be stored within a metal can, not necessarily closeable such as a coffee can, to contain spillage if the bottle breaks.
- ✓ Be sure that all caps are tightened securely on bottles and cans. Remove and properly dispose of all leaky containers.
- ✓ Maintain a pesticide inventory for the storage area.
- ✓ Do not store weed killers close to other materials such as wettable powders, dust formulations, or granular insecticides. Weed killers such as 2,4-D and 2,4,5-T are highly volatile and can contaminate other materials especially when placed in close contact in confined quarters.
- ✓ Store wettable powders, dusts, and granules of pesticide products in a cool, dry place.
- ✓ Do not store liquid pesticides in a place where the temperature will fall below 40 degrees F.
- ✓ Avoid storing pesticides in sunlight — photo degradation of resins in plastic containers and container fixtures may weaken and break at the point of attachment, especially if the container is plastic and the fixtures are metal.
- ✓ Do not carry over pesticide products whose labels have been lost or are not complete and legible
- ✓ Purchase pesticides in the smallest quantity necessary. This practice will reduce storage problems and eliminate any potential shelf life issues.
- ✓ Keep a spill cleanup kit in the pesticide storage and mixing area.

Contacts for Additional Pesticide Information

Pesticide Information Network (PIN)

Provides contacts directory, pesticide applicator training bibliography, pesticide monitoring inventory, pesticide environmental fate and effects data summaries, and current regulatory information on pesticides in special review, canceled or suspended pesticides and restricted use product information.

Primary Contact: Leslie Davies Hilliard

Telephone: (703) 305-7499

Fax: (703) 305-6309

Access: Personal Computer and Modem

Hours: 24 hours a day, 7 days a week

National Pesticide Telecommunication Network (NTPN)

Free service providing a variety of information concerning pesticides; pesticide product information; information on recognition and management of pesticide poisonings; toxicology and symptomatic reviews; referrals for laboratory analyses, investigation of pesticide incidents, and emergency treatment information; safety information; health and environmental effects; and cleanup and disposal procedures.

Primary Contact: Dr. Jack Hayes

Telephone: (800) 858-7378 (general public)

(800) 858-7377 (Medical and government personnel)

Fax: (806) 743-3094

Hours: 8 AM to 6 PM (Central)

National Pesticide Information Retrieval System (NPIRS)

Subscription database of the Center for Environmental and Regulatory Systems (CERIS).

Provides information on pesticide products (current and historical) which have been registered by EPA. Registration support documents, commodity/tolerance data, Material Safety Data Sheets, Fact Sheets, and state product registration data are provided. Includes access to CERIS-Net, which provides e-mail and news, EPA Pesticide Regulatory (PR) Notices, the full text of the Federal Register updated daily, and the Code of Federal Regulations for EPA, USDA, Labor, Transportation, and FDA.

Primary Contact: Virginia Walters

Telephone: (317) 494-6614

Fax: (317) 494-9727

Hours: 8 AM to 5 PM (Eastern)

**Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Docket (PESTICIDES
DOCKET)**

The docket consists of the Federal Register Docket which houses background documents and public comments on proposed action announced by the Office of Pesticide Programs (OPP) in the Federal Register, the Special Review and Registration Standard Docket which includes all Position Documents, Registration Standards, Science Chapters, public comments, references, letters, other pesticide documents received by OPP, and minutes of meetings between EPA and outside parties concerning pesticides under Special Review and those evaluated in the Registration Standards process, and Special Dockets, which are created when OPP wants to place documents on public display.

Primary Contact: Robin Carnes

Telephone: (703) 305 -5805

Fax: (703) 305-5884

Hours: 8 AM to 4:30 PM

Physical Location

**US Environmental Protection Agency
Office of Pesticide Programs Public Docket
Crystal Mall, Building #2, Room 1132
1921 Jefferson Davis Highway
Arlington, VA 22202**

List of Acronyms

CAA	Clean Air Act
DOI	Department of Interior
DOT	Department of Transportation
FDA	Food and Drug Administration
FDCA	Food, Drug and Cosmetics Act
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
HAP	Hazardous Air Pollutant
IPM	Integrated Pest Management
NPDES	National Pollution Discharge Elimination System
OSHA	Occupational Safety and Health Act
POTW	Publicly Owned Treatment Works
SDWA	Safe Drinking Water Act
TSDF	Treatment, Storage and Disposal Facility
USDA	United States Department of Agriculture

**SAFETY, HEALTH, AND
ENVIRONMENTAL MANAGEMENT
PROGRAM GUIDE**

Guide No. 09

Issued 10/97

Revised --

TOXIC SUBSTANCES CONTROL ACT (TSCA) PROGRAM

SCOPE OF THE PROGRAM

This Program Guide provides an overview of the requirements EPA facilities must fulfill to comply with the regulations, guidance, and procedures associated with the Toxic Substances Control Act (TSCA) Program. TSCA was enacted by Congress in 1976 to provide a regulatory framework for comprehensively dealing with risks posed by the manufacture and use of chemical substances. TSCA covers a diverse set of requirements including premanufacture notification, chemical testing, recordkeeping and reporting, chemical importing and exporting, the voluntary 33/50 program, imminent hazard provision, and specific restrictions on chemicals considered high risk (e.g., asbestos, polychlorinated biphenyls (PCBs), chlorofluorocarbons (CFCs), dioxins). The key TSCA issue with EPA facilities is the management of PCBs; therefore, the focus of this Program Guide is on PCBs. In particular, this program guide provides information on the management of PCBs including their use in electrical equipment, research and laboratory analysis, and manifestation and ultimate disposal.

REGULATORY REQUIREMENTS

The key or basic elements of this program required by law and/or EPA policy are to:

Ensure PCBs at concentrations equal to or exceeding 50 parts per million (ppm) are managed in accordance with the TSCA regulations

Ensure PCB concentration levels are not diluted below the 50 ppm limit

Manage PCBs in a totally enclosed

environment unless otherwise stated in the regulations

Place markings on all PCB containers and equipment in accordance with the regulations

Comply with PCB storage and disposal requirements in accordance with the TSCA regulations

Keep records on file as described in the TSCA regulations

Comply with notification and reporting requirements.

AUTHORITIES

The following documents are the sources of the legal authority that establish the applicability and requirements of this program.

Toxic Substance Control Act, 15 United States Code, 2601, et seq.

Title 40 Code of Federal Regulations (CFR), Part 761

EPA Safety, Health, and Environmental Management Guidelines

EPA Facility Safety, Health, and Environmental Management Manual

REFERENCES

The documents listed below can help you implement this program and specifically are intended for facility operations.

Environmental Law Handbook,
Government Institutes, Inc., 9th Edition,
May 1987

Environmental Reporter, Bureau of
National Affairs

IMPLEMENTATION ACTIVITIES

The following list gives an overview of the activities that this program will require. To implement and operate this program, you must:

Manage PCB-containing materials whose concentration levels are equal to or exceeding 50 ppm in accordance with federal, state, and local TSCA requirements applicable to laboratory operations

Manage PCBs in a totally enclosed manner unless otherwise authorized under the TSCA regulations

Insist that all PCB containers and equipment be properly marked or labeled in accordance with the TSCA regulations or separate PCB permits

Store and dispose of PCBs in accordance with TSCA regulations

Develop procedures for organizing and compiling facility records in accordance with the TSCA regulations

Be familiar with notification and reporting requirements under TSCA.

IMPLEMENTATION IMPLICATIONS

The management systems and internal controls required to implement this program include:

Procedures to ensure compliance with federal, state, and local TSCA PCB requirements

PCB inventory control to track the types and quantities of PCBs and PCB items used, handled, stored, and disposed of

A system to manage facility records

A system for tracking changes to PCB regulations under TSCA

TSCA training to promote staff awareness and educate staff on specific implementation procedures associated with PCBs.

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Section 09-02
Introduction

PURPOSE

This chapter provides policy, guidance, information and procedures to ensure that EPA laboratories operate in full compliance with EPA regulations on PCB management.

SCOPE

This chapter addresses PCB management at EPA facility operations, including the use of PCBs in electrical equipment, use in research and laboratory analysis, and storage and manifesting of PCBs for ultimate disposal

AUTHORITY

Section 6 (e) of the Toxic Substances Control Act (TSCA) and regulations promulgated pursuant to TSCA found at 40 CFR Part 761

POLICY

EPA facilities and operations shall comply with the requirements set forth in the Code of Federal Regulations, Title 40 Part 761, this Chapter, applicable Office of Toxic Substances memoranda and policy documents, and other applicable federal, state, county and municipal regulatory requirements relating to management of PCBs

OBJECTIVES

Effective PCB management is designed to:

- Protect employees, the public and the environment from PCB contamination
- Increase employee awareness of the safety, health, and environmental risks associated with PCBs
- Promote sustained regulatory compliance at EPA laboratory operations.

RESPONSIBLE OFFICERS

Due to the varied nature of PCB operations at EPA facilities, the responsibility for PCB management may fall under the purview of several facility representatives. Typically, the use and disposal of PCBs in the laboratory is handled by the Safety, Health and Environmental Management (SHEM) Managers, while the management of PCB equipment such as transformers is often supervised by facility engineers and

maintenance staff. In addition, analytical and research staff must be cognizant of PCB management requirements to ensure that PCB standards, experimental residues, and wastes are managed to avoid unacceptable risks. Finally, prudent PCB waste handling is essential where PCBs are mixed with hazardous or radioactive waste streams.

REFERENCES

Topics discussed in this chapter were developed from the following sources:

- 0 CFR Part 761
- 40 CFR Section 268.32
- 49 CFR Parts 172 and 173
- Federal Register, December 21, 1989 (53 FR 52752)
- Federal Register, December 21, 1990 (55 FR 52402)
- Federal Register, December 20, 1991 (56 FR 66124)
- Federal Register, June 23, 1993 (58 FR 34205)
- Federal Register, December 6, 1994 (59 FR 62787)
- Memo. Denise Keehner, Chief, Chemical Regulation Branch, Office of Toxic Substances (OTS), to Howard Wilson, Manager, Environmental Compliance Program, August 13, 1987
- Memo. Denise Keehner, Chief, Chemical Regulation Branch, OTS, to Howard Wilson, Manager, Environmental Compliance Program, October 20, 1988
- Memo. John Smith, Acting Chief, Chemical Regulation Branch, OTS, to Howard Wilson, Chief, Environmental Compliance Branch, September 25, 1989
- TSCA PCB Compliance Program Policy 6-PCB-2, A.E. Conroy II, Director Compliance Monitoring Staff, OTS, August 16, 1983
- TSCA PCB Compliance Program Policy 6-PCB-6, A.E. Conroy II, Director Compliance Monitoring Staff, August 16, 1983.

(Note Copies of TSCA Compliance Program Policies may be obtained by calling the TSCA Hotline at 202-554-1404)

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Section 09-03
PCB Management - 40 CFR Part 761

DEFINITIONS

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 term includes capacitors, transformers, electric motors, pumps, and pipes
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
PCB Authorizations	Provisions of 40 <u>CFR</u> 761.30 that allow certain uses of PCBs.
PCB Container	Any package, can, bottle, bag, barrel, drum, tank, or other device that contains PCBs or PCB articles and whose surface(s) has been in direct contact with PCBs.
PCB Equipment	Any manufactured item, other than a PCB container or a PCB article container, that contains a PCB article or other PCB equipment This term includes microwave ovens, electronic equipment, and fluorescent lights ballasts and fixtures
PCB Large Capacitor	A device for accumulating and holding a charge of electricity and consisting of conducting surfaces separated by 1.36 kg (3 lb) or more dielectric fluid.
PCB Small Capacitor	A device for accumulating and holding a charge of electricity and consisting of conducting surfaces separated by less than 1 36 kg (3 lb) of dielectric fluid
PCB Transformer	Any transformer that contains 500 ppm PCBs or greater.

GENERAL
APPLICABILITY
(SUBPART A)

Part 761 applies to all persons who manufacture, process, distribute in commerce, use or dispose of PCBs and PCB items

50 ppm Limit	Unless otherwise indicated, the applicability of the PCB regulations addressed in this chapter pertain only to PCBs or PCB items in concentrations equal to or greater than 50 ppm.
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Toxic Substances Control Act

Operations

EPA facilities are not involved in manufacturing or processing PCBs. EPA facilities do, however, conduct certain laboratory operations involving PCBs and use electrical equipment containing PCBs. Examples of TSCA-regulated operations typically found at EPA facilities include:

Use -

- Operating and servicing PCB transformers, capacitors, and other PCB electrical equipment
- Use of small quantities for research and analysis of PCBs, but not for the development of a PCB product (see authorization section)
- Distribution of quality assurance sample for laboratory analysis
- Performing PCB analysis on soil, water, oil and other samples in support of Agency environmental program enforcement
- Use of fluorescence microscopy immersion oil containing PCBs

Disposal - Facilities designating PCB items, PCB liquids or PCB solid waste (soils or rags) for disposal. This includes samples and laboratory waste from PCB analysis that are no longer needed for enforcement purposes and that will not be returned to the sample collector.

Dilution

TSCA requirements for marking and disposal become more stringent with an increase in PCB concentration. EPA facilities must be aware that the applicability section of TSCA regulations (761.1 (b)) clearly states that "No provision specifying a PCB concentration may be avoided as a result of any dilution, unless otherwise specifically provided "

An EPA facility would violate the PCB regulations if it mixed < 50 ppm oil with \geq 50 ppm oil in a common container in an attempt to circumvent the TSCA PCB regulations by reducing the combined concentration to below regulated levels. Likewise, a facility would be violating the PCB regulations if when testing waste oil for disposal it mixed \geq 500 ppm PCB oil with < 500 ppm PCB oil in order to avoid the incineration requirement. If these two concentrations were combined, the mixture must be considered as

≥ 500 ppm even if the actual combined concentration is < 500 ppm due to the dilution*¹

¹ Certain exceptions to the dilution prohibition have been proposed for laboratory operations in the 12/6/94 Federal Register (59 FR 62788)

A few operations pertaining to PCB analysis, however, would not meet the definition of dilution For example

- Gas chromatograph analysis of PCBs typically involves a syringe wash step where the injection syringe is cleaned with solvent between sample injections

Guidance: Facilities should not consider the slight PCB contamination in the solvent wash as dilution of PCBs and it should only be treated as PCB waste if resultant concentration is ≥ 50 ppm PCBs. Otherwise the wash waste should be managed as a solvent waste and be manifested and disposed of accordingly.

- Solvent extraction of PCBs from water may result in trace amounts of residual PCBs remaining in the aqueous layer of the extraction. According to the TSCA Compliance Program Policy 6-PCB-2, when PCBs are extracted from water samples, the organic phase must be disposed according to the resulting concentration of PCBs or according to the type of solvent present. The Policy further states that "The aqueous phase may be disposed of by means of filtration to remove any residual PCBs (e g activated carbon) provided the filter medium is disposed of in accordance with the regulations for solids containing that concentration of PCBs, and the water .. is discharged in accordance with a National Pollutant Discharge Elimination System (NPDES) permit granted under the Clean Water Act "

In the majority of situations, however, EPA facilities should manage all PCB waste according to the original PCB concentration unless otherwise directed through Agency policy statements. In order to fulfill this requirement, facilities should consider tracking PCB concentrations as PCB materials are stored and managed. Labeling waste containers only as "PCBs" does not convey whether the waste is ≥ 50 ppm PCBs or began at such a concentration

Uncertainty could lead to either increased disposal costs as wastes are managed conservatively as regulated or improper disposal of regulated wastes that began at PCB concentrations ≥ 50 ppm

AUTHORIZATIONS
(761 30)

Generally, the TSCA regulations prohibit the use of PCBs and PCB items in any manner other than totally enclosed. However, the TSCA PCB regulations allow for certain uses of PCBs and PCB items that are not totally enclosed, provided that specific management conditions are followed. These PCBs and PCB items are described below.

PCB Transformers

Registration - All PCB transformers must be registered with local fire response personnel (761.30 (a)(1)(vi)). The registration must provide the

- Location of the transformer (building address and specific room or outdoor location)
- Principal constituent of the dielectric fluid
- Name and telephone number of person(s) to contact at the facility in the event of a fire

Guidance: PCB transformer registration information should be sent by registered mail to verify compliance with this requirement (the SHEM Manager should maintain this verification on file at the facility).

Quarterly Inspection - Facility personnel must conduct a quarterly visual inspection of each transformer in use or stored for reuse. This can take place any time during January-March, April-June, July-September, October-December, as long as there is a minimum of 30 days between inspections (761 30(a)(1)(ix))

The following inspection and maintenance information is required to be maintained at a facility for three years after disposing of the transformer (761 30(a)(1)(xii)):

- Location
- Date of inspection
- Person performing inspection
- Location of any leaks

Toxic Substances Control Act

- Amount of fluid released from any leak
- Date of any cleanup or maintenance
- Description of cleanup or maintenance

Policy: Facilities must prepare a log to record the above required inspection information. Exhibit 09-01 at the end of this chapter provides a sample inspection log.

Use Conditions - Facilities are prohibited from using or storing PCB transformers in a manner that poses an exposure risk to food or feed

The following table outlines the requirements for operating a PCB transformer located in or near a commercial building (761.30 (ii-v))

Table 1
PCB Transformer Requirements

Requirements for PCB Transformers Located In or Near Commercial Bldgs	Prohibited after Oct. 1, 1990	Electrical protection for high current faults by Oct 1, 1990	Electrical protection for low current faults by Oct. 1, 1990	Registered with building owners as of Dec 1, 1985*
Network with Higher Secondary Voltage	X	NA	NA	NA
Network with Lower Secondary Voltage		X		X
Radial with Higher Secondary Voltage		X	X	X
Radial with Lower Secondary Voltage		X		X

* This requirement is for the registration of a PCB Transformer with building owners when the transformer is located in or within 30 meters of a commercial building

PCB Capacitors

After October 1, 1988, PCB large capacitors rated at high and low voltages must be used only within a restricted access electrical substation or in a contained and restricted access indoor installation that also provides containment (761 30(I)(1)(ii))

Toxic Substances Control Act

PCB Analysis by EPA
Labs for Enforcement

TSCA regulations do not specifically address using PCBs for EPA laboratory operations to support enforcement programs for TSCA and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The Office of Toxic Substances, in a October 20, 1988 memo to the Manager of the Environmental Compliance Program of EHSD, stated that "EPA's authority to conduct their analysis [on enforcement samples] is an implied authority; EPA is responsible for enforcement of its PCB regulations, and it could not effectively enforce without authority to analyze and maintain samples for enforcement actions."

PCBs in Small
Quantities for
Research and
Development (R&D)

Under the TSCA regulations, laboratories are allowed to use for PCBs indefinitely for research and development in a "other than totally enclosed."

40 CFR 761.3 defines the conditions for operating under this exclusion. The original package of PCB material must have been in one or more hermetically sealed containers of 5 ml volume or less, and the PCBs must be used for scientific experimentation or analysis and not for the development of a PCB product

The manufacture, processing, or distribution in commerce of small quantities of PCBs for research and development is permitted only for persons who have been granted an exemption under TSCA

Guidance: EPA laboratories must make certain that they have obtained their PCB material from companies who have TSCA approval for manufacturing small quantities of PCBs for research and development (a list of companies is given in 761.80 (g)).

MARKING
REQUIREMENTS
(761.40)

Under TSCA, certain structures, PCB equipment and PCB containers require a PCB mark to be placed on them in a prominent position. The marking requirement identifies PCBs or PCB equipment to protect emergency response personnel. Excessive marking of items such as laboratory doors, gas chromatographs, or refrigerators is inappropriate and defeats the intent of the marking provisions. Facilities are required to place marks on PCB transformers, PCB large high-voltage capacitors, PCB large low-voltage capacitors when taken out of service, PCB containers, and PCB storage areas as described below

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PCB Transformers	Facilities operating a PCB transformer (dielectric fluid containing \geq 500 ppm PCBs) are required to place a large PCB mark on the transformer PCB contaminated transformers (dielectric fluid with 50 to 500 ppm PCBs) do not require the official PCB mark in 40 CFR 761.45.
Means of Access	Vault doors, machinery room doors, fences or other means of accessing PCB transformers must be labeled with a PCB mark.
PCB Large High- and Low-Voltage Capacitors	Facilities are required to label all large PCB capacitors with a large PCB mark. If the capacitor is protected behind a fence, or is installed on a power line pole or other structure, this requirement may be met by marking the fence, structure or pole. The facility must keep a record in this situation to identify the capacitor.
Storage Areas	Each storage area used to store PCBs and PCB items for disposal must be designated with a PCB mark.
PCB Containers	All containers holding PCBs in concentrations \geq 50 ppm, whether in storage for disposal or while being collected in the laboratory, require the large PCB mark. If in any of the above situations a large PCB mark is required but there is inadequate space to accommodate the mark, a small mark may be used in its place.
<u>MARKING PCB STANDARDS (761.45)</u>	The small PCB mark can be reduced proportionally to a minimum of 1 by 2 cm. While this may not be small enough to accommodate the labeling of PCB standard vials, the mark may be used to label the box in which the PCB standards are stored.
PCB DISPOSAL (761.60)	When PCBs and PCB items are removed from service for final disposition, disposal must be undertaken in accordance with specific regulatory standards in 40 CFR 761.60. Generators of

PCB waste or equipment destined for disposal should identify PCB concentration and type of PCB item to determine applicable disposal requirements

Land Disposal
Restrictions Resource
Conservation and
Recovery Act
(RCRA)

Although TSCA is the primary responsible legislation addressing PCB disposal, regulations promulgated under RCRA have affected the disposal of hazardous wastes that contains PCBs. Specifically, the land disposal restrictions for "California List" wastes identified in 40 CFR 268.32 prohibit the land disposal of liquid hazardous wastes containing PCBs at a concentration of 50 ppm or greater (effective July 8, 1987). In addition, land disposal restrictions also apply to nonliquid hazardous wastes containing halogenated organic compounds (HOCs) (e.g., PCBs) at concentrations greater than 1,000 ppm (effective November 8, 1988).

These land disposal restrictions only apply, however, when the PCB waste also meets the definition of hazardous waste. Therefore, if the PCBs are not contained in a hazardous waste, they would not be subject to the land disposal restrictions. Examples of TSCA laboratory waste regulated by LDR include hexane solvents mixed with PCBs and PCB degradation study residues (containing >1000 ppm HOCs). The following steps will assist facilities in identifying their responsibilities for the proper disposal of hazardous waste and non hazardous waste containing PCBs

- The facility must first identify whether the PCBs are mixed with a hazardous waste.
- If the PCBs are not mixed with a hazardous waste then they would not meet the criteria for California list wastes and the facilities would be subject to the TSCA disposal requirements in 40 CFR 761.60.
- If the PCB waste meets the definition of a hazardous waste, the facility would be subject to both RCRA and TSCA disposal requirements. The RCRA land disposal restrictions are more stringent than TSCA and therefore would be the most applicable regulations in this situation.

The RCRA land disposal restrictions cover all full quantity generators, and 100-1000 kg/month generators. Conditionally exempt small quantity generators are presently excluded from this

Toxic Substances Control Act

regulation (see 40 CFR Part 268 (c)(4)). Technically, this allows conditionally exempt generators to continue using chemical waste landfills for the disposal of mineral oil and other liquid PCBs in concentrations from 50 to 500 ppm having a flash point greater than 60 degrees Celsius

Guidance: Despite the exemption for conditionally exempt small quantity generators, EPA facilities should comply with the procedural and substantive provisions of the land disposal restrictions regardless of their generator status.

The following table outlines the PCB disposal options under TSCA, taking into account land disposal restrictions under RCRA

Table 2

PCB DISPOSAL OPTIONS FOR EPA LABORATORIES					
PCB Category with CFR Section	TSCA Incinerator (761 60)	High Efficiency Boiler (761 60) (a)	Chemical Waste Landfill (761 75)	Alternative Method (761 60 (e))	Solid Waste Disposal
PCB Transformers -> 500 ppm					
1 Undrained (761 60 (b)(1)(i)(A))	X		X		
2 Drained & solvent flushed					
PCB Contaminated Transformers and other contaminated electrical equip - 50-500 ppm					X
1 Drained (761 60 (b)(5)(i)(B))					
PCB Large Capacitors -> 3 lbs dielectric fluid at >500 ppm (761 60 (b)(2)(ii)(A))	X				
PCB Small Capacitors -<3 lbs dielectric fld(761 60 (b)(2)(ii))					X
Mineral oil dielectric fluid from PCB contaminated electric equipment -50-500 ppm	X	X	X	X	

Toxic Substances Control Act

PCB DISPOSAL OPTIONS FOR EPA LABORATORIES					
PCB Category with CFR Section	TSCA Incinerator (761 60)	High Efficiency Boiler (761.60) (a)	Chemical Waste Landfill (761 75)	Alternative Method (761 60) (e)	Solid Waste Disposal
Liquids other than mineral oil with 50-500 ppm (761 60 (a)(3))					
1 Flash Point <60°C (Ignitable hazardous waste)	X			X	
2 Flash Point >60°C (Meets hazardous waste definition)	X			X	
3 Flash Point >60°C (Does not meet hazardous waste definition)	X	X	X	X	
Non liquid PCBs - soil, rags or other debris >50 ppm (761 60 (a)(4))					
1 Does not meet definition of hazardous waste	X		X		
2 <1000 ppm PCBs and meets the definition of hazardous waste	X		X		
3 >1000 ppm PCBs and meets the definition of hazardous waste	X				
All other PCBs with >50 ppm (761 60 (a)(1))	X				

Common Containers (761 60(g))

PCB testing procedures allow generators to collect waste PCB oil in a single common container and then test the mixture for PCB concentration. No other substances or chemical mixtures, such as non-PCB oils or oils contain more than 500 ppm PCBs may be added to the container. Laboratories may therefore collect laboratory waste from research or analysis in the same container provided that none of the additions to the container affects the regulatory requirements through dilution (refer to the discussion on dilution in GENERAL APPLICABILITY)

The common container option also exists for EPA facilities using PCB equipment to facilitate testing of mineral oil dielectric fluid in the equipment. Facilities may mix the fluid in a single container,

before testing, provided that none of the fluid is known or assumed to contain above 500 ppm PCBs or is categorized as non-PCB oil

**STORAGE FOR
DISPOSAL**
(761 65)

PCBs or PCB items designated for disposal must immediately be placed in an appropriate DOT specification container and transferred to proper storage to await disposal. That date on which the PCBs or PCB items were taken out of service must be marked on the PCB article or container. The facility must remove the article or container and properly ensure its disposal within one year from the date it was placed into storage for disposal. For example, a PCB transformer placed into storage for disposal on June 1 would have to be incinerated by June 1 of the following year.

Although the PCB regulations provide a total of one year to dispose of PCB waste, the generator of PCB waste, according to TSCA Compliance Policy 6-PCB-6, must allow the disposal facility 90 days in which to dispose of the waste before the one-year deadline occurs. The policy states that "EPA will allocate enforcement liability for a failure to dispose of PCB waste within one year after it is placed into storage between the generator and the ultimate disposal facility based on the contribution by either party to the violation." For example, a disposal facility receiving PCB waste just 60 days before the one-year deadline and who is unable to incinerate the material until 30 days after the deadline would not be held liable, while the generator would be liable for one-third of the standard penalty. Laboratories presenting the waste to a disposal facility 30 days before the deadline would be liable for two thirds of the standard penalty if the disposal facility was unable to destroy the waste before the one-year deadline. Facilities are directed to Compliance Policy 6-PCB-6 for the complete liability chart.

Acceptable Containers

While in storage for disposal, or 30-day temporary storage, PCBs and PCB items must be placed in proper containers. DOT-

approved containers for the management of PCB wastes are identified in 49 CFR 173.202 and .204. A detailed list of DOT-specification containers that may be used to store PCB wastes prior to disposal is provided in Exhibit 09-02 of this chapter.

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Storage Facility

A facility used to store PCBs and PCB items designated for disposal must meet the following requirements.

- Adequate roof and walls to prevent rain water from reaching the stored PCBs and PCB items
- Adequate floor with continuous curbing at least six inches high. The containment volume must be equivalent to twice the internal volume of the largest PCB article or container, or 25 percent of the total internal volume of all PCB articles or containers in storage, whichever is greater
- No drain valves, floor drains, expansion joints or any other openings that would allow liquids to flow from the curbed area
- Floors and curbing constructed of smooth and impervious materials such as Portland cement
- Located above the 100-year floodplain (This information can be obtained through local county surveyor offices)

**Temporary Storage
for Disposal
(761.65(C))**

The regulations allow certain PCBs and PCB items to be stored for up to 30 days in a temporary storage area that meets fewer requirements than those for storage for disposal. The following items may be stored temporarily as long as each item is marked with the date it was removed from service.

- Non-leaking PCB articles and equipment
- Leaking PCB articles and equipment, provided that the items are placed in a non-leaking container with sufficient absorbent material to absorb any PCB liquid.
- PCB containers holding nonliquid PCBs in the form of soils, rags, and so forth
- PCB containers holding liquid PCBs at a concentration from 50 to 500 ppm, provided a spill, prevention, control, and countermeasure (SPCC) plan has been prepared for the area in accordance with 40 CFR Part 112 if any containers exceed 110 gallons

- Non-leaking PCB large high-voltage capacitors and PCB-contaminated electrical equipment that have not been drained when on pallets next to a proper storage facility. This is only allowed when the facility's unfilled storage space is equivalent to 10 percent of the total internal volume of all of the equipment stored outside of the facility. As an additional requirement, capacitors and equipment temporarily stored under these conditions are subject to weekly inspections.

**Storage at Point of
Generation**

Many EPA facilities generate waste from PCB sample extraction analysis. Such PCB wastes typically are collected in a container located in or under a laboratory fume hood. TSCA regulations do not address whether this method of collection of PCBs constitutes storage or temporary storage for disposal. A memorandum from John Smith, Acting Chief of the Chemical Regulation Branch, to Howard Wilson, Chief of Environmental Compliance Branch, dated September 25, 1989, provides some interpretation on this issue. The memorandum states that laboratory storage of PCB wastes in a hood is acceptable for storage provided a suitable containment pan (glass or steel) with 6-inch curbing is used. The memorandum also notes that storing PCBs under a hood is not considered temporary storage for disposal and therefore the 30-day storage limit and SPCC plan requirement do not apply.

Guidance: When collecting PCB waste in the laboratory or under a lab hood, EPA facilities should use one-gallon DOT specification containers. A suggested commercial source for this type of container is Label Masters, 5724 North Pulaski Rd, Chicago, Ill. 60646, (1-800-621-5808). Another commercial source is

Laboratory Safety Supply, P.O. Box 1308, Jonesville, WI 53547-1368, (1-800-356-0783). These containers require the PCB mark because they meet the definition of PCB containers (see 761.40) and must be marked with the date that PCB waste storage for disposal first commenced.

**Enforcement and
Research Samples and
Standards**

The authorizations provided to EPA laboratories for enforcement support and research and development do not exempt them from TSCA regulations covering marking, storage and disposal. If the

resulting waste material from laboratory operations was contaminated with PCBs at an original concentration of 50 ppm or greater, the laboratories would need to appropriately manage this as PCB contaminated waste. OPPTS, however, has allowed EPA laboratories to store enforcement samples and standards until the enforcement case is complete. As soon as there is no reason to maintain the samples, the samples must immediately be placed into storage for disposal and the one-year storage limit would begin to run on that day

EPA laboratories have, in the past, performed PCB research exposing mice, birds, and aquatic animals to PCBs. Laboratory animals that have been exposed to PCBs during research can be stored and disposed of according to the final PCB concentration in the animal.

Returning samples
forth to the sample
collector (761.65(i))

Facilities that keep laboratory samples on-site, either the sample litigation purposes or for future return to the sample collector, are not storing PCBs for disposal. Consequently, no manifest is required for laboratories returning analyzed PCB samples to the sample collector. When returning samples, laboratories must:

- Comply with DOT and U.S. Postal Service shipping requirements
- Accompany the sample with the sample collector's name, mailing address and telephone number, laboratory's name, mailing address and telephone number, the quantity of the sample, the date of shipment, and a description of the sample
- Package the sample so that it does not leak, spill, or vaporize

RECORDKEEPING
(761.180)

Facilities must prepare and maintain on file a written annual document log covering PCB use, storage, and disposal at the facility during the calendar year (January-December), if during the year they used or stored at one time:

- A PCB transformer, or
- 50 or more large capacitors (i.e., capacitors which contain 1.36 kg (3 lbs.) of dielectric fluid), or
- 45 kilograms (99.4 lb.) of PCBs in PCB containers

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Exhibit 09-03 provides a sample template for an Annual Document Log. SHEMD has created an electronic format to help prepare the annual document log. The format allows space for supporting records and lays out a method to generate certain required totals. When used with a computer, the totals and summary information are calculated and presented automatically. A copy of the log can be down-loaded from the OA website at dc_www.wic.epa.gov/oa

Guidance: To calculate the weight of PCBs in containers the facility may refer to the PCB Spill Cleanup Policy (761.125(b)) which provides an example stating that 270 gallons of 500 ppm PCBs in oils as being equal to 1 pound of pure PCBs. Using this formula, 1 ppm PCBs in oil is equivalent to 7.5 lb. PCBs / 1 million gallons of oil.

Facilities may use the following equation to calculate the weight of PCBs in containers

$$\frac{(PCB \text{ in ppm}) \times (7.5 \text{ lb PCBs})}{(\text{million gals oil})} = \frac{(\text{lb. PCBs})}{(\text{million gals oil})}$$

$$\frac{(\text{lb. PCBs}) \times (\text{gals of oil in container})}{(\text{million gals oil})} = (\text{lb. of PCBs})$$

$$(\text{lb. of PCBs}) \times (0.45 \text{ kg/lb.}) = (\text{kg of PCBs})$$

After inserting numbers from the Spill Cleanup Policy example, the equation works out as follows:

$$\frac{(500 \text{ ppm}) \times (7.5 \text{ lb PCBs})}{(\text{million gals oil})} = \frac{(3750 \text{ lb. PCBs})}{(\text{million gals oil})}$$

$$\frac{(3750 \text{ lb. PCBs}) \times (270 \text{ gallons oil})}{(\text{million gals oil})} = 1.0 \text{ lb. pure PCBs}$$

$$(1.0 \text{ lb. PCBs}) \times (0.45 \text{ kg/lb.}) = 0.45 \text{ kg PCBs}$$

Note. This calculation does not provide the weight of the dielectric fluid, but rather the weight of pure PCBs contained in the dielectric fluid. Therefore this formula can not be used to calculate the weight of dielectric fluid in a capacitor to determine if it meets the definition of small or large capacitor.

If facilities meet any of the previous criteria for transformers, capacitors, or containers with PCBs, they must develop and maintain records on the disposition of all PCBs and PCB items at the facility. These records are used to compile the annual document log that must be completed by July 1 of the following year. There is no requirement for the submission of an annual document log to any TSCA representative; TSCA requires that facilities maintain the document on file at the facility. The records and documents contributing to the annual document log must be maintained for a period of three years after the facility stops using or storing PCB items in the regulated quantities.

The annual records include:

- All signed manifests
- All certificates of disposal

Information required for the annual document log varies depending on what types of PCBs are on-site at the end of the calendar year or were shipped off-site for disposal during the calendar year. Exhibit 09-03 provides a data collection construct that can be used for the PCB Annual Document Log.

Recordkeeping

Guidance: EPA facility representatives are encouraged to create a central file for all PCB records. Even though certain provisions in the regulations allow facilities to dispose of records after a period of time, SHEMD is recommending that EPA facilities retain these records indefinitely. Besides records for the annual document log, the PCB regulations necessitate the development of the following types of documentation to demonstrate compliance with PCB management standards:

- *Records of quarterly visual inspection and related maintenance information of PCB transformers (see 761.30)*
- *Records of PCB transformer registration with local fire response personnel (see 761.30)*
- *Records of monthly visual inspection of the PCB storage for disposal area (see 761.65)*

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- *Records of weekly visual inspections of the temporary or interim PCB storage for disposal area (see 761.65).*

EPA Identification
Numbers (761.202)

Upon receipt of the notification form (see 761.205), EPA will assign a unique PCB identification number to each facility. Facilities that already possess a RCRA identification number will receive that number as their PCB identification number.

Notification of Waste
Activity (761.205)

Facilities generating (and storing in long-term storage for disposal areas), transporting, or disposing of PCB waste must notify EPA of these activities using EPA Form 7710-53. Facilities engaged in PCB waste handling prior to February 5, 1990, were required to notify by April 4, 1990. Facilities beginning such PCB handling after February 5, 1990, must notify prior to engaging in PCB waste handling.

Manifests (761.207)

Facilities that generate and ship PCB waste off-site must complete a uniform hazardous waste manifest for that material using EPA Form 8700-22. Generators should acquire manifests from the state to which the waste is being shipped (consignment state). If this is not possible, they may acquire manifests from their state hazardous waste officials. If manifests are not available from either source, they may obtain copies of the manifests from commercial printers.

Manifest Contents - In addition to general facility information, several items must be entered on a TSCA manifest. These include a proper DOT description (described below), the earliest date of PCB removal from service for disposal, unique identifying number for each container, type of PCB waste for each container, and serial number of any PCB article not held in containers or bulk shipment.

Proper DOT Description - The Department of Transportation (DOT) has amended its regulations regarding proper description of PCB waste before transport. EPA facilities are recommended to use a hierarchical approach to the identification and classification of PCB waste.

Facilities must first ascertain whether the PCB waste meets any of the characteristics of a hazardous waste as provided in 40 CFR Part

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261 Subpart C When PCBs are mixed with other hazardous wastes, the facilities must determine the appropriate DOT hazard class (e.g., corrosive, flammable, oxidizer) and identify the waste accordingly. SHEM Managers should refer to 49 CFR 173.2a to assist them in "Classification of a material having more than one hazard." For example, because "Miscellaneous hazardous materials" is the only hazard class applicable to PCBs and is the lowest hazard class identified in 49 CFR 173.2a, a mixture that meets the hazard class definition of a flammable liquid would be reported as such. An example of this would be a mixture of low concentrations of PCBs in methanol. If the PCB waste does not meet the criteria for reportable quantity (RQ), then the proper DOT description would be

- Waste flammable liquid, n.o.s. (methyl alcohol UN1230, II (PCBs))

(Add RQ to the end of the description if the PCBs meet the criteria for RQ as defined in the following section.)

PCB waste that does not fit the definition of hazardous waste, and is not otherwise contaminated, should next be compared with the definition of a hazardous substance in 49 CFR 172.8 (DOT regulated wastes). In order for PCB waste (not otherwise contaminated) to be reported as a hazardous substance for the purposes of transportation, it must meet both of the following requirements:

- The waste must contain a quantity of PCBs, in a single package, that equals or exceeds the RQ of 1 lb (see RECORDKEEPING section for assistance in calculating the weight of PCBs)
- When in a mixture, the PCBs must exist in a concentration by weight that equals or exceeds 20 ppm (see 49 CFR 172.8. Definition of "Hazardous Substance" and 172.101, Appendix).

According to DOT regulations in 49 CFR 172.203(c), if a PCB waste meets the criteria of a hazardous substance the proper US DOT description is:

- RQ, Polychlorinated Biphenyls, 9, UN2315, II

Guidance provided to SHEMD from DOT staff indicates that the following DOT description should be used if PCB waste does not meet the definition of a hazardous waste or a hazardous substance:

- Non-DOT regulated (Polychlorinated Biphenyls)

A hazard class and ID number are not applicable in the above situation and are therefore not included in the DOT description.

Retention of
Manifests
(761.209)

Facilities are required to maintain signed manifests for three years from the date the PCB waste was accepted by the initial transporter.

Guidance: SHEM Managers should consider retaining PCB waste manifests and related Certificates of Destruction for longer than the three year mandatory time period to document compliance with PCB management standards. Additionally, an extended retention period is useful for documenting the quantity and type of PCB wastes that are sent for off-site treatment and disposal in the event that a potentially responsible party search is conducted under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Accordingly, EPA facilities should retain PCB manifests and Certificates of Destruction indefinitely.

Exception Reports
and Certificates of
Disposal (761.215 and
.218)

As with hazardous waste, generators are required to contact the transporter and/or the disposal facility if a signed manifest is not returned within 35 days. After 45 days, the generator is required to submit an Exception Report to the EPA Regional Administrator. The report must include a copy of the manifest and a letter indicating efforts taken to secure a signed copy.

For any regulated PCB waste, disposal facilities must return a Certificate of Disposal (CD) within 30 days of disposal indicating how and when the waste was disposed. For PCBs sent for disposal within nine months of being taken out of service, the CD must be received within 13 months after the PCBs were taken out of service. If the CD is not received within 13 months, or if it indicates that the waste was disposed beyond one year from the date the waste was removed from service, a One-year Exception Report must be filed. This report must include a copy of the manifest, the date the PCBs were removed from service, the date

they were transferred off-site, the identities of all parties handling the PCBs after leaving the facility, and any information as to why disposal did not occur within the allotted time.

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PCB Transformer Inspection Log

Facility Address		Transformer Location:		
		Building Name	_____	
		Room #	_____	
		Outdoor Subst	_____	
PCB Transformer/Storage Facility Inspection and Maintenance Log				
Date and Inspector's Initials	Inspection or Maintenance	Inspection Results (Provide volume and location of leaks)	Describe Remedial Action	Describe Maintenance Action

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**Department of Transportation (DOT) - Specification Containers
for PCB Waste Storage**

Non-Bulk Packaging for PCB Liquids	Non-Bulk Packaging for PCB Solids
<p>Steel drum: 1A1 or 1A2 Aluminum drum: 1B1 or 1B2 Metal drum other than steel or aluminum 1N1 or 1N2 Plastic drum 1H1 or 1H2 Fiber drum 1G (with liner) Wooden barrel: 2C1 Steel jerrican: 3A1 or 3A2 Plastic jerrican: 3H1 or 3H2 Plastic receptacle in steel, aluminum, fiber or plastic drum 6HA1, 6HB1, 6HG1 or 6HH Plastic receptacle in steel, aluminum, wooden, plywood or fiberboard box 6HA2, 6HB2, 6HC, 6HD2 or 6HG2</p>	<p>Steel drum 1A1 or 1A2 Aluminum drum 1B1 or 1B2 Plywood drum 1D Plastic drum. 1H1 or 1H2 Fiber drum: 1G Metal drum other than steel or aluminum 1N1 or 1N2 Wooden barrel: 2C1 or 2C2 Steel jerrican: 3A1 or 3A2 Plastic jerrican. 3H1 or 3H2 Steel box 4A1 Steel box with liner 4A2 Aluminum box 4B1 Aluminum box with liner 4B2 Natural wood box 4C1 Natural wood box, sift proof 4C2 Plywood box: 4D Reconstituted wood box 4F Fiberboard box: 4G Expanded plastic box 4H1 Solid plastic box. 4H2 Plastic receptacle in steel, aluminum, fiber or plastic drum 6HA1, 6HB1, 6HG1 or 6HH Plastic receptacle in steel, aluminum, wooden, plywood or fiberboard box 6HA2, 6HB2, 6HC, 6HD2 or 6HG2</p>

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xAnnual PCB Document

Disposition	PCB Items	PCB Transformers	PCB Large Capacitors	Other PCB Articles (non-transformers or capacitor articles)	PCB Article Containers	PCBs or PCB Items in Containers	Bulk PCBs	TOTALS
PCB Items Remaining in Service								-
	Number of items							0
	Total Weight (kb) of PCBs							0.0
								-
PCB Items Placed in Storage for Disposal								-
	Number of items							0
	Total Weight (kb) of PCBs							0.0
								-
PCB Items Transferred								-
	Number of items							0
	Total Weight (kb) of PCBs							0.0
								-
PCB Items Disposed								-
	Number of items							0
	Total Weight (kb) of PCBs							0.0
								-

**SAFETY, HEALTH, AND
ENVIRONMENTAL MANAGEMENT
PROGRAM GUIDE**

Guide No. 11

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RESOURCE CONSERVATION AND RECOVERY ACT PROGRAM

SCOPE OF THE PROGRAM

This Program Guide provides an overview of the requirements EPA facilities must fulfill to comply with the regulations, guidance, and procedures associated with the hazardous waste management provisions under Subtitle C of the Resource Conservation and Recovery Act (RCRA). RCRA Subtitle C regulates hazardous waste management from "cradle to grave." The full scope of RCRA encompasses solid waste management, hazardous waste management, waste oil, land disposal restrictions (LDRs), and underground storage tanks (USTs). This chapter focuses on hazardous waste identification and classification, generator requirements, storage and disposal requirements, recycling and the LDRs.

REGULATORY REQUIREMENTS

The key or basic elements of the RCRA Program required by law and/or EPA policy are to

- Manage all hazardous waste handling from generation through disposal in a prudent and fully compliant manner
- Properly identify and characterize (i.e., characteristic or listed) solid waste that may be defined as hazardous
- Identify and comply with any additional hazardous waste listings, characteristics, or management standards imposed by state or local regulations

AUTHORITIES

The following documents are the sources of the legal authority that establish the applicability and requirements of this program.

- Resource Conservation and Recovery Act, as amended
- Title 40 CFR Parts 260 through 280

REFERENCES

The following documents listed below can help you implement the RCRA program.

- 40 CFR Parts 260 through 280
- Russell Phifer and William McTigue, Jr., Lewis, Handbook of Hazardous Waste Management for Small Quantity Generators
- EPA, EPA Facility Waste Stream Characterization Manual
- Office of Solid Waste and Emergency Response (OSWER), Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes
- Federal Register (specific volumes and page numbers cited where applicable)
- Office of Solid Waste and Emergency Response (OSWER) directives (cited where applicable)
- Regulatory Development Branch (RDB) policy correspondence

IMPLEMENTATION ACTIVITIES

The following list gives an overview of the activities that the RCRA program will require. Specifically, to implement and operate this program, you must.

- Identify and characterize hazardous waste and track hazardous waste generation
- Segregate P-listed wastes from other types of listed and characteristic wastes to avoid generating larger quantities of acute waste that could possibly change the facility's generator status
- Ensure only federal and state licensed or permitted transporters are used for transporting hazardous wastes on public highways
- Store hazardous waste in a secure area
- Manage hazardous waste in accumulation or permitted storage areas by date. Waste in storage for disposal for the longest period of time should be the first shipped off-site for disposal
- Provide material safety data sheets (MSDSs) and posters in and near hazardous waste storage areas and laboratories to guide employees in the safe management of incompatible waste streams
- Using only licensed and RCRA permitted treatment, storage, and disposal facilities for off-site hazardous wastes management.

IMPLEMENTATION IMPLICATIONS

The management systems and internal controls required to implement this program include

- A current log that quantifies waste generation volumes each month for monitoring generator status
- A standardized system for tracking hazardous waste to ensure the waste is being sent to and received by an approved

facility within generator time limits for on-site accumulation.

- Documentation of hazardous waste container and accumulation area inspections
- A hazardous waste training program, including detailed and accurate personnel training records
- A process for reviewing hazardous waste manifests for technical accuracy and compliance with regulatory standards.
- Contractual mechanisms or interagency agreements for securing permitted hazardous waste disposal vendors
- A current copy of the state hazardous waste regulations and the federal RCRA regulations

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RCRA 11-01 Table of Contents

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Section 11-02 Introduction

PURPOSE

The Resource Conservation and Recovery Act (RCRA) of 1976 gave the U.S. Environmental Protection Agency (EPA) the responsibility of regulating solid waste, a subset of which is hazardous waste. RCRA addresses a range of topics relating to solid waste management, those most relevant to EPA facilities include hazardous waste management, waste oil, land disposal restrictions (LDRs), and underground storage tanks (USTs).

This chapter of the Environmental Compliance Manual (ECM) emphasizes the hazardous waste management provisions under Subtitle C of RCRA. Many activities at EPA facilities are affected by these regulations, which address the management of hazardous waste from "cradle to grave," meaning from the point of initial generation to permanent disposal.

This chapter provides descriptive information on regulatory requirements, guidance, recommended procedures, and management tools to assist EPA facilities in complying with Subtitle C of RCRA and to mitigate the risks of hazardous waste management.

SCOPE

Subtitle C of RCRA regulates the various facets of hazardous waste management. This chapter focuses on the RCRA regulations affecting EPA operations, such as hazardous waste identification and classification, generator requirements, storage and disposal requirements, recycling and the land disposal restrictions. This chapter, however, does not address management of nonhazardous solid waste or underground storage tanks, which are discussed in separate chapters of the ECM.

AUTHORITY

Resource Conservation and Recovery Act, as amended Title 40 CFR Parts 260 through 280

OBJECTIVES

The objective of this chapter is to clarify select portions of the RCRA regulations that commonly apply to EPA facilities. This chapter also provides guidance and recommended procedures.

intended to further protect EPA employees, facilities, and the environment.

RESPONSIBLE OFFICERS

All persons managing hazardous waste at EPA facilities are responsible, to some degree, for proper handling, storage and disposal of hazardous waste. Compliance with RCRA regulations is primarily the responsibility of the Safety, Health and Environmental Management Program (SHEMP) Manager, Hazardous Waste Control Officer, and EPA facility management

REFERENCES

The following sources were used to develop this chapter:

- 40 CFR Parts 260 through 280
- Federal Register (specific volumes and page numbers cited where applicable)
- Handbook of Hazardous Waste Management for Small Quantity Generators, Russell Phifer and William McTigue, Jr., Lewis Publishers Michigan, 1988
- Office of Solid Waste and Emergency Response (OSWER) directives (cited where applicable)
- Regulatory Development Branch (RDB) policy correspondence
- EPA Facility Waste Stream Characterization Manual
- Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes (OSWER Directive 9938 4-03, April 1994)

Section 11-03
Identification of Hazardous Waste - 40 CFR Part 261

INTRODUCTION

As a cradle-to-grave management system designed to safeguard human health and the environment, the RCRA program regulates all hazardous waste handling from generation through disposal. The critical first step of the hazardous waste management process is the proper identification of solid wastes that may be defined as hazardous. When wastes are not properly identified, subsequent management of the waste may threaten employee safety, pose fire risks, and impair environmental quality. Accordingly, it is crucial to establish a systematic, rational approach to waste identification. It is particularly important for EPA facilities to proactively pursue safe management practices as a model for the regulated community.

Guidance: EPA facilities should establish a standardized system for identifying and tracking hazardous waste. A tracking system requires development of standardized waste profiles that identify common facility wastestreams, regulated points of generation, and proper handling techniques. Exhibits 11-1 and 11-2 present sample waste characterization profile and tracking forms that can be used for this purpose. The tracking forms ensure proper waste identification and provide the basis for compliance with subsequent hazardous waste management standards. A standardized waste tracking system enables precise counting and determination of generator status, compliance with accumulation limits, and accurate manifesting. The tracking system also helps identify source reduction and other pollution prevention opportunities.

**DEFINITION OF
SOLID WASTE**
(§261.2)

A solid waste is any material that is abandoned, recycled or inherently waste-like, as explained in §261.2. Solid waste as defined in RCRA refers not only to solids, but also to semi-solids, sludges, liquids, and contained gases.

There are limited circumstances under which certain materials would not be considered solid wastes when they are destined for recycling. Specifically, sludges or by-products that exhibit a characteristic of hazardous waste, and all discarded commercial chemical products, are not considered solid wastes when they are reclaimed.

**DEFINITION OF
HAZARDOUS WASTE**
(§261.3)

Section 3001 of RCRA charges EPA with developing criteria for identifying the characteristics of hazardous waste and for listing hazardous waste based on toxicity, persistence or degradability in nature, potential for accumulation in tissue, and other related hazardous properties

Under the authority of RCRA §3001, EPA promulgated regulations that classify wastes as hazardous against two major criteria. A solid waste is considered hazardous under the RCRA statute if (1) it is one of a number of specific chemicals or wastestreams that EPA has listed as hazardous, or (2) it exhibits one of four hazardous physical or chemical properties (e.g., ignitable, corrosive, reactive, or toxic) as defined under §§261.21-.24. These hazardous waste lists and characteristics are discussed in detail later in this chapter.

In establishing the statutory definition of hazardous waste, EPA recognized that certain waste types pose potential threats to human health and the environment even when properly managed. Hazardous wastes that may present insidious risks are designated as acutely hazardous wastes and are subject to special management requirements. All other hazardous wastes are considered nonacute.

**EXCLUSIONS FROM
SUBTITLE C**
(§261.4)

Two classes of materials are excluded from the hazardous waste regulations: materials that are not solid wastes, and (§261.4) solid wastes that are not hazardous wastes.

Not Solid Wastes
(§261.4(a))

Two materials specifically excluded from the definition of solid waste are domestic sewage and mixtures of domestic sewage with other wastes (including hazardous) that pass through a sewer system to a publicly owned treatment works (POTW). Requirements for these materials are established under the Clean Water Act and are addressed in Chapter 6 of this manual. For example, a laboratory may generate a corrosive waste during routine operations. Once the waste is discharged via a laboratory sink or drain to the sewer which is connected to a POTW, the waste is no longer subject to RCRA regulation. Clean Water Act general pretreatment standards or local sewer use ordinances, however, will have to be met prior to discharge into the municipal wastewater collection system. See §261.4(a) for the full list of materials that are excluded from the definition of a solid waste.

Not Hazardous Wastes
(§261.4(b))

Chlorofluorocarbons (CFCs) used in air conditioning or refrigeration systems are exempt from Subtitle C regulation when

they are reclaimed for further use, but not when they are sent off-site for disposal

Used oil filters may also be exempt from the hazardous waste regulations. Non-terme plated (e.g., automobile) oil filters are excluded from the definition of hazardous waste if they are gravity hot-drained and have not been mixed with a listed hazardous waste. See §261.4(b) for a full list of solid wastes that are excluded from hazardous waste regulations.

**Conditional Exclusions
(§261.4(d) - (f))**

Laboratory Samples. Samples sent to a laboratory for the sole purpose of characterization or identification are exempt from RCRA regulations if the generator complies with the Department of Transportation (DOT) and U S Postal Service (USPS) shipping requirements specified in §261.4(d)(2)(ii). After the sample has been analyzed, it may also be sent back to the sample collector under the same exempt status. But once the sample is no longer needed for a specific purpose (i.e., analysis is complete and any related enforcement action has concluded) and the sample is intended for disposal, it no longer qualifies for this exclusion.

Treatability Studies. Persons who generate or collect samples for purposes of conducting treatability studies are exempt from complying with regulations under Part 261 through 263 of RCRA when the wastes are collected, accumulated prior to transportation, or transported to the laboratory or testing facility. The collector must comply with certain shipping requirements specified by DOT and USPS, and recordkeeping requirements as cited in §261.4(e)(2). Once the studies are complete or the samples are no longer required, they become subject to all applicable regulations when either discarded by the testing facility or upon return to the sample collector.

The samples themselves and the facilities performing the treatability studies are likewise exempt from the RCRA requirements, provided that the facility handles the samples in strict accordance with the procedures enumerated at §261.4(f).

Several limits are imposed on treatability study samples as part of these exemptions. For example, the weight of treatability study samples must not exceed 10,000 kilograms (kg) of environmental media contaminated with nonacute hazardous waste. Additional weight thresholds include no more than 2,500 kg of media contaminated with acutely hazardous waste, 1,000 kg of nonacute

hazardous waste, or 1 kg of acutely hazardous waste. For additional conditions placed on these samples, such as maximum holding periods and shipment quantities, generators, sample collectors and facilities that receive field samples should refer to 40 CFR §261.4(e) and (f).

LISTED HAZARDOUS WASTE
(§261 Subpart D)

If a solid waste has not been excluded, it is a hazardous waste if it is specifically listed. The listed hazardous wastes in 40 CFR §§ 261.31- 33 comprise four groups:

- F-listed wastes
- K-listed wastes
- P-listed wastes
- U-listed wastes.

In establishing the lists, EPA arbitrarily identified F-, K-, P- and U-designations. The letters carry no purpose other than to identify particular listing categories.

Each listed waste has an associated hazard code which reflects the reason the waste was listed by the EPA Administrator. Hazardous properties, with the designated codes in parentheses, are as follows: ignitable (I), corrosive (C), reactive (R), and acutely hazardous (H). Wastes are also coded if they display the toxicity characteristic (E) in §261.24 or have been listed in §§261.31- 32 because they contain any of the toxic constituents in 40 CFR Part 261, Appendix VIII and exhibit toxicological properties that pose potential threats to human health and the environment when improperly managed (T). For each F-listed and K-listed waste noted as E, T, or H, Appendix VII in Part 261 specifically identifies the toxic constituent(s) which forms the basis for listing. For example, F011 is listed because it contains toxic cyanide salts.

Only a portion of the listed wastes are defined as acutely hazardous. They are F020-F023, F026-F027, and all P-listed wastes. Such wastes are an important management consideration since they are subject to more stringent regulatory standards.

F-Listed Hazardous Wastes
(§261.31)

The F-list includes nonspecific source wastes that are not attributable to a specific industry or process unit. EPA laboratory facilities routinely generate spent solvents (F001-F005) and occasionally produce dioxin-contaminated wastes (F020-F023, F026-F028). Other F-listed wastes that EPA facilities may

occasionally receive for analysis from field investigations include electroplating wastes (F006-F019), wastes from the production of chlorinated aliphatic hydrocarbons (F024/F025), wood preserving wastes (F032-F035), petroleum refinery wastes (F037, F038), and multi-source leachate (F039)

Spent Solvents The spent solvent wastes F001-F005 are from nonspecific sources. The F001 listing, however, only applies to solvents used in degreasing operations. Laboratory solvent wastes frequently fall into one or more of the F002-F005 listings.

The spent solvent listings F001, F002 and F004 are listed due to their toxicity; F003 is listed solely due to ignitability; and F005 is listed for both ignitability and toxicity. The solvent constituents in the F001-F005 listings are presented alphabetically in Exhibit 11-3 to facilitate waste identification.

The scope of the spent solvent F-list was clarified in the December 31, 1985, Federal Register. The spent solvent list covers only those solvents that are used for their solvent properties. For example, toluene used in a parts degreaser would be considered a form of solvent use. The list applies to solvents used in degreasing and cleaning, as diluents and extractants, and in reaction and synthesis media, but only when spent. According to 50 FR 53316, December 31, 1985, "a solvent is considered spent when it has been used and is no longer fit for use without being regenerated" or otherwise reprocessed. Even if a solvent can theoretically be further used, it will be considered spent when it is removed from service without actual continued beneficial use.

A product that contains solvent ingredients does not qualify for spent solvent listing following use if the product itself was not applied as a solvent. For example, although xylene performs a solvent function when added to paint, the resulting mixture would not carry an F-listing after use, however, xylene based thinner would become F003 when discarded following use as a paint stripper in equipment cleaning (see 05/20/87 interpretive letter from Sales to Czigler; RPPC#944 1987(18)).

In 1985, the spent solvent list was redefined to include solvent mixtures containing, before use, 10 percent or more total listed solvent (50 FR 53315, December 31, 1985). The list was also expanded to include the still bottoms from the recovery of these solvents. The 10 percent threshold was selected based on data that

most solvent blends contain well over 10 percent by volume of the listed solvent constituents.

For purposes of waste identification, "before use" refers to practical application at the facility, rather than to composition as purchased. For instance, if a solution of carbon disulfide with a concentration of 18 percent were cut with an equal part of water prior to use in an analytic method, the resulting spent solvent waste would not be the listed waste F005.

To be listed as an F001, F002, F004 or F005 spent solvent waste, the solvent product must have contained, before use, at least 10 percent of any single one of the above solvents or any combination of the above solvents. In the case of a solvent product mixture, all appropriate F-listings must be applied when classifying the waste. For example, a solvent product containing, before use, 6 percent chlorobenzene (F002) and 4 percent cresols (F004) would be classified as F002, F004 waste when spent.

The F003 listing is significantly different from the F001, F002, F004 and F005 listings. For an F003 listing, the solvent product before use must be comprised of one of the following: (1) pure F003 constituents; (2) a technical grade of an F003 solvent, or (3) a mixture of an F003 solvent and a total of 10 percent or more of any combination of F001, F002, F004, or F005 solvents.

Four steps should be followed to correctly identify an F-listed spent solvent waste:

Was the product used for its solvent properties?

Step 1. Determine whether the solvent was used for its "solvent properties" as defined in 50 FR 53315, December 31, 1985. If these conditions were not met, the waste will not meet F001 through F005 listing criteria (however, the waste may meet other F-listings).

Before use, did it contain \geq 10% F001, F002, F004, and/or F005?

Step 2. If the waste was used as a solvent, determine whether the solvent product contained more than 10 percent of any combination of F001, F002, F004, or F005 solvent constituents before use.

Did it contain F003? additional F003? In pure or technical grade?

Step 3. Determine if any of the F003 listed solvents are present. To meet the F003 listing, the solvent must be 100 percent constituents before use, a technical grade of an F003 solvent, or a mixture with an F003 solvent that contains at least 10 percent of one or more other F-listed solvents.

Apply the appropriate listing(s)

Step 4. If the criteria in Steps 2 or 3 are met, classify the hazardous waste by each applicable waste code (i.e., F001, F002, F003, F004 and F005). If only Step 3 is met, and the waste does not contain more than 10 percent of any combination of F001, F002, F004, or F005 solvents before use, identify the waste as only F003 for the corresponding solvent constituents.

For example, a spent solvent extraction that was 15 percent methylene chloride and 85 percent acetone before use would be classified as F002, F003 waste.

Dioxin-Contaminated Wastes: The F-listed wastes F020 through F023 and F026 through F028 result from the manufacture of chlorinated phenolic compounds. Often these wastes are contaminated with dioxins and generically referred to as dioxin-contaminated wastes. EPA laboratories may encounter these wastes when performing analysis of environmental samples originating near a past or present pesticide manufacturing operation. Chlorophenolic formulations are also used in pollutant fate and transport modeling as well as degradation kinetics studies. Certain wastes generated by EPA laboratories may contain trace concentrations of dioxins which are not derived from chlorophenolic manufacturing and therefore do not meet the F020 through F023 and F026 through F028 listings. Nevertheless, these waste streams should be managed in an environmentally sound manner, preferably by an industrial solid waste or hazardous waste treatment or disposal facility.

Upon accepting an environmental sample, it is imperative that EPA personnel ascertain the origin of the sample in order to assign the correct EPA hazardous waste code for appropriate disposal.

Table 1 shows how the F-listings should be applied to three wastes commonly encountered at EPA laboratories.

**Table 1
F-Listings for Common Laboratory Wastes**

Sample Waste	EPA Hazardous Waste Number(s)	Explanation
Aqueous phase extraction waste generated during analysis of semivolatile organics. Contains water and trace quantities of methylene chloride.	Not Hazardous	This is a process waste contaminated with trace quantities of solvent. OSW does not consider this waste to meet the F002 listing.
Solvent phase extraction waste generated during analysis of chlorinated herbicides. Contains ethyl ether. (Aqueous phase contains analyte salts.)	F003	Before use, the solvent contained pure ethyl ether.
Sample extract waste generated during analysis of dioxins. Contains hexane, methanol, methylene chloride and benzene	F002, F003, F005, possibly F021-F028	Before use, the solvents were reagent grade: methylene chloride (F002), benzene (F005), and methanol (F003). The waste also contains methanol; thus, it is F003. It may be F021-F028 depending on the sample's origin.

**K-Listed Wastes
(§261.32)**

The K-list consists of wastes from specific hazardous waste generating processes and specific types of industries (e.g., K009 is distillation bottoms from the production of acetaldehyde from ethylene). Generally, each waste listing has a limited number of generators due to the specific nature of each process. Consequently, there is usually little confusion linking generators with applicable K-listed waste streams. EPA facilities may, however, encounter K-listed wastes in the course of analyzing samples from industrial operations or Superfund sites. Upon accepting an environmental sample, it is imperative that EPA laboratory personnel determine the origin of the sample to facilitate accurate waste classification upon disposal.

**P- and U-Listed Wastes
(§261.33)**

P- and U-lists include commercial chemical products and manufacturing chemical intermediates that are hazardous wastes when discarded or intended to be discarded. This applies only to unused formulations of these chemicals, or situations where chemical products or intermediates are mixed with other solid wastes for the purpose of disposal (as discussed in the definition of hazardous waste, 40 CFR §261.3). P-listed chemicals are acutely hazardous wastes when discarded.

Unused chemical formulations in which a P- or U-listed chemical is the sole active ingredient would also be regulated as a P- or U-listed waste when discarded regardless of concentration. This applies even to those formulations where the P- or U-listed chemical comprises only a small percentage of the product or by-product solution. For example, if a dilute toluene solution (where toluene is 20 percent and water 80 percent) is formulated to be used as a laboratory reagent, but is not used, the toluene in the unused mixture would be the sole active ingredient, and the mixture would be managed as U220 when discarded.

The P- and U-listings also apply to off-specification products and spill residues of unused commercial chemical products, but not to rags or supplies that are contaminated with these chemicals during non-spill cleanup and maintenance activities. Thus, if a product with the sole active ingredient toluene were discarded after exceeding its shelf life, the U220 listing would again apply.

Hazardous waste regulations cannot be circumvented by mixing two unused P- or U-listed commercial chemical products. If two commercial chemical products that are unused and intended to be discarded are mixed prior to disposal, the resulting mixture would be identified by the two commercial chemical ingredients. For example, if product grade methanol (U154) and toluene (U220) were combined prior to disposal, the waste would be identified as U154 and U220.

Guidance: EPA facilities should segregate P-listed wastes from other types of listed and characteristic wastes. This will avoid generating larger quantities of acute waste that could possibly change the facility's generator status.

**CHARACTERISTIC
HAZARDOUS WASTE**
(§261 Subpart C)

In addition to the hazardous waste listings, a solid waste is a hazardous waste if it exhibits one or more characteristics of hazardous waste. These characteristics, along with their corresponding regulatory citation and waste code, follow:

<u>Regulatory Citation</u>	<u>Characteristic</u>	<u>Waste Code</u>
261.21	Ignitability	D001
261.22	Corrosivity	D002
261.23	Reactivity	D003
261.24	TC Toxicity	D004 - D043

Ignitability (§261 21)

Petroleum distillates and stoddard solvents often exhibit the characteristics of ignitability

A liquid waste, other than an aqueous solution containing less than 24 percent alcohol by volume, is considered ignitable if it has a flash point less than 60°C (140°F). The ignitability characteristic also includes a small category of nonliquids which are capable of causing fire through friction, absorption of moisture, or spontaneous chemical change. In addition, compressed gases defined as flammable under DOT standards (e.g., hydrogen, oxygen, acetylene, propane), as well as DOT defined oxidizers (e.g., nitric acid, perchloric acid, chromic acid, hydrogen peroxide), are ignitable hazardous wastes and carry the D001 waste code.

Corrosivity (§261 22)

Excess reagents such as nitric or sulfuric acid commonly display the corrosivity characteristic

A waste is considered corrosive if it is aqueous and has a pH of less than or equal to 2, or greater than or equal to 12.5, or if it is a liquid and corrodes steel at a rate of more than 6.35 mm (0.25 inches) per year. The regulations only address the concept of corrosivity for liquid or aqueous wastes. Waste sodium hydroxide pellets, for example, are not a hazardous waste. Generators, however, should be warned that some solids may be corrosive when dissolved in a liquid, and thus should be handled cautiously (even though they are not hazardous wastes).

***Guidance.** Only the pressure filtration step of SW-846 Method 1311 (Test Methods for the Evaluation of Solid Wastes: Physical/Chemical Methods, Third Edition. Contact the Government Printing Office at 202-512-1800, order number 955-001-00000-1 to obtain a copy), the Toxicity Characteristic Leaching Procedure, should be used to determine if wastes are not liquids for the purpose of applying the characteristics of ignitability or corrosivity. Negative results from other test methods cannot conclusively demonstrate the absence of free liquid.*

Reactivity (§261 23)

The characteristic of reactivity is defined for the most part in subjective terms. For example, if a waste is normally unstable or reacts violently with water, it is considered a reactive hazardous waste. One quantitative criterion for determining reactivity is the generation of cyanide and sulfide gases when exposed to pH conditions between 2 and 12.5. Although the regulations do not specify a regulatory level of gas generation, EPA has published interim threshold levels of 250 mg HCN/kg waste and 500 mg H₂S/kg waste. Interim thresholds and testing procedures used to determine HCN and H₂S generation are contained in SW-846 Volume II, Section 7.3. The procedures outlined in Section 7.3

should be used in conjunction with Method 9010 for HCN and Method 9030 for H₂S to obtain a value for comparison with the specified thresholds.

For example, if a cyanide-bearing waste generates in excess of 250 mg of gaseous HCN/kg of waste when exposed to pH conditions between 2 and 12.5, it would be classified as a reactive hazardous waste (D003)

Toxicity
(§261.24)

In March 1990, EPA promulgated the final Toxicity Characteristic (TC) rule (55 FR 11798). This rule established the Toxicity Characteristic Leaching Procedure (TCLP), which replaced the extraction procedure (EP) toxicity test as the method for determining the characteristic of toxicity. The TCLP more accurately reproduces the leaching conditions of a landfill. Additionally, the technical procedures associated with the TCLP have allowed EPA to add 26 new organic constituents to the contaminant list, which previously included eight metals (D004-D011) and six pesticides (D012-D017). The TCLP procedure yields an extract of the waste. For each hazardous contaminant, EPA has established a threshold level in this waste extract above which the waste is considered hazardous.

The TC final rule promulgated a number of parameter changes to the originally proposed contaminant list. The entire TC constituent list is found in Table 2.

MIXTURES
(§261.3)

Mixtures of solid wastes and hazardous wastes can in some cases be regulated as hazardous wastes.

Characteristic Waste and Solid Waste

If a solid waste is mixed with a characteristic hazardous waste through normal laboratory operations, and the mixture exhibits any hazardous waste characteristic, the entire volume would be considered a hazardous waste. For example, if instrument effluents from Total Kjeldahl Nitrogen analysis, which are TC toxic for mercury (D009), are mixed with other wastewaters and the mixture remains TC toxic, the entire resulting waste mixture would require management as a characteristic hazardous waste.

Listed Waste and Solid Waste

If a solid waste or characteristic hazardous waste is mixed with and a listed hazardous waste, the mixture would require management as the listed hazardous waste. For example, if the TC toxic mercury solution (characteristic waste) is mixed with an F002 spent solvent

(listed waste), the mixture would be regulated as F002 and, provided the mixture still exhibits the TC for mercury, as D009

**DERIVED-FROM
WASTE**

**Wastes Derived from
Hazardous Wastes**

Solid waste generated from the treatment, storage, or disposal of a listed hazardous waste will continue to be regulated as the listed hazardous waste. Therefore, still bottoms derived from on-site recovery of spent methylene chloride solvents (F002) would need to be disposed as F002 waste. However, the regenerated methylene chloride would no longer be hazardous waste since products reclaimed from hazardous wastes for beneficial use are no longer subject to Subtitle C regulation according to 40 CFR §261.3(c)(2)(I).

**STATE REGULATORY
HAZARDOUS WASTE**

Although some states adopt the federal standards verbatim, many exercise their right to regulate hazardous wastes management more stringently by applying hazardous wastes controls to additional wastestreams and adopting more restrictive standards.

Some of the most common wastestreams subject to regulation at the state level are those protected by RCRA exclusions that states have chosen not to adopt. For example, wastes containing polychlorinated biphenyls are not specifically regulated under the federal RCRA program, and some are even subject to an exclusion from certain characteristics of hazardous waste. Nonetheless, states such as Maryland, New Jersey, and Washington have extended their hazardous waste programs to specifically identify these materials as hazardous wastes. Similarly, although EPA decided that a hazardous waste listing was unwarranted for used oil, many states, such as New Jersey, have chosen to identify used oil as a listed hazardous waste. Other states regulate used oil as a nonhazardous special waste or have prohibited it from disposal in municipal solid waste landfills.

Resource Conservation and Recovery Act

Table 2
TC Contaminant Regulatory Levels

Contaminants	CASNO	HWNO*	Regulatory level (mg/l)
Arsenic	7440-38-2	D004	5
Banum	7440-39-3	D005	100
Benzene	71-43-2	D018	0.5
Cadmium	7440-43-9	D006	1
Carbon tetrachloride	56-23-5	D019	0.5
Chlordane	57-74-9	D020	0.03
Chlorobenzene	108-90-7	D021	100
Chloroform	67-66-3	D022	6
Chromium	7440-47-3	D007	5
o-Cresol	95-48-7	D023	200
m-Cresol	108-39-4	D024	200
p-Cresol	106-44-5	D025	200
Cresol	-----	D026	200
2,4 D	94-75-7	D016	10
1,4 Dichlorobenzene	106-46-7	D027	7.5
1,2 - Dichloroethane	107-06-2	D028	0.5
1,1 - Dichloroethylene	75-35-4	D029	0.7
2,4 Dinitrotoluene	121-14-2	D030	0.13
Endnn	72-20-8	D012	0.02
Heptachlor (and hydroxide)	76-44-2	D031	0.008
Hexachlorobenzene	118-74-1	D032	0.13
Hexachlorobutadiene	87-68-3	D033	0.5
Hexachlorethane	67-72-1	D034	3
Lead	7439-92-1	D008	5
Lindane	58-89-9	D013	0.4
Mercury	7439-97-6	D009	0.2
Methoxychlor	72-43-5	D014	10
Methyl ethyl ketone	78-93-3	D035	200
Nitrobenzene	96-95-3	D036	2
Pentachlorophenol	87-86-5	D037	100
Pyridine	110-86-1	D038	5.0**
Selenium	7782-49-2	D010	1
Silver	7440-22-4	D011	5
Tetrachloroethylene	127-18-4	D039	0.7
Toxaphene	8001-35-2	D015	0.5
Trichloroethylene	79-01-6	D040	0.5
2,4,5 - Trichlorophenol	95-95-4	D041	400
2,4,6 - Trichlorophenol	88-06-2	D042	2
2,4,5 - TP (Silvex)	93-72-1	D017	1
Vinyl Chloride	75-01-4	D043	0.2

* Hazardous waste number

**Wastestreams from nutrient analyses should be evaluated against the TC where pyridine is used as a reagent for possible classification as D038

States have also subjected additional wastestreams to regulation by expanding the list of constituents addressed by the toxicity characteristic. While benzene is the only common petroleum constituent regulated by the RCRA toxicity characteristic, wastes may often be characteristically hazardous on a state-by-state basis for total petroleum hydrocarbons (TPH), or for specific additional hydrocarbon constituents like toluene, ethyl benzene and xylene.

Guidance. EPA facilities should identify and comply with any additional hazardous waste listings, characteristics, or management standards imposed by state or local regulations (see Exhibit 11-09).

LOW-LEVEL RADIOACTIVE MIXED WASTE

"Mixed wastes" are wastes that contain both a hazardous waste component regulated under RCRA and a component consisting of source, special nuclear, or by-product material regulated under the Atomic Energy Act (AEA). Because these two components cannot ordinarily be segregated from one another, these wastes are governed by both EPA and Nuclear Regulatory Commission (NRC) regulations. Specific AEA and NRC requirements can be found in the AEA chapter of this manual.

Radioactive wastes regulated under the AEA fall into three categories: high-level, transuranic, and low-level. While all three qualify as mixed wastes subject to RCRA if they are either listed or exhibit a characteristic, low-level mixed wastes are the only type usually encountered by facilities that are not involved in the production of nuclear energy or weapons.

For low-level radioactive mixed wastes, the chemical hazard posed by the RCRA component of the waste usually exceeds the risks associated with low-level radioactivity. Nonetheless, persons who handle low-level mixed wastes should take appropriate health and safety precautions to safeguard against conventional and radiation hazards. Guidance on proper protective measures given the radioactive properties of these wastes is codified in the NRC regulations (Title 10 CFR), which address health, safety, and environmental requirements for radioactive wastes under the AEA.

Low-level mixed wastes potentially encountered by EPA facilities include wastes from analytic procedures, actual waste samples from other facilities, and discarded equipment such as lead shielding from radio spectrometers. Scintillation cocktails using organic

solvent-based fluids are a specific example. These laboratory wastes generally consist of a radioactive compound carried in a solvent reaction media such as xylene. When discarded, the standard classification procedures apply, and the waste would be regulated under RCRA as an F003 spent solvent and under applicable NRC regulations. The RCRA generator requirements applicable to "normal" hazardous wastes are also germane to these mixed waste types.

As low-level radioactive mixed wastes are fully regulated by Subtitle C controls, they are potentially subject to waste code-specific land disposal restrictions. Since the May 8, 1992, expiration of the two-year national capacity variance granted to low-level mixed wastes, these wastes must meet all applicable LDR requirements for the hazardous component of the waste (Additional guidance on the LDR requirements applicable to radioactive mixed wastes may be found in the LDR discussion of this chapter.)

Applicable personnel radiation monitoring requirements and safety guidance are contained in two documents published by the EPA Radiation Safety and Health Protection Program, *Standard Operating Practices for Laboratory Work* and *Standard Operating Practices for Field Work*.

EMPTY CONTAINERS (§261.7)

Residues of listed hazardous wastes that remain in containers will continue to be regulated as hazardous waste unless the container is rendered "RCRA empty" according to the procedures provided in 40 CFR §261.7. Residue in a container that has been rendered empty in accordance with these procedures is not subject to regulation as a hazardous waste.

Containers that held acutely hazardous waste (discussed in §261.30) are rendered empty by triple-rinsing with a substance capable of removing the acutely hazardous waste. Since residues from triple-rinsing come from containers that do not yet meet the applicable performance standards, they must be managed as acutely hazardous listed wastes.

Containers that have held other listed hazardous wastes are considered empty when they meet one of two standards: (1) no more than 2.5 centimeters (1 inch) of residue remains on the bottom of the container, or (2) no more than 3 percent by weight of

the total capacity remains in a container that is less than or equal to 110 gallons in size, or no more than 0.3 percent by weight of the total capacity remains in a container that exceeds 110 gallons in size.

To be considered for the one-inch standard, containers must first have been emptied using all the practices commonly employed to remove materials from that type of container. Common practices may include, but are not restricted to, pouring, pumping, aspirating, or scraping.

Cylinders that contained hazardous compressed gases will be considered empty when the pressure in the container reaches atmospheric level.

Once a container has been declared empty, the container may be appropriately managed without further control under Subtitle C of RCRA. Additional regulations applicable to the reuse of hazardous waste containers can, however, be found in the DOT regulations in 49 CFR §173.28

Section 11-04**Requirements for Generators of Hazardous Waste - 40 CFR Part 262****GENERATOR
REGULATIONS**
(Part 262)

The RCRA regulations found in 40 CFR Part 262 contain the requirements applicable to generators of hazardous waste. Additional regulations applicable to generators are contained in 40 CFR Parts 264 through 280. Generators should review these parts as well as Part 262 to ensure compliance with all applicable regulations. The summary table at the end of this section lists the requirements for hazardous waste generators from Part 262.

**HAZARDOUS WASTE
DETERMINATION**
(§262.11)

The first step in determining which, if any, generator regulations are applicable to a facility is to determine if solid wastes generated at the facility are hazardous wastes. This determination may be based either on testing of the waste or by applying knowledge of the materials or processes generating the waste. The hazardous waste determination hierarchy in §262.11 (Exhibit 11-4) requires that a generator must first determine if the solid waste is excluded from RCRA regulation under §261.4. Second, if the waste is not excluded, the generator must determine if the waste meets one of the F-, K-, P-, or U-listings. Third, for the purposes of compliance with the land disposal restrictions, or if the waste is not listed, the generator must identify all relevant hazardous waste characteristics (i.e., ignitability, corrosivity, reactivity, and toxicity) in Subpart C of Part 261. The final determination step ensures that all applicable waste codes, both listed and characteristic, are assigned to afford comprehensive treatment of all hazards associated with a waste as mandated under the Hazardous and Solid Waste Amendments (HSWA) of 1984.

***Guidance.** To afford consistent waste classification and enhance the availability of pertinent information for DOT description, as well as employee health and safety, EPA facilities should include all relevant hazardous waste codes (listed and characteristic) when performing hazardous waste determinations.*

**GENERATOR
CLASSIFICATION**

EPA facilities must count the quantity of hazardous waste generated each month in order to determine their generator classification. The regulations stating which hazardous wastes are to be counted in a generator's monthly quantity determination are

found in §261.5(c) and (d). While the regulations for counting hazardous waste appear in the section of the regulations applicable to conditionally exempt small quantity generators, all generators must comply with the counting requirements found in §261.5(c) and (d), not just conditionally exempt generators. Generally, wastes subject to "substantive regulation" (regulations related directly to the accumulation, treatment, storage, transportation, or disposal of hazardous wastes) are to be counted in a generator's monthly quantity determination. Wastes that are not subject to substantive regulation need not be counted. The quantity of hazardous waste generated per calendar month determines the facility's generator status and which corresponding regulations are applicable. Table 3 provides a summary of the quantity thresholds for generator classifications and identifies the applicable regulations.

Table 3
Generator Classifications

Generator	Quantity	Applicable Regulations
Large Quantity Generator (LQG)	≥1000 kg/month hazardous waste (approx. ≥2200 lbs.) >1 kg/month acute waste	40 CFR Part 262
Small Quantity Generator (SQG)	Between 100-1000 kg/month hazardous waste (approx. 220-2200 lbs.)	40 CFR Part 262, Subparts A, B, C (§262.34(d) is specific to SQGs), E, and portions of Subpart D as specified in §262.44
Conditionally Exempt Small Quantity Generator (CESQG)	≤100 kg/month hazardous waste ≤1 kg acute waste ≤100 kg acute residue	40 CFR §261.5

The process of determining which hazardous wastes are subject to "substantive regulation" is complex. Different waste management scenarios will affect the amount of hazardous waste that is counted toward a facility's monthly generation totals, which will impact the facility's generator classification. Table 4 may be used as a tool for determining which wastes (assuming the wastes are listed or exhibit a characteristic of a hazardous waste) are counted toward a facility's hazardous waste quantity determination. Additional guidance on counting hazardous waste may be found in the March 24, 1986 Federal Register (51 FR 10152).

**Table 4
Counting Hazardous Waste**

Waste Management Scenario	Is the Waste Counted?
Waste placed into satellite accumulation	Yes
Waste placed directly into central accumulation	Yes
Expired or excess chemicals that have been designated as waste and will not be recycled	Yes
Expired or excess chemicals that will be used without prior reclamation	No
Solvent put into a solvent reclamation unit.	
if accumulated first	Yes
if not accumulated but placed directly in the recycling unit (count residuals in this scenario)	No
if sent off-site for recycling	Yes
Treatment/recycling residuals (assuming material being recycled/treated was accumulated prior to recycling and therefore already counted)	No
Treatment/recycling residuals (assuming material being recycled/treated was not accumulated prior to recycling and therefore not already counted)	Yes
Waste disposed of down the drain to the local treatment works without prior accumulation (disposal must be in compliance with federal, state, and local Clean Water Act requirements) (Federal requirements in 40 CFR 403.5(b))	No
Wastes accumulated for two days then disposed of down the drain (disposal must be in compliance with federal, state, and local Clean Water Act requirements) (Federal requirements in 40 CFR 403.5(b))	Yes
Used oil sent for recycling	No
Used oil sent for disposal	Yes
Fluorescent lamps that will be disposed of or recycled	Yes
Batteries going for regeneration	No
Lead acid batteries going for reclamation	No
Batteries going for disposal	Yes
Waste going for precious metal reclamation	Yes

**EPISODIC
GENERATION**

Generators may periodically exceed or fall below their normal generation limits in any given calendar month. In these situations the facility must ensure compliance with the applicable generator category in that particular month. For example, if a facility typically generates 700 kg of hazardous waste per month but due to increased analytical work generates 1,100 kg in one month, the waste generated in that month would be subject to large quantity

generator standards. This would include 90-day on-site accumulation, increased requirements for contingency planning, personnel training, and biennial reporting. Wastes generated in other months may be managed separately and in this example would be subject to SQG standards.

Guidance. If past hazardous waste generation indicates routine fluctuation in generator status, we recommend that facilities fulfill the more stringent generator requirements at all times to ensure compliance during these periods.

**CONDITIONALLY
EXEMPT SMALL
QUANTITY
GENERATORS** (§261.5)

A conditionally exempt small quantity generator (CESQG) may generate up to 100 kg of hazardous waste or up to 1 kg of acutely hazardous waste in a calendar month and be exempt from most RCRA generator requirements. There is no on-site accumulation time limit unless imposed by state law. Nonetheless, to remain conditionally exempt, these generators should not accumulate in excess of 1,000 kg of nonacute hazardous waste, 1 kg of acute hazardous waste or 100 kg of spill residue from acute hazardous waste. If the 1,000 kg limit is exceeded, the entire waste volume immediately becomes subject to all requirements for facilities that generate between 100 and 1,000 kg of hazardous waste per month (see 40 CFR §262.34). If the 1 kg limit for acute waste is exceeded, that acute waste is subject to large quantity generator standards. As long as generators remain conditionally exempt, they are not required to obtain an EPA identification number unless stipulated by the state hazardous waste agency.

Occasionally, conditionally exempt generators may generate in excess of 100 kg of hazardous waste in a single month. If this occurs, all hazardous waste generated that month would be subject to the 100-1000 kg per month generator requirements. Therefore, it would be prudent to manage the waste volumes subject to different regulatory schemes separately.

Guidance. To avoid the possibility of being out of compliance in either of the above situations, EPA conditionally exempt small quantity generators should be prepared to comply immediately with all requirements applicable to 100-1,000 kg/month generators in case they exceed their accumulation or generation limits (see Table 6).

Note: Several states do not recognize the conditionally exempt generator status. Consequently, in these states, all generators of

hazardous waste may be regulated. See Exhibit 11-9 for further information.

Guidance *The conditionally exempt generator bears the burden of proof of demonstrating that the facility is exempt from the regulations. It is therefore essential that a log be maintained to quantify waste generation volumes each month and that a waste tracking system be implemented (see Exhibits 11-1 and 11-2) to ensure the waste is being sent to and received by an approved facility.*

**Waste Disposal
(§261.5(f) and (g))**

To retain exempt status, conditionally exempt generators must ensure that their hazardous waste is disposed of at a permitted or interim status RCRA treatment, storage or disposal facility (TSDF), a facility that is licensed by a state to manage municipal or industrial solid waste; or a recycling/reclamation facility that legitimately recycles the waste.

EPA's Office of Solid Waste (OSW) has interpreted this regulation to mean that a conditionally exempt small quantity generator's waste must be shipped directly to a permitted (or interim status) TSDF, a state-approved solid waste management facility, or a recycler. The waste may not be consolidated at an unpermitted facility and then shipped to the permitted facility.

This interpretation has a significant impact on many EPA facilities. Frequently, EPA conditionally exempt generators are located near larger EPA facilities with regularly scheduled hazardous waste pickups. Although it may seem convenient for CESQGs to transport their waste to the larger EPA facility for subsequent disposal, this practice is a violation of the regulations. CESQGs must arrange for their hazardous waste to be transported directly to a permitted facility. EPA facilities may consider scheduling the hazardous waste transporter to pickup waste at all the local EPA generator sites. If this is not feasible, facility personnel may seek written authorization from the appropriate state or Regional official for the larger EPA facility to accept hazardous waste from the proximal EPA CESQG.

Guidance *All EPA facilities, regardless of generator status, must ensure that only federal and state licensed or permitted transporters are used for the transportation of hazardous wastes on public highways.*

**EPA IDENTIFICATION
NUMBERS**
(§262.12)

Each generator of hazardous waste, except a CESQG, must obtain an EPA identification number (EPA ID No.) Generators may obtain an EPA ID No. by completing EPA Form 8700-12, which can be obtained from the state hazardous waste management agency or the appropriate EPA Regional Office.

The EPA ID No. is site-specific, if a facility relocates, it will need to apply for a new number. Additionally, if the previously occupied property is taken over by a new owner, the facility should be sure its name is no longer associated with the past ID No. This can be accomplished by the new owner of the property, who should file a subsequent form 8700-12 identifying the change in ownership. Because the ID No. is site-specific, an EPA facility with multiple noncontiguous generation sites must have a different ID No. for each site.

Guidance While not required, it is recommended that all EPA generators obtain an EPA ID No. to safeguard conditionally exempt generators in case they, on occasion, slip into regulated generator status. Further, most transporters will not accept hazardous waste from a facility that does not have an EPA ID No. To address this problem, some states will issue a temporary EPA ID No. for CESQG waste shipments. In addition, EPA facilities should ensure, where possible, that contractors and landlords who generate hazardous waste have a separate EPA ID No. and that contracts specify hazardous waste management responsibilities for waste generated by contractors or landlords.

**HAZARDOUS WASTE
MANIFESTS**
(§262.20-23)

Manifests are used to track hazardous waste from the point of generation to the point of ultimate disposal. Generators should acquire manifests from the state to which the waste is being shipped (consignment state). If this is not possible, they may acquire manifests from their state hazardous waste officials. If manifests are not available from either source, they may obtain copies of the manifests from commercial printers. The facility must sign a copy of the original manifest that will accompany the waste to the treatment, storage and disposal facility. The facility must receive a signed copy of the manifest from the TSDF confirming that the waste reached its ultimate destination. If a signed copy of the manifest is not received from the disposal facility within 45 days for large quantity generators or 60 days for small quantity generators, the facility must follow the exception reporting procedures in

§262.42 Although the manifest is typically completed by the hazardous waste transporter, it is important to review this paperwork for accuracy prior to signing the manifest. Common manifest errors include improper waste characterization, inaccurate DOT classification, and missing information.

Guidance *For exception reporting purposes, generators should record the date of each hazardous waste shipment to track the time required for the waste to reach the designated facility. Generators should file the original manifest copy with the signed manifest returned by the disposal facility. The copy of the manifest returned from the disposal facility should be stamped with the date it was returned to provide documentation that the manifest was returned within the appropriate time frame. Any certificates of destruction issued by the TSDF should also be filed with the appropriate manifest. Contracts with transporters and disposal facilities should include requirements to ensure that manifests are returned to the facility within specified time frames. This documentation must be maintained on-site for at least three years.*

Facilities that generate between 100 and 1,000 kg of hazardous waste a month may be exempt from manifest requirements if the generator recycles the waste pursuant to a contractual agreement with a recycler, which stipulates the waste types and recycling frequency; and the vehicle used to transport the waste and return the regenerated product is owned by the reclaimer. This is referred to by many as the "Safety Kleen" exemption, and is commonly employed to manage spent solvents.

**ACCUMULATION
STANDARDS**
(§262.34)

Accumulation standards for generators include on-site accumulation time limits, training, preparedness and prevention requirements, and contingency planning. The differences in the requirements for LQG and SQG generators of hazardous waste are explained in each subsection. LQGs may accumulate hazardous waste on-site for up to 90 days, while facilities generating 100-1,000 kg per month may accumulate waste on-site for 180 days, or 270 days if the waste must be transported more than 200 miles. The accumulation start date is considered to be the date waste is first placed in the accumulation drum, tank or other container. The time period limitation does not apply while the waste is in a satellite accumulation area. Table 5 provides the accumulation standards for LQGs, SQGs, and CESQGs.

Table 5
Generator Classification Determines Length Of Accumulation Time

Generator Category	On-site Accumulation Time	On-site Quantity Limit
Large Quantity Generators	≤ 90 days on-site	No Limit
Small Quantity Generators	≤ 180 days on-site or ≤ 270 days if shipped > 200 miles	6,000 kg
Conditionally Exempt Small Quantity Generators	No time limit	1,000 kg nonacute waste 1 kg acute waste 100 kg acute spill residue

Waste Accumulation Units

Hazardous waste containers are the most common waste accumulation units at EPA facilities. Small and large quantity generators accumulating hazardous waste in containers are subject to the container management standards for TSDFs in Part 265, Subpart I. Containers and tanks accumulating hazardous waste must be labeled "Hazardous Waste" and marked with the date that waste initially accumulates in the container. These standards are discussed in more detail in the standards for TSDFs section. Two other waste management units may be used by generators for accumulating hazardous waste: (1) tanks that meet the Part 265, Subpart J standards, and (2) containment buildings that meet the Part 265, Subpart DD standards.

Air Emission Standards (Part 265, Subpart CC)

New air emission regulations have been established in Part 265, Subpart CC that may impact EPA laboratories accumulating hazardous waste in containers. In an effort to reduce volatile organic emissions from hazardous waste management activities, EPA promulgated new air emission standards on December 6, 1994 (59 FR 62896). These standards are applicable to large quantity generators and RCRA treatment, storage, and disposal facilities that manage hazardous waste in containers, tanks and surface impoundments. Under these standards, EPA requires air emission controls (e.g., leak-tight covers for containers), monitoring and inspections, and specific recordkeeping for facilities subject to these regulations. Exemptions from these requirements are provided for containers with a capacity of less than 0.1 cubic meter (approximately 26 gallons), or that have an average volatile organic concentration less than 100 parts per million by weight (ppmw) at the point of generation. In addition, for containers that have a capacity less than 119 gallons, generators may use a container that meets DOT specifications in 49 CFR Part 178, in lieu of meeting the new standards. This exemption should ease the impact of these requirements on EPA facilities.

Guidance *Using containers that meet DOT specifications for hazardous waste accumulation in central storage areas is recommended. This recommendation is applicable for containers greater than 26 gallons but less than 119 gallons.*

Accumulation at the Point of Generation (§262.34(c)(1))

Generators may accumulate up to 55 gallons of hazardous waste, or up to one quart of acutely hazardous waste, at or near the point of generation provided they comply with marking requirements and container management standards. Accumulations of waste not exceeding the 55-gallon limit may be stored indefinitely at the point of generation unless otherwise specified by state law. Once the 55-gallon limit is exceeded, the generator has 3 days to transfer the excess waste to a hazardous waste accumulation area, at which time the 90- or 180-day accumulation period begins, depending on the generator's status. For satellite accumulation points at a laboratory, at or near the point of generation generally means within the specific laboratory or laboratory area where the waste is generated. Once waste is moved from that room, it must be directly transferred to a designated hazardous waste accumulation storage area or a permitted or interim status storage area. Typical satellite accumulation points in laboratories include effluent containers from Atomic Absorption Spectrophotometers and High Pressure Liquid Chromatography (HPLC) units.

Based on audits of EPA laboratories, the most common satellite accumulation problems include.

- Satellite accumulation containers not kept closed except when adding or removing waste
- Containers not labeled "Hazardous Waste" or with other words that describe the container's contents
- Containers not in good condition or incompatible with the waste held

Interpretations of the satellite accumulation provisions by OSWER allow certain wastes that may be generated throughout the facility (e.g., batteries and fluorescent lamps) to be collected at a central location and still be subject to the reduced requirements for satellite accumulation areas (OSWER Directive 9453.1993(01))

**Generator Training Requirements
(§262.34(a)(4))**

Facility personnel conducting hazardous waste management activities must receive training on emergency response procedures and proper waste handling procedures that meet the personnel training requirements for TSDFs in §265.16. Small quantity generators are required to meet less stringent personnel training requirements in §262.34(d)(5)(iii). CESQG facility personnel are not required to meet personnel training requirements under RCRA, but it is recommended. More discussion is provided on the personnel training requirements in the standards for TSDFs section.

**Preparedness and Prevention
(§262.34(a)(4))**

Laboratories generating hazardous waste must be prepared to respond to fire, explosions, and releases of hazardous waste at the facility. Large and small quantity generators must meet the preparedness and prevention requirements for TSDFs in Part 265, Subpart C. The standards for TSDFs section provides more detail on these provisions.

**Contingency Plans
(§262.34(a)(4))**

In the event of a fire or explosion, the facility must have a contingency plan designed for immediate response to minimize hazards to human health and the environment. Large quantity generators must meet the contingency plan requirements for TSDFs in Part 265, Subpart D. RCRA does not require small quantity generators to develop a formal contingency plan, but it is recommended. Facilities that have existing spill prevention, control, and countermeasures (SPCC) plans that meet the requirements of 40 CFR Part 112 may amend the plans to incorporate hazardous waste management provisions in lieu of developing a separate contingency plan. The standards for TSDFs section provides additional information on these provisions.

**Recordkeeping and Reporting
(Part 262, Subpart D)**

Sound recordkeeping is a critical component in demonstrating compliance with the RCRA regulations. A complete set of records should include waste analysis and testing data used to identify and characterize hazardous waste, a copy of the 8700-12 that was submitted to the state or EPA Region, copies of hazardous waste manifests (both originals and signed copies with a date received by the facility), biennial hazardous waste reports (some states require annual reports), and land disposal restriction notifications and certifications (discussed in the LDR section).

A biennial report that details hazardous waste management activities at large quantity generator facilities must be submitted to the appropriate state environmental agency or EPA Regional Office. This report should include information on the quantity of

hazardous waste generated during each even-numbered year and the amount of hazardous waste shipped off-site. Information also must be included on waste minimization activities that have been undertaken during the year to reduce the volume and toxicity of hazardous waste generated at the facility. Generators should note that many states require this information on an annual basis (see Exhibit 11-9).

HAZARDOUS WASTE MINIMIZATION

As discussed above, large quantity generators must document waste minimization activities conducted at the facility throughout the year in their biennial report. Also, generators must sign each hazardous waste manifest that includes a certification for LQGs that they have a waste minimization program in place, and a certification for SQGs that they have made a good faith effort to reduce the volume or toxicity of hazardous waste generated at the facility.

Waste minimization is defined as any environmentally sound practice that reduces the toxicity or volume of waste that is generated. It consists of two predominant strategies: source reduction and recycling. Source reduction is defined as the elimination or reduction of waste that is generated, typically within a process. Recycling consists of either reuse (i.e., use of a spent material as a viable product ingredient or substitute) or reclamation (i.e., processing of a spent material to recover useful product). Relevant examples include reuse of a laboratory spent solvent for lower purity applications such as degreasing (reuse) or regeneration of spent solvents (reclamation).

The following six basic elements are common to most successful waste minimization programs:

- Top management support
- Characterization of waste generation and waste management costs
- Periodic waste minimization assessments
- Appropriate cost allocation
- Encouragement of technology transfer
- Program implementation and annual program evaluation

Resource Conservation and Recovery Act

These elements should be included in facility-specific waste minimization plans in order to meet RCRA regulatory requirements. Such plans should be consistent with, or a part of, facility pollution prevention plans developed pursuant to Executive Order 12856.

Table 6
RCRA Generator Summary
Requirements for Hazardous Waste Generators

	CESQG	SQG	LQG
Quantity Limits	≤100 kg/month ≤1 kg acute/month §§261.5(a) and (e)	Between 100-1000 kg/month <i>Part 262 and §262.34(d)</i>	> 1000 kg/month or >1 kg of acute hazardous waste/month <i>Part 262 and §261.5(e)</i>
EPA ID Number	Not required §261.5	Required §262.12	Required §262.12
On-Site Accumulation Quantity	≤1000 kg ≤ 1 kg acute ≤ 100 kg spill residue from acute waste §§261.5(f)(2) and (g)(2)	≤6000 kg §262.34(d)(1)	No Limit
Accumulation Time Limits	None §261.5	≤ 180 days or ≤ 270 days if shipped over 200 miles §§262.34(d) and (e)	≤ 90 days §262.34(a)
Storage Requirements	None §261.5	Basic requirements with most technical standards for tanks or containers §§262.34(d)(2) and (3)	Full compliance for management waste in tanks, containers, or containment buildings §262.34(a)
Off-site Management of Waste	Hazardous waste, state approved solid waste, or recycling facility §§261.5(f)(3) and (g)(3)	RCRA permitted/interim status facility §262.20(b)	RCRA permitted/interim status facility §262.20(b)
Manifest	Not required §261.5	Required §262.20	Required §262.20
Biennial Report	Not required §261.5	Not required §262.44	Required §262.41
Personnel Training	Not required §261.5	Basic training required §262.34(d)(5)(iii)	Required §262.34(a)(4)
Contingency Plan	Not required 261.5	Basic plan required §262.34(d)(5)(i)	Full plan required §262.34(a)(4)
Emergency Procedures	Not required §261.5	Required §262.34(d)(5)(iv)	Required §262.34(a)(4)
DOT Transport Requirements	Yes (as required by DOT)	Yes §§262.30-262.33	Yes §§262.30-262.33

Section 11-05 Standards for TSDFs

GENERAL BACKGROUND

Both 40 CFR Part 264 and Part 265 apply to owners and operators of facilities conducting hazardous waste treatment, storage and disposal activities. Part 264 applies to facilities with RCRA Part B permits, whereas Part 265 applies to facilities with interim status (i.e., have only submitted Part A of the RCRA permit application or have submitted a Part B application that has not yet been approved). Because the regulations in these two parts are essentially identical, the regulations of Part 265 will be cited since few EPA facilities have RCRA Part B permits and thus must comply with the specific conditions of their permits which are based on the Part 264 standards. It is important to note that the regulations under Part 265 for interim status facilities also apply to LQGs and SQGs since the standards are incorporated by reference in 40 CFR Part 262. Thus, this section provides additional guidance on the standards applicable to both EPA TSDFs, as well as generators.

State Programs (§265 1(c)(4))

EPA facilities in states with authorized hazardous waste programs must comply with state regulations. Facilities located in unauthorized states (e.g., Iowa) are subject to federal hazardous waste regulations in addition to state waste management regulations unique to the specific state.

Guidance: *All EPA facilities must have a current copy of the state hazardous waste regulations and the federal RCRA regulations on site. Exhibit 11-9 provides a description of states with hazardous wastes regulations that are more stringent than the federal program.*

Neutralization Units (§265 1(c)(10))

One relevant exemption from permitting requirements for treatment activities at EPA facilities is for elementary neutralization units. An elementary neutralization unit is defined as a device (tank, container, transport vehicle or vessel) used to neutralize hazardous wastes which exhibit only the characteristic of corrosivity or are listed solely for that reason (40 CFR §260.10)

An elementary neutralization unit is exempt from Parts 264 and 265 of the RCRA regulations. If waste is stored prior to entering the neutralization unit, however, it must be managed as hazardous

waste. For example, if a laboratory generates acidic waste (pH less than or equal to 2) through the use of an atomic absorption spectrophotometer and stores the waste in a carboy attached to the instrument, then that waste is hazardous waste. The carboy must be labeled as containing hazardous waste and the waste generated must be counted toward the generator's monthly hazardous waste accumulation.

Note See Chapter 6, Clean Water Act, for further information on elementary neutralization units

GENERAL FACILITY STANDARDS

(Part 265 Subpart B)

Subpart B of Part 265 addresses general facility standards applicable to owners and operators of TSDFs. Portions of the standards presented here are applicable to hazardous waste generators through reference in 40 CFR §262.34. In addition, EPA guidance recommends that all EPA generators comply with some regulations in Part 265 which are not mandated by RCRA.

Security
(§265.14)

Owners and operators of TSDFs must control entry to the hazardous waste treatment, storage or disposal areas.

Guidance: *All EPA facilities must store hazardous waste in a secure area. Only authorized individuals should have access to the storage area. Additionally, each entrance to an active area must be conspicuously marked "Danger - Unauthorized Personnel Keep Out." Additional signage considerations include the use of "No Smoking" postings where ignitable or reactive wastes are being accumulated as well as posting requirements driven by other legislation (e.g., NRC radiation postings, TSCA PCB markings).*

General Inspections
(§265.15)

All EPA facilities should implement a general inspection program. Such programs should be designed to prevent and detect all incidents which may threaten human health or the environment. The inspection of such equipment should be recorded in a log sheet such as that shown in Exhibit 11-5. Records of inspection should be maintained for at least three years.

Guidance: *Spill prevention and control equipment, fire prevention and control equipment, containment structures, communication devices and security devices should all be inspected on a routine basis (e.g., once every two months).*

**Personnel Training
(§265.16)**

Owners and operators of TSDFs and LQGs must comply with the RCRA personnel training requirements in §265.16. Facility personnel engaged in hazardous waste management must meet these training requirements within six months after assuming responsibilities for hazardous waste management activities. This training must be renewed annually. Although not required for small quantity generators (training requirements for SQGs are specified in §262.34(d)(5)(iii)) or CESQGs, it is recommended that all EPA facilities generating hazardous waste comply with the training requirements of 40 CFR §265.16.

The training must be designed to ensure that EPA facility personnel are familiar with proper waste management procedures and emergency response procedures, equipment, and systems. If a facility, at any time and for any reason, slips into LQG status, it must comply with all training requirements in 40 CFR §265.16. For this reason, if a facility has the potential to be a LQG, it should comply with 40 CFR §265.16 at all times.

***Guidance** In order to verify compliance with personnel training requirements, EPA facilities must maintain detailed and accurate training records. For each training session, a report containing a summary of the information covered, the date and length of the training, and the signatures of those in attendance must be prepared and placed in a training file. A sample of such a document is shown in Exhibit 11-6. Additionally, each employee's personnel file should contain a list of the training attended. EPA Order 1440 should be referenced for a full list of Agency training requirements for laboratory personnel.*

EPA generators must be aware of other training regulations applicable to hazardous waste management that may be included as part of an overall training course. A training course may be developed to meet the regulatory requirements for training under Occupational Safety and Health Act (OSHA) and DOT in addition to the RCRA requirements. This may streamline the resources required for training under the following regulations and internal agency policies:

- Hazard Communication Standard, OSHA (29 CFR 1910.1200)
- Respiratory Protection Standard, OSHA (29 CFR 1901.134)
- Hazardous Waste Site and Emergency Response Operations, OSHA (29 CFR 1910.120)

- Hazardous Materials Transportation, DOT (49 CFR §173 1(b) and §173 700-704)
- Substance-specific training under OSHA 29 CFR Part 1910
- EPA Order 1440
- EPA Order 1440 2

PREPAREDNESS AND PREVENTION
(Part 265 Subpart C)

The requirements of Subpart C apply not only to owners and operators of TSDFs, but also to LQGs and SQGs. When hazardous waste storage areas are modified or newly constructed, the preparedness and prevention standards must be incorporated into the planning and design of the facility. Inspection procedures should be implemented to verify the facility's compliance with these standards.

Required Equipment and Design
(§265.32)

All hazardous waste storage areas must have the equipment described below:

1. An internal communication or alarm system that is "readily accessible" (i.e., within 20 feet) to persons working in the hazardous waste storage area must be available. If no such system activator, such as a fire alarm pull station, is readily accessible, an air horn must be located in the storage area. Personnel should be warned that the sounding of the air horn indicates an emergency in the hazardous waste storage area.
2. A communication device (e.g., telephone or two-way radio) that is capable of summoning emergency assistance from local authorities must be available. If a telephone is not located within or immediately outside of the hazardous waste storage area (i.e., within 20 feet of the working area), persons working in the storage area must carry two-way radios in order to fulfill this requirement.
3. Portable fire extinguisher(s), fire control equipment, spill control equipment and decontamination equipment must be available. Portable fire extinguishers and spill control equipment must be located within the hazardous waste storage area.
4. Water from a hose or sprinkler system or foam-producing equipment must be accessible.

- 5 The area should also be designed with sufficient secondary containment capacity to contain 10 percent of the volume of the containers being accumulated. A base should underlay the containers that is free of cracks or gaps and is sufficiently impervious to contain leaks and spills until the collected material is detected and removed

Testing Equipment
(§265.33)

All of the emergency equipment mentioned above must be tested and maintained regularly to ensure proper operation in case of an emergency

Guidance *Emergency equipment testing should be documented. A form such as the one provided in Exhibit 11-5 should be used to log the testing and maintenance of emergency equipment. National Fire Protection Association (NFPA) pamphlets and local fire codes should be consulted for specific emergency equipment testing requirements.*

Access to
Communications
or Alarm System
(§265.34)

When handling hazardous waste, personnel must have "immediate access" to a communication device or alarm system

Guidance *If such a communication device/alarm system is not located within 20 feet of the area in which hazardous waste is being handled, personnel must carry a two-way radio or an air horn. Employees must not handle hazardous waste at times when other employees are not present at the facility.*

Aisle Space
(§265.35)

Guidance *If possible, at least five feet of aisle space should be maintained in hazardous waste storage areas to provide for the unobstructed movement of personnel and fire, spill and decontamination equipment.*

Arrangements with
Local Authorities
(§265.37)

Owners and operators of TSDFs, LQGs and SQGs must attempt to make arrangements to familiarize local police, fire departments, emergency response teams and hospitals with the potential hazards at the facility

Guidance *Representatives from the local fire department and police station should be invited to tour EPA facilities at least annually. If more than one police or one fire department might respond to an emergency, the facility should designate a primary emergency authority. Arrangements made with local authorities must be documented. If the local authorities decline to enter into such arrangements, the refusal should be documented.*

**CONTINGENCY PLAN
AND EMERGENCY
PROCEDURES**
(Part 265 Subpart D)

Owners and operators of TSDFs and LQGs must prepare a contingency plan in accordance with 40 CFR Part 265 subpart D. A copy of the plan must be maintained at the facility and submitted to all local authorities which may be called upon to provide emergency services (i.e., police, fire department, local hospital)

As stated previously, facilities that have an SPCC plan that meets the requirements of 40 CFR Part 112 may amend the plan to include hazardous waste management provisions in lieu of developing a separate contingency plan.

***Guidance:** The local authorities should be requested to sign a response card stating that they have received and reviewed the plan. These should be maintained on file at the facility. A sample response form is shown on below. The refusal of local authorities to sign such a form should also be documented and maintained on file.*

Sample Response Form

I have received and reviewed the Environmental Laboratory's Contingency Plan	
Please check one:	
<input type="checkbox"/>	I agree with the emergency response procedures outlined in the contingency plan
<input type="checkbox"/>	I agree with many of the emergency response procedures outlined in the contingency plan; however, I would like a facility representative to call me to discuss some areas of non-concurrence.
<input type="checkbox"/>	I do not agree with the emergency response procedures outlined in the contingency plan.
Signed: _____	Date: _____
Printed Name: _____	Job Title _____

Contingency Plan Amendments: If the facility holds a RCRA Part B permit, amendment of the contingency plan constitutes a minor (Class 1 or 2) modification to the RCRA Part B permit (51 FR 37912, September 28, 1988)

**Emergency Coordinator
(§265.55)**

Each owner and operator of a TSDF and each LQG must designate an emergency coordinator responsible for coordinating all emergency response measures. SQGs must also designate an emergency coordinator according to §262.34(d)(5).

The emergency coordinator (or the designated alternate) must be on the facility premises or on call at all times.

Guidance *"On call" means being able to reach the facility within 15 minutes and being able to be contacted by phone. If the emergency coordinator is at any time unable to be on call, an alternate must be designated.*

Emergency coordinators must be fully trained in accordance with the OSHA requirements contained in 29 CFR §1910.120 before participating in an emergency response action dealing with hazardous substances.

**USE AND
MANAGEMENT OF
CONTAINERS
(Part 265 Subpart I)**

The regulations in Subpart I apply to (1) owners and operators of interim status TSDFs, (2) LQGs, and (3) SQGs, that store hazardous waste in containers.

Guidance. *CESQGs should comply with the requirements set forth in §§265.171-174.*

Guidance: *All EPA facilities should manage their hazardous waste accumulation or permitted storage areas by date. Waste disposal officers should operate on the "first-in first-out" principle. Waste in storage for disposal for the longest period of time should be the first shipped off-site for disposal.*

**Container Inspections
(§265.174)**

All EPA operators of TSDFs and generators must inspect hazardous waste containers stored for eventual off-site disposal at least weekly. The inspector must look for leaks and deterioration of containers.

Guidance *These inspections should be documented in a log book or on a form such as the one provided as Exhibit 11-5.*

The records of these inspections must be maintained for a period of at least three years from the date of the inspection.

**Incompatible Wastes
(§265.177)**

Generators and TSDFs must consider all aspects of chemical compatibility when managing hazardous wastes, and avoid:

- Mixing incompatible hazardous wastes or chemicals
- Placing hazardous wastes or chemicals in containers made of a substance with which they may react
- Storing hazardous waste or chemical containers near other materials or equipment with which they may react
- Storing hazardous wastes in areas where they are incompatible with environmental elements (e.g., heat, rain, moisture)

The major categories of incompatibles are as follows:

- Acids and highly basic compounds
- Reactive metals (i.e., Al, Be, Ca, Li, Mg, K, Na, Zn) and corrosives (acidic or basic)
- Water reactives (i.e., concentrated corrosives, Ca, Li, K, metal hydrides) and water or alcohols
- Sulfides or cyanides and acids
- Strong oxidizers (i.e., chlorine, chlorates, chlorites, perchlorates, hypochlorites, chromic acid, nitrates, fuming nitric acid, permanganates and peroxides) and flammables, organic acids, reactive solvents or reactive metals

Exhibit 11-7 provides a summary matrix of chemical incompatibilities. This reference should be consulted when designing new chemical and hazardous waste storage areas as well as when accumulating diverse wastestreams in a common storage area.

Guidance *EPA facilities should provide material safety data sheets (MSDSs) and posters in and near hazardous waste storage areas and laboratories to guide employees in the safe management of incompatible waste streams.*

Flammable Containers

Metal containers storing flammable liquids must be grounded to protect against a buildup of static electrical charge. See OSHA regulations at 29 CFR §1910.106(e) for more information.

Section 11-06
Special Requirements for Recyclable Materials - 40 CFR Part 266

**RECYCLABLE
MATERIALS**
(§261.6)

To foster resource recovery — one of RCRA's primary goals — hazardous waste recycling is strongly encouraged. For some hazardous wastestreams, special regulations have been established under RCRA to promote recycling. Other wastestreams may not have unique regulations but still represent environmental and cost benefits when recycled. This section provides a general discussion of the RCRA impacts on certain recyclable materials.

**USED FLUORESCENT
LAMPS**

Fluorescent and high intensity discharge (HID) lamps may contain mercury or lead, which could result in the lamps being considered hazardous waste under RCRA when removed for disposal. There are no special recycling provisions at this time for fluorescent and HID lamps, but EPA issued a proposed rule on July 24, 1994 (59 FR 38288) that will prescribe how these wastes must be managed, once approved.

Currently, if the lamps exhibit the toxicity characteristics for mercury, large and small quantity generators must manage the lamps as hazardous waste. This includes RCRA on-site accumulation standards, accumulation time limits, counting toward monthly generation totals, and manifests for off-site shipment for recycling or disposal. The two options for disposal of fluorescent and HID lamps that exhibit the toxicity characteristic are recycling and disposal.

Guidance *The preferred alternative for EPA facilities to minimize potentially harmful releases of pollutants into the environment is to recycle large quantities (i.e., greater than 300 four-foot T12 or 400 four-foot T8 lamps per month) of hazardous lamps by using a complete mercury recovery or retorting process. The solid waste landfill disposal option is not recommended because more environmentally sound management alternatives exist. Disposal of smaller quantities of hazardous lamps shall be addressed on a case-by-case basis. In either scenario, shipping the lamps off-site would require a hazardous waste manifest and a transporter with an EPA identification number. It is also critical to ensure that the state does not have more stringent regulations. It is prudent to contact the appropriate EPA Region and the state environmental*

agency to ensure the recycling and disposal company is in compliance with applicable environmental regulations.

If the facility is a conditionally exempt small quantity generator (less than or equal to 100 kilograms of hazardous waste or less than or equal to 1 kilogram of acutely hazardous waste per calendar month), less stringent disposal regulations are applicable. A conditionally exempt generator has the option to dispose of lamps in a RCRA Subtitle D solid waste landfill. For estimating purposes, disposal of approximately 300-350 lamps would create a change in generator status from conditionally exempt to small quantity generator. To offset the burden of changing generator status, CESQGs may want to use a relamping or maintenance contractor that will assume the generator responsibilities for any waste lamps.

USED OIL
MANAGEMENT
(§261.6(a)(4) and §279)

Special regulations have been established in 40 CFR Part 279 that are applicable to used oil recycling. The most common method for recycling used oil is burning it to recover energy. The used oil regulations established management standards for generators storing used oil on-site prior to off-site recycling. These standards include container management and labeling requirements, tracking for off-site shipments, and requirements applicable to mixing used oil with hazardous waste. Used oil should be segregated and labeled to avoid being mixed with hazardous waste. This mixing could subject the entire wastestream to hazardous waste management regulations. If the used oil is recycled on-site, additional regulations under Part 279 may be applicable. On the other hand, waste oil that is disposed is potentially subject to RCRA hazardous waste controls like any other solid waste.

Guidance: While the Part 279 used oil standards for container management and labeling have not been adopted in some states with authorized RCRA programs, it is recommended that generators in all states follow these standards. In addition, many states may have existing used oil regulations that must be followed (see Exhibit 11-9 for further details).

SPENT SOLVENTS

Recycling spent solvents generated at EPA laboratories is the preferred waste management alternative for these wastes based on the potential cost savings and environmental benefits. There are no special provisions under the RCRA regulations for solvent recycling. When these wastes are accumulated on-site prior to

recycling, they must be managed as hazardous waste including counting, labeling, and manifesting for off-site shipments. The recycling process is exempt from federal treatment permit requirements under RCRA, therefore, recycling could be conducted on-site or off-site depending on the quantities of waste involved.

PRECIOUS METALS
(Part 266, Subpart F)

Wastes generated at EPA facilities that may contain economically significant quantities of gold, silver, platinum, palladium, iridium, osmium, rhodium, or ruthenium may be recycled with only minimal RCRA requirements. Generators must have an EPA ID No., count the waste toward monthly generation totals, and use a hazardous waste manifest when shipping waste off-site. No RCRA accumulation standards are applicable to on-site storage of the waste. Solid pieces or fines of precious metals would not be subject to any regulation if recycled as scrap metal (see §261.6(a)(3)(iii)).

SPENT LEAD-ACID BATTERIES
(Part 266, Subpart G)

Spent lead-acid batteries, while not a common wastestream at EPA facilities, are occasionally removed for disposal. Lead-acid batteries have special provisions that allow for recycling with minimal requirements. If the facility is not actually conducting the recycling activities, no RCRA regulations are applicable to the generator or transporter. Facilities conducting lead-acid battery recycling must meet substantial RCRA requirements.

***Guidance** The facility should contact the EPA Regional Office to confirm that the recycling facility has obtained an EPA ID No. and to determine the compliance history of the recycling facility.*

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Section 11-07
Land Disposal Restrictions - 40 CFR Part 268

INTRODUCTION

In November 1984, Congress enacted the Hazardous and Solid Waste Amendments to RCRA, which mandated broad changes to the hazardous waste management program. Among the most significant portions of the amendments, HSWA required EPA to establish a comprehensive set of management standards governing the land disposal of untreated hazardous wastes. These standards, known as the land disposal restrictions, are codified at 40 CFR Part 268. Hazardous wastes become "restricted" and, therefore, subject to the LDR program when they are prohibited from land disposal by either regulation or statute, regardless of any extensions, exemptions, or variances. "Prohibited" wastes are a subset of the restricted wastes and are defined as those restricted wastes which are ineligible for land disposal since they do not meet designated treatment standards after the appropriate effective date. Wastes for which no treatment standards have been promulgated, and which are not specifically designated by HSWA as ineligible for land disposal, are neither restricted nor prohibited, and are not currently subject to the LDR program. The areas of the LDR program most significantly impacting EPA facilities are described below.

**NOTIFICATION AND
CERTIFICATION
REQUIREMENTS**
(§268.7, §268.9)

Basic notification and certification requirements

Generators of restricted wastes must provide notice and certification, and comply with the recordkeeping and waste analysis requirements mandated by applicable sections of 40 CFR §268.7(a). Table 7 provides a summary of the basic LDR notification and certification requirements. Details and discussion on this topic are provided below.

Table 7
Summary of Basic Notification and Certification Requirements

Scenario	Frequency	Recipient of notification	Recordkeeping, notification, and/or certification requirements
Waste does not meet applicable treatment standards or exceeds applicable prohibition levels (see §268.7(a)(1))	With each shipment	Treatment or storage facility	Notice must include: <ul style="list-style-type: none"> • EPA hazardous waste code • Constituents of concern • Treatability group • Manifest number • Waste analysis data, where available
Waste can be disposed without further treatment (meets applicable treatment standards or does not exceed prohibition levels upon generation) (see §268.7(a)(2))	With each shipment	Land disposal facility	Notice and certification statement that waste meets applicable treatment standards or applicable prohibition levels must also include: <ul style="list-style-type: none"> • EPA hazardous waste code • Constituents of concern • Treatability group • Manifest number • Waste analysis data, where available
Waste is subject to exemption from a prohibition on the type of land disposal used for the waste, such as a case-by-case extension, a no-migration exemption, or a national capacity variance (see §268.7(a)(3))	With each shipment	Treatment, storage, or disposal facility	Notice must include: <ul style="list-style-type: none"> • EPA hazardous waste code • Constituents of concern • Treatability group • Manifest number • Waste analysis data, where available • Date the waste is subject to the prohibitions

With each shipment of restricted waste sent off-site, or in conjunction with on-site treatment or disposal of a restricted waste, the generator must provide notification. The notice must include

- EPA hazardous waste code
- Hazardous constituents to be monitored, if monitoring will not include all regulated constituents, for wastes F001-F005, F039, D001, D002, and D012-D043; for all wastes, the notice should also include whether the waste is a wastewater or nonwastewater, and any appropriate subcategory, if applicable
- Accompanying manifest number
- Waste analysis data, where available.

This notification must accompany all shipments of restricted wastes, regardless of whether they are being shipped to a recycler, treatment facility, storage facility or disposal facility. Copies of the notifications must be maintained by the generator for five years

Table 8 has been included to prevent confusion with other recordkeeping requirements potentially applicable to EPA facilities. It should be noted that record retention periods are automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator

Table 8
Summary of Recordkeeping Requirements Potentially Applicable
to Generators Of Hazardous Waste

Recordkeeping Requirement	Citation	Length
Documentation of claims that materials are not solid wastes or are conditionally exempt from regulation	§261.2(f)	Unspecified
Copy of each returned, signed manifest	§262.40(a)	3 years from receipt
Copy of each Biennial Report and Exception Report	§262.40(b)	3 years from due date
Records of any test results, waste analyses, or other determinations in accordance with §262.11	§262.40(c)	3 years from date waste sent for treatment, storage or disposal
Documentation that recyclable materials to be sent for precious metals reclamation have not been speculatively accumulated	§266.70(c)	Revised annually
Copy of waste analysis plan when treating in generator tanks, containers or contaminant buildings according to §262.34	§268.7(a)(4)	5 years
Any documentation supportive of hazardous waste identification based on knowledge and all waste analysis data	§268.7(a)(5)	5 years
A copy of all other notices, certifications, demonstrations, waste analysis data, and other documents produced pursuant to §268.7	§268.7(a)(7)	5 years

If the generator determines that the waste meets the treatment standard and decides to ship the waste to a land disposal facility, the notification must include a signed certification that the waste meets the treatment standards. The language for the certification is provided in §268.7(a)(2). Copies of the notification, certification, and associated waste analysis data must also be retained for a minimum of five years.

If a generator is managing a restricted waste that is subject to an exemption from a prohibited type of land disposal, such as a nationwide capacity variance or a case-by-case extension, a notification must still be provided with each shipment of the waste. In addition to the standard information, the notice should also include the date upon which the waste will become subject to prohibition, per §268.7(a)(3).

Regardless of whether a generator identifies waste based on knowledge or testing data, all data and analytical results that support the determination must be maintained on-site. In addition to these materials, generators must also retain on-site copies of all notices, certifications, demonstrations, waste analysis data and any other records associated with shipments of restricted wastes for at least five years.

Special notification and certification requirements of particular interest to EPA facilities

Beyond the basic notification and certification requirements, §268.7(a) identifies a number of procedures with significantly narrower applicability. Of those, the scenarios with notable applicability to EPA facilities are identified below. If a generator is managing a restricted waste that is excluded from the definition of hazardous or solid waste subsequent to the point of generation, a one-time notification must be placed in the facility file. A relevant example would be a one-time notification that is developed for corrosive wastes that are managed through sewer disposal methods after elementary neutralization. The notice should state such generation, subsequent exclusion, and the final disposition of the waste. This provision was codified in 40 CFR §268.7(a)(6) (56 FR 3878, January 31, 1991).

Small containers of laboratory wastes that are grouped together and placed in overpacked drums are subject to all the applicable waste-specific prohibitions; they are, however, also eligible for a single alternative treatment standard, as discussed below. Generators who wish to take advantage of the alternative treatment standard should provide the basic notification for wastes that do not

meet treatment standards, except they need not note constituents of concern, and a special certification for lab packs containing the language found in 40 CFR §268.7(a)(8). Generators notifying for lab packs must also comply with the previously identified requirements for wastes excluded subsequent to the point of generation and for record retention.

EPA facilities that intend to lab pack wastes for disposal should also consider the special DOT packaging requirements in 49 CFR §173.12(b). Specifically, these include the following requirements for lab packs:

- Outer packagings (e.g., UN1A2 or UN1B2 metal drums, UN1G fiber drum, or UN1H2 plastic drum) may contain only one hazard class of waste material.
- Inner packagings should be either glass, not exceeding 4 liters rated capacity, metal not exceeding 20 liters capacity, or plastic not exceeding 20 liters capacity.
- Inner packagings containing liquid should be surrounded by a chemically compatible absorbent material in sufficient quantity to absorb the total liquid contents.
- Gross weight of the complete package may not exceed 205 kg (452 lbs).

Notification and
certification
characteristic wastes

Shipments of restricted characteristic wastes are subject to all the applicable notification, certification and recordkeeping requirements of §268.7, but different notification requirements apply to these wastes once they are no longer hazardous. For deactivated wastes that were restricted at the point of generation, facilities should provide a one-time notification to the EPA Region or authorized state, and retain a copy of the notification on-site. The notice should include the name and address of the RCRA Subtitle D facility receiving the waste and the EPA hazardous waste codes and all underlying hazardous constituents present in the waste as initially generated. For ongoing processes, this notice must be updated only if the process changes or if the Subtitle D recipient facility changes. Even then, notification need only be updated annually. A certification according to §268.7(b)(5) should accompany the notice, declaring that the waste either meets treatment standards or still requires additional treatment for underlying hazardous constituents.

Guidance *When a restricted characteristic waste has been rendered nonhazardous but still requires additional treatment for underlying hazardous constituents, EPA facilities must notify the treatment or disposal facility of any underlying hazardous constituents present in the waste at the point of generation. This information is necessary since the disposal facility has the ultimate responsibility for land disposing only those restricted wastes that meet LDR treatment standards.*

**TREATMENT
STANDARDS**
(§268 40-45)

The goal of the LDR program is to minimize threats to human health and the environment posed by wastes that are to be land disposed. The regulations, therefore, require that all restricted wastes intended for eventual land disposal meet specific treatment standards. The treatment standards for listed and characteristic wastes are promulgated according to EPA waste code in 40 CFR §268 40 and take one of the three forms described below.

- “Total waste standards” establish maximum values for particular hazardous constituents in the waste. To meet a total waste standard, the total concentration of each hazardous constituent in the waste or the treatment residue must not exceed a value given in the table for the waste.
- “Waste extract standards” identify maximum concentration values for specific hazardous constituents in extracts of the waste or treatment residues. Wastes with extract standards are eligible for land disposal once an extract of the waste or treatment residue does not exceed any numeric concentration given in the table for that waste.
- “Technology standards” mandate treatment of the waste with a specified technology. To be eligible for land disposal, a prohibited waste with a specified technology must be treated in accordance with the full description given in Table 1 of 40 CFR §268 42.
- To be eligible for land disposal, a waste must meet the treatment standards for all applicable listings and characteristics. For purposes of LDR, however, wastes will not be considered characteristic where the treatment standard for the listed waste specifically addresses the property or constituent that causes the waste to exhibit the characteristic.

Two wastestreams potentially generated by EPA laboratories illustrate this point. Following use in analytical testing, a spent

solvent mixture containing 30 percent methylene chloride, 30 percent benzene, and 40 percent inert ingredients will carry the waste code F002. Though the waste also fails the TCLP for benzene (D018), §268.9(a) only requires that the waste carry the listing for purposes of LDR, since the standard for F002 specifically requires treatment of benzene to a concentration of 10 mg/kg. In contrast, a solvent mixture containing 80 percent methanol and 20 percent carbon disulfide before use would be classified as F003 and F005 following use in an analysis for semivolatiles. While these wastes are listed for both toxicity and ignitability, the treatment standards for the listings address only the toxic constituents. Since the waste also exhibits the characteristic of ignitability (D001) and the treatment standard for the listings does not specifically address that hazardous property, the waste would also need to meet the standard for waste code D001 to be eligible for land disposal.

Universal treatment standards and treatment of underlying hazardous constituents

The waste-code specific standards of §268.40, which mandate treatment of prohibited wastes in order to be eligible for land disposal, rely heavily upon the list of universal treatment standards (UTS) found in 40 CFR §268.48. As the comprehensive list of regulated hazardous constituents and their associated technology-derived numeric treatment standards, the UTS dictates the uniform, numeric treatment level for any hazardous constituent identified in a §268.40 standard. As a result, an individual constituent such as benzene shall be treated to the same level regardless of whether it is regulated in a listed waste or characteristic waste.

To further minimize threats to human health and the environment, the treatment standards for certain characteristic wastes (D001, D002, D012-D043) may sometimes mandate treatment of additional hazardous constituents even though they are present at concentrations below the point at which they would exhibit a characteristic. These constituents subject to further treatment are referred to as "underlying hazardous constituents" and are defined by their presence in a waste at the point of generation in concentrations that exceed UTS levels. Where the treatment standard for a characteristic waste mandates that it "meet §268.48 levels," the waste must be legitimately treated to reduce the mobility or toxicity of all underlying hazardous constituents present in the waste until they fall below UTS levels.

Characteristic solvents and acids treatment for underlying hazardous

This requirement is of particular note to EPA facilities due to the quantity of characteristic wastes that they may produce. For example, the excess aliquot from an analysis for hexavalent chromium could fall into this category. If the waste had a pH of 1.5 due to the presence of sulfuric acid, and an extract of aliquot constituents prior to land disposal yielded a total chromium content of 4.0 mg/l, the waste would be identified solely as a D002 waste for the characteristic of corrosivity. However, to be eligible for land disposal, the waste would need to be deactivated and then treated to reduce the leachable level of chromium to below the universal treatment standard of 0.86 mg/l as measured by the TCLP. Even if facilities do not treat or dispose of hazardous wastes on-site, notification pursuant to §268.7(a) requires that they identify underlying hazardous constituents, where applicable.

Alternative treatment standard for lab packs

As previously noted, laboratories frequently dispose of many small containers of hazardous wastes by placing them in overpacked drums. Because lab packs are potentially subject to a different prohibition and associated treatment standard for each waste they contain, they have been given a single alternative treatment standard for ease of compliance. Lab packs satisfying the requirements of 49 CFR §173.121(b) and 40 CFR §§264.316/265.316 that do not contain any of the mercury bearing wastes listed in Appendix IV to Part 268 will be eligible for land disposal following incineration in a hazardous waste incinerator, so long as any incinerator ash then meets the treatment standards for metal wastes (D004-D011).

DILUTION
PROHIBITION
(§268.3)

According to the LDR regulations, no one shall dilute a restricted waste to avoid an applicable treatment standard. This was intended to ensure legitimate treatment of hazardous wastes in order to reduce the toxicity and mobility of hazardous constituents. Dilution, however, is permissible for certain characteristic wastes managed in systems whose discharge is regulated by the Clean Water Act or the Safe Drinking Water Act. Until Phase III of the land disposal restrictions is finalized (the proposed rule was promulgated at 60 FR 11702, March 1, 1995), the decision flow-chart in Exhibit 11-8 may be used to identify the circumstances under which dilution is not yet prohibited.

Dilution of prohibited wastes generated at EPA laboratories will not usually be allowed. For example, a D001 (high TOC subcategory) spent solvent mixture that contained 50 percent

acetone and 50 percent acetonitrile before use could not be diluted if it is going to be land disposed. The waste would require legitimate treatment to remove the characteristic and comply with the UTS for all underlying hazardous constituents present at the point of generation

Another dilution action that is not permissible is treatment with an inappropriate technology given the chemical and physical properties of the waste. Examples include biological treatment or combustion of inorganic metal-bearing hazardous wastes. This is not allowed because restricted wastes are diluted and treatment standards are circumvented by transferring of hazardous constituents to other media

It is permissible, however, to dilute restricted wastes that are not disposed via a prohibited method of land disposal. Where wastes are disposed by methods that do not constitute a prohibited form of land disposal, the treatment standard would not be applicable

As an example, consider a solvent blend of methanol, acetonitrile, and water, that is to be discharged directly to a sanitary sewer following use in an analytical process. Although this is a restricted D001 waste that carries the underlying hazardous constituent acetonitrile, it is never managed in a land-based unit prior to the point of exclusion for mixtures of wastes with domestic sewage. Subsequently, dilution would not be prohibited as it does not occur in order to avoid treatment standards. Nonetheless, the generator must still comply with the notification requirements for restricted wastes that are excluded subsequent to the point of generation.

Guidance *While disposal of wastes in this manner is not prohibited under the land disposal restrictions or RCRA, the general pretreatment standards under the Clean Water Act contained in 40 CFR §403.5 prohibit the introduction of wastes into POTWs that would interfere with the operation of the treatment plant. EPA facilities should consult applicable sewer discharge requirements issued by their local POTW prior to discharging RCRA hazardous wastes. EPA facilities should also consider long-term contamination potential of subsurface soils and elementary neutralization systems (e.g., sludge residues) when evaluating facility wastewater discharge implications.*

**STORAGE
PROHIBITION**
(§268 50)

The land disposal restrictions also prohibit long-term storage as a means of avoiding treatment standards. Specifically, storage of restricted wastes is allowed only in tanks and containers and only for the purpose of accumulating sufficient quantities to facilitate proper treatment, storage, or disposal. If an EPA-permitted facility stores a restricted waste for more than a year, it bears the burden of proof that storage was for the purpose of accumulating sufficient quantities to facilitate proper treatment or disposal. For storage within the one year period, EPA and state enforcement divisions bear the burden of proof of noncompliance.

The storage prohibition can present significant difficulty to federal facilities that manage radioactive mixed wastes. While RCRA requires that the wastes be adequately treated, there is a significant lack of capacity to properly treat wastes according to AEA specifications. The Federal Facilities Compliance Act of October 6, 1992, attempts to resolve these competing demands by allowing federal facilities until October 6, 1995, to develop enforceable, approved, site-specific plans that specify how LDR requirements will be met for mixed wastes. After that date, federal facilities without such plans will be subject to fines and punishment as directed by EPA.

Guidance Since EPA is ultimately responsible for enforcement of these statutory requirements, EPA facilities that store mixed wastes must take a proactive approach in developing site-specific management plans for their mixed wastes.

**TREATMENT IN
ACCUMULATION
TANKS AND
CONTAINERS**
(§262 34)

To truly minimize future threats to human health and the environment, the LDR program must ensure that wastes are legitimately treated to meet the established prohibitions. The integrity of this process is maintained by the stringent regulations and permit standards that govern all activities at hazardous waste treatment, storage and disposal facilities. To warranty that waste treatment is properly performed outside of these facilities, the land disposal restrictions subject generators of hazardous wastes to parallel waste analysis and certification requirements, when they treat wastes for purposes of LDR.

If a generator is managing a restricted waste in tanks or containers regulated under §262 34 and is treating such waste to meet applicable treatment standards, the generator must develop and follow a written waste analysis plan (WAP), and provide the

notification required under §268 7(a)(2) The waste analysis plan must be:

- Kept on site in the facility's files
- Descriptive of procedures the generator will take to meet LDR treatment standards
- Based on a physical and chemical analysis of a representative sample of the waste
- Filed with the facility's implementing agency.

This requirement is limited in its applicability to generators that treat their wastes to meet LDR prohibitions in these units subject to substantive regulation. Waste analysis plans are not required when treating wastes in units exempt from regulation, or when wastes are not subject to prohibition. Treatment in an excluded elementary neutralization unit is an example of an activity not subject to a WAP even if treatment is intended to achieve compliance with LDR standards

Guidance Even when not required to follow waste analysis plans, EPA facilities will find WAPs useful as part of their waste tracking system. Facilities should, therefore, consider the development of waste analysis plans to fully characterize the physical and chemical properties of their wastes, and to help identify the presence of any underlying hazardous constituents.

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Waste Characterization Record

Satellite Accum. Loc. _____ Container # _____ Date _____
 Generator _____ Container Size _____ Accumulation Start Date _____
 Profile # _____ Storage Room # _____
 90/180/270 Day Accumulation Time Limit Ends _____

COMPOSITION

Based on Generator Knowledge _____ Based on Analysis _____

DESCRIPTION Physical State _____ pH _____ Volume _____
 Concentration (%) _____ Color _____ Odor _____
 Other Analyses Run _____

Decision Questions.	Yes	No
1. Is the Waste RCRA Solid Waste?	_____	_____
2. Is the Waste Excluded?	_____	_____
3. Is the Waste Listed?	_____	_____
If Yes, Give EPA Waste Code(s)	_____	_____
4. Does the Waste Display a Characteristic?	_____	_____
If Yes, Give EPA Waste Code(s)	_____	_____
5. Is the Waste a Regulated Mixture?	_____	_____

RADIOACTIVE WASTES

Is the Waste a Low-Level Mixed Waste? _____
 If yes, What is the Radioisotope? _____ Radioactivity? _____

COMMENTS

FINAL CLASSIFICATION

EPA Hazardous Waste Code(s) _____
 DOT Proper Shipping Description _____

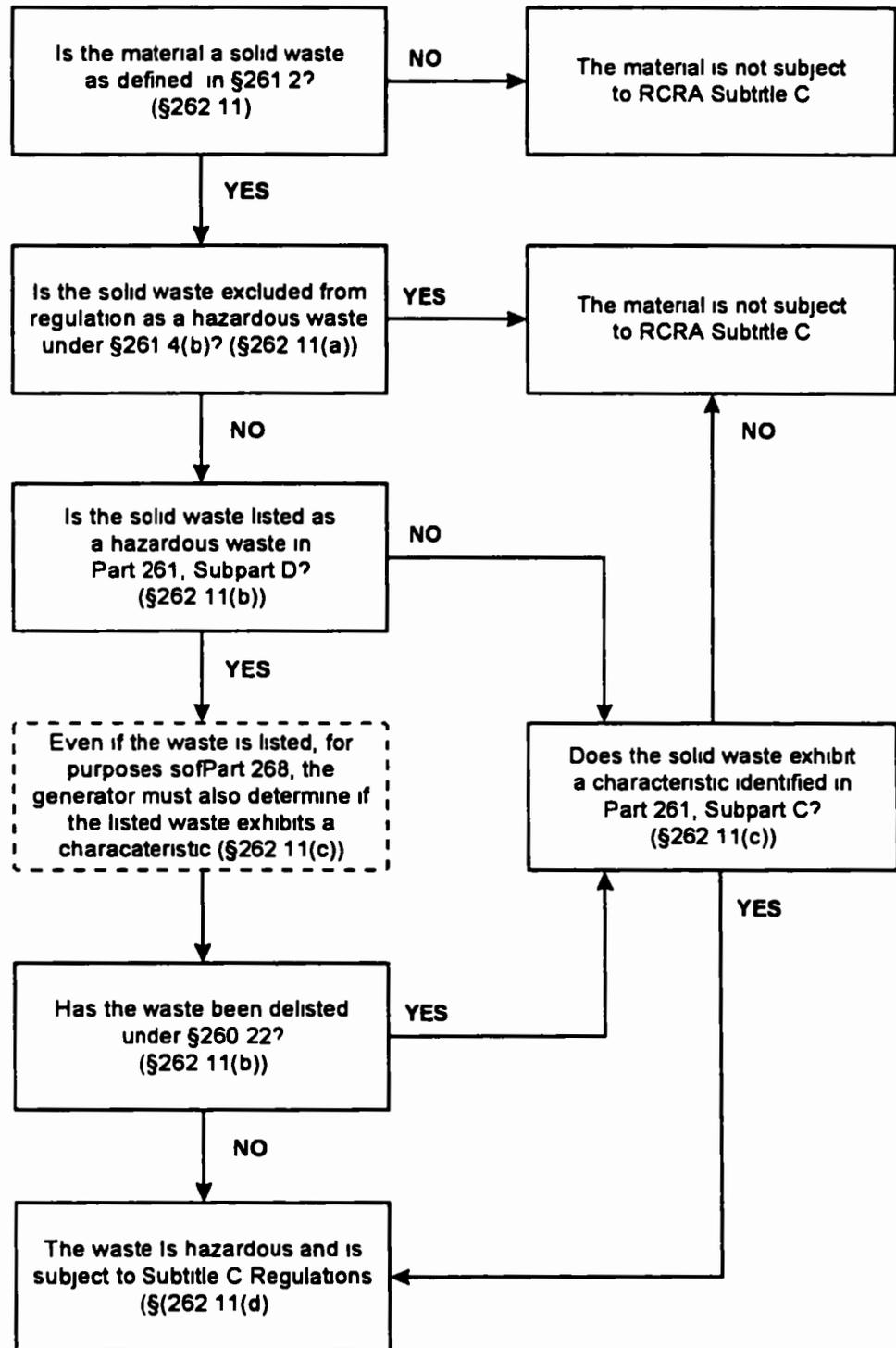
Radiation Safety Officer **Environmental Compliance Manager**

Resource Conservation and Recovery Act

Alphabetized List of F001 - F005 Solvents

SUBSTANCE NAME	CATEGORY
Acetone	F003
Benzene	F005
N-Butyl Alcohol	F003
Carbon Disulfide	F005
Carbon Tetrachloride	F001
Chlorobenzene	F002
Chlorinated Fluorocarbons	F001
Cresols	F004
Cresylic Acid	F004
Cyclohexanone	F003
2- Ethoxyethanol	F005
Ethyl Acetate	F003
Ethyl Benzene	F003
Ethyl Ether	F003
Isobutanol	F005
Methanol	F003
Methylene Chloride	F001, F002
Methyl Ethyl Ketone	F005
Methyl Isobutyl Ketone	F003
Nitrobenzene	F004
2-Nitropropane	F005
Ortho-Dichlorobenzene	F002
Pyridine	F005
Tetrachloroethylene	F001, F002
1,1,1 Trichloroethane	F001, F002
1,1,2 Trichloroethane	F002
Trichloroethylene	F001, F002
1,1,2 Trichloro-1,2,2 Trifluoroethane	F002
Trichlorofluoromethane	F002
Toluene	F005
Xylene	F003

The Hazardous Waste Determination Hierarchy



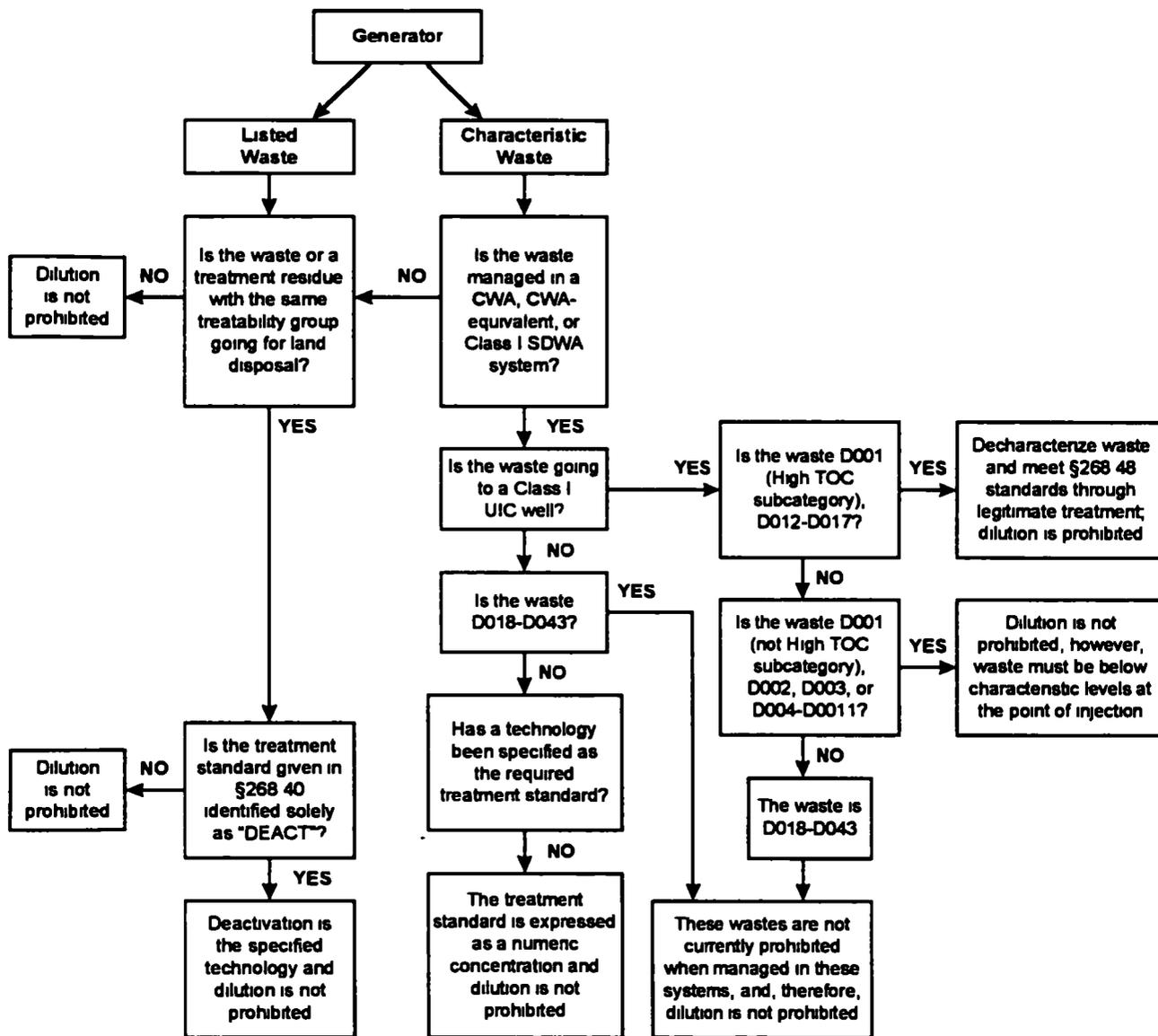
Accumulation Site Inspection Log

Inspection Date _____

	YES	NO
CONTAINER CONDITION		
Are containers in good condition (e.g., free of dents or corrosion)?		
Are containers closed?		
Are containers leaking?		
MARKING AND LABELING		
Is the accumulation start date marked on the container?		
Is a hazardous waste label on the container?		
Are any containers approaching the accumulation time limit of 90- or 180-day (270 days, if the waste will be shipped over 200 miles) accumulation time limit?		
COMPATIBILITY		
Is the waste compatible with the accumulation container?		
For LQGs, are ignitable or reactive wastes stored at least 15 meters (50 feet) from the facility property line?		
Are incompatible wastes stored in separate containers and segregated by a dike, berm, wall, or other device to prevent mixing or reactions?		
PREPAREDNESS AND PREVENTION		
Is spill control equipment available?		
Is the accumulation storage area equipped with an internal communication or alarm system that can provide instruction to facility personnel?		
Is the accumulation storage area equipped with a telephone or two-way communication system to contact outside emergency personnel?		
Is the accumulation storage area equipped with fire control equipment including fire extinguishers and other fire control equipment (e.g. sprinklers)?		
Are the communication systems and fire control equipment tested on a periodic basis?		
Is adequate aisle space (i.e., 2-5 feet) maintained between rows of containers to allow for unobstructed movement of emergency response personnel and equipment?		

IF "No" was answered to any of the questions above please provide additional comments on the situation and pending corrective action status.

Dilution Prohibition Decision Flow-Chart



Note The dilution prohibition does not apply to wastes with national capacity variances or case-by case extensions, or to wastes going to no migration units

Resource Conservation and Recovery Act

State Hazardous Waste Program Summary*

State	Recognizes additional hazardous waste listings (1) or characteristics (2) that are more stringent than the federal standards?	Does not recognize all 3 levels of generator status (3) and/or changes management standards (4)?	Requires annual or quarterly reports (5) as a supplement to biennial reporting?	Administers a used oil program that is appreciably different from 40 CFR Part 279 (6)?
Alabama	- -	- 4	-	6
Arkansas	1 -	- 4	5	-
California	1 2	3 -	5	6
Florida	- -	- 4	-	6
Kansas	- -	3 -	5	6
Maryland	1 -	3 4	5	6
Massachusetts	1 -	- -	-	6
Michigan	1 2	- 4	-	6
Minnesota	1 -	3 -	5	6
Mississippi	- -	- -	5	-
Missouri	- -	- 4	5	-
Nevada	1 -	- 4	-	6
New Jersey	1 -	3 4	5	6
North Carolina	- -	- 4	5	6
Ohio	- -	- 4	5	-
Oklahoma	- -	- -	5	-
Oregon	1 2	- -	5	6
Rhode Island	- 2	3 4	-	-
Texas	- -	- -	5	-
Virginia	- -	- -	5	-
Washington	- 2	- 4	5	6
West Virginia	- -	- 4	-	-

*Note This table can be used to identify some areas of the hazardous waste regulations that states with EPA facilities have frequently chosen to regulate more stringently. Since state programs are subject to change and may differ in other areas, federal facilities bear the individual burden of compliance with all state regulations that are more stringent than the federal RCRA standards.

List of Acronyms

AEA	Atomic Energy Act
CFC	Chlorofluorocarbon
CFR	Code of Federal Regulations
ECM	Environmental Compliance Manual
EP	Extraction Procedure
EPA	US Environmental Protection Agency
EPA ID No.	EPA Identification Number
CESQG	Conditionally Exempt Small Quantity Generator
DOT	Department of Transportation
FR	Federal Register
HID	High Integrity Discharge
HPCL	High Pressure Liquid Chromatography
HSWA	Hazardous and Solid Waste Amendments of 1984
KG	Kilogram
LDR	Land Disposal Restrictions
LQG	Large Quantity Generator
MSDS	Material Safety Data Sheet
NRC	Nuclear Regulatory Commission
OSHA	Occupational Safety and Health Act
OSW	Office of Solid Waste
OSWER	Office of Solid Waste and Emergency Response
POTW	Publicly Owned Treatment Works
ppmw	parts per million by weight
RCRA	Resource Conservation and Recovery Act
RDB	Regulatory Development Branch
SHEMP	Safety, Health and Environmental Management Program
SPCC	Spill Prevention, Control and Countermeasures
SQG	Small Quantity Generator
TC	Toxicity Characteristic
TCLP	Toxicity Characteristic Leaching Procedure
TPH	Total Petroleum Hydrocarbons
TSDF	Treatment, Storage or Disposal Facility
USPS	United States Postal Service
UST	Underground Storage Tank
USTS	Universal Treatment Standards
WAP	Waste Analysis Plan

**SAFETY, HEALTH, AND
ENVIRONMENTAL MANAGEMENT
PROGRAM GUIDE**

Guide No. 13

Issued 05/98

Revised _____

HAZARDOUS MATERIALS/WASTE TRANSPORTATION PROGRAM

SCOPE OF THE PROGRAM

This Program Guide provides an overview of the requirements EPA facilities must fulfill to comply with the regulations, guidance, and procedures associated with the Hazardous Materials Transportation Act (HMTA) and Subtitle C of the Resource Conservation and Recovery Act (RCRA). HMTA and RCRA establish a comprehensive framework of standards to promote the safe transportation of materials from the initial site of shipment through final destination at the receiving facility. Safely transporting hazardous materials and wastes entails several interrelated activities including classifying and assigning proper shipping descriptions, selecting the proper package, marking and labeling, preparing shipping papers, using placards, and vehicle loading/unloading. Additional focus is placed on shipping/hazardous wastes, a subset of the DOT universe of hazardous materials, according to the rules established under Subtitle C of RCRA. Hazardous materials/waste shipment also requires regular training to assist in recognizing transportation-related hazards and emergency response notification procedures in the event of an accident.

REGULATORY REQUIREMENTS

The key or basic elements of the Hazardous Materials/Waste Transportation Program required by law and/or EPA policy are to

- Comply with federal and state regulations and EPA guidance pertaining to hazardous materials/waste transportation
- Follow the mandatory provisions that have been established for the classification,

marking, labeling, packaging, and spill reporting for hazardous materials in transit

AUTHORITIES

The following documents are the sources of the legal authority that establish the applicability and requirements of this program

- Hazardous Materials Transportation Act of 1974, as amended
- Resource Conservation and Recovery Act of 1976, as amended
- 49 CFR Parts 171-177, Regulations Governing the Shipment of Hazardous Materials in the United States
- Applicable state or territorial laws and regulations for operating motor vehicles

REFERENCES

The following documents and hotline information listed below can help you implement the Hazardous Materials/Waste Transportation program

- EPA, Training Manual for Transportation of Hazardous Materials
- International Air Transport Association (IATA), Dangerous Goods Regulations
- DOT, Emergency Response Guide
- EPA, Safety, Health and Environmental Management Training for Field Activities, Employee Manual

- EPA, Wastestream Characterization Manual for EPA Laboratories
- American Trucking Association, DOT Drivers Handbook
- National Highway Traffic Safety Administration, Information Hotline, (800)424-9393 or (202)366-0123

IMPLEMENTATION ACTIVITIES

The following list gives an overview of the activities that this program will require. To implement and operate this program, you must

- Identify the characteristics of the material to ensure proper classification against applicable DOT hazard classes
- Develop a DOT shipping description in accordance with the Hazardous Materials Table codified in 49 CFR 172.101, which lists more than 3,000 acceptable Proper Shipping Names
- Select packages from DOT's various packaging alternatives for each hazardous material ranging from ampule-sized "limited quantity" packages to bulk shipments
- Mark each hazardous materials package with the proper shipping name and United Nations/North American (UN/NA) identification number
- Prepare shipping paper for each hazardous materials shipment that identifies key information, such as the shipper name and address, consignee name and address, shipment contents description, and certification of compliance with transportation rules
- Provide and use placards for application to transport vehicles and bulk tanks
- Maintain DOT required basic emergency response communication information with every hazardous materials shipment and making it available if an emergency does

arise. As specified in 40 CFR Part 172, Subpart H, employees must be trained within 90 days of accepting a position involving hazardous materials transportation responsibilities. Such employees are also required to receive recurring training at least once every two years thereafter to maintain awareness of current regulatory standards.

IMPLEMENTATION IMPLICATIONS

The management systems and internal controls required to implement this program include:

- A system of accurate information regarding the material's identity on the Hazardous Materials Table in 49 CFR 172.101 and the hazard class criteria in 49 CFR Part 173. This information should be maintained by EPA facilities in their permanent environmental records file.
- Processes to review and remain cognizant of additional hazardous waste listings or characteristics that influence the classification of hazardous waste for shipment.
- Hazardous material transportation training that integrates both DOT and OSHA requirements to enhance training efficiencies and the interface of applicable regulatory standards.
- Internal procedures to procure required DOT labels, placards, and packaging.
- A compliance checklist (such as the one in Appendix G) to assist in preparing shipping papers in accordance with DOT and EPA regulations.
- An archive of shipping documentation developed for off-site hazardous waste transfers to TSDFs that should be maintained for a minimum of five years.

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Hazardous Materials/Waste Transportation

**Section 13-02
Introduction**

PURPOSE

In the course of their work, Environmental Protection Agency (EPA) personnel are frequently required to transport hazardous materials and hazardous wastes to support sampling, analytical, and research activities. Safety, Health and Environmental Management Program (SHEMP) managers, waste control officers, and employees with shipping responsibilities should be thoroughly aware of the regulatory provisions applicable to the transportation of hazardous materials and wastes. Through regulatory training and the use of guidelines and tools presented herein, the Agency can effectively protect the safety of its employees and mitigate potential Agency liabilities. This chapter of the SHEMP Guidelines provides individuals with shipping responsibilities a systematic approach for meeting hazardous materials/waste requirements promulgated pursuant to the Hazardous Materials Transportation Act (HMTA) and Subtitle C of the Resource Conservation and Recovery Act (RCRA).

SCOPE

The safe transportation of hazardous materials and wastes entails several interrelated activities including classification and assignment of proper shipping descriptions, package selection, marking and labeling, shipping paper preparation, use of placards, and vehicle loading/unloading. In addition, the shipment of hazardous materials/waste also requires regular training to promote recognition of transportation-related hazards and emergency response notification procedures in the event of an accident. The technical discussions and guidelines presented in this chapter will focus on highway-related transportation requirements given that these activities represent the vast majority of EPA shipping activities.

AUTHORITY

The following laws and regulations are the sources of legal authority that establish the applicability and requirements of this program.

- Hazardous Materials Transportation Act of 1974, as amended
- Resource Conservation and Recovery Act of 1976, as amended

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- 49 CFR Parts 171-177, Regulations Governing the Shipment of Hazardous Materials in the United States
- Applicable state or territorial laws and regulations for operating motor vehicles

RESPONSIBLE OFFICERS

All employees engaging in hazardous materials and hazardous waste transportation, including preparation of shipping papers and hazardous waste manifests, container selection and marking, loading/unloading, and assignment of placards to transportation vehicles. Compliance with federal and state regulations and EPA guidance pertaining to hazardous material/waste transportation is primarily the responsibility of the SHEMP manager, waste control officer, and sample processing/shipping personnel.

REFERENCES

The following useful reference materials will assist in implementing this program

- EPA's Training Session for Safety, Health and Environmental Managers, Training Manual for Transportation of Hazardous Materials, June 1994
- *Dangerous Goods Regulations*, International Air Transport Association (IATA), 2000 Peel Street, Montreal, Quebec H3A 2R4
- National Highway Traffic Safety Administration, Information Hotline, (800) 424-9393 or (202) 366-0123
- U S Department of Transportation, Emergency Response Guide
- U S. EPA, Safety, Health and Environmental Management Training for Field Activities, Employee Manual, September 1994
- Wastestream Characterization Manual for EPA Laboratories
- American Trucking Association, DOT Drivers Handbook

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**Section 13-03
Hazardous Materials/Transportation Overview**

INTRODUCTION

The transportation of hazardous materials and hazardous waste is performed by a wide range of EPA employees engaging in field investigation, research, and analytical activities. Given the potential significance of transportation-related incidents, a thorough understanding of the legal framework and function-specific requirements for the preparation and shipment of hazardous materials and wastes is an essential component of an effective safety, health and environmental management program. Accordingly, this chapter emphasizes the management and technical standards promulgated pursuant to the HMTA which are implemented by the Department of Transportation's (DOT's) Research and Special Programs Administration (RSPA). These standards primarily include the classification and packaging of hazardous materials, fulfilling applicable hazard communication requirements (e.g., shipping paper preparation, marking and labeling), and the reporting of transportation-related releases. In addition, focus is placed on shipping hazardous wastes, a subset of the DOT universe of hazardous materials, according to the rules established under Subtitle C of RCRA. Throughout the discussions presented herein, attention will be given to identifying streamlined management approaches and proven strategies to bolster EPA facility and operational conformance with transportation-related regulatory provisions.

LEGAL FRAMEWORK

The HMTA gives DOT broad authority to promulgate and enforce hazardous materials regulations for transportation by rail, water, air, and public highway. Under the HMTA, mandatory provisions have been established for the classification, marking, labeling, packaging, and spill reporting for hazardous materials in transit. The DOT regulations promulgated pursuant to the HMTA are codified in 49 CFR Parts 171-178. A cross-reference of hazardous material transportation standards, by part, applicable to EPA activities is described below:

Hazardous Materials/Waste Transportation

<u>Regulatory Reference</u>	<u>Scope and Content</u>
Part 171	Definitions and Reporting Requirements
Part 172	Hazardous Material Table, listing of hazardous substances and reportable quantities (RQ), hazard communication requirements (shipping papers, package marking and labeling, placarding) emergency response information and training
Part 173	Hazard class definitions, shipper responsibilities, and packaging provisions
Parts 174-177	Carrier requirements for individual modes of transportation
Part 178	Construction and testing requirements for packagings

The shipment of hazardous materials is undergoing increased scrutiny from regulatory officials and policymakers in recent years. Of special significance, the RSPA recently promulgated two major rulemakings to bolster the safety and efficiency of the legal framework for hazardous materials transportation (1) DOT Docket HM-126F, which contains mandatory training and testing requirements for personnel that manage hazardous materials, and (2) DOT Docket HM-181, which adopts new packaging and handling requirements based on United Nations (international) standards. A detailed description of these major regulatory developments is presented in the following discussion

DOT Docket HM-126F

HM-126F outlines specific training requirements for all employees involved with hazardous materials, including general awareness training, functional training (activity-specific), safety training, and recurrent (refresher training). Under the HM-126F rules contained in 49 CFR Part 172, Subpart H, all employees who ship, transport, handle, and/or store hazardous materials should be trained in hazardous materials handling, hazard communication, and classification procedures. More detailed information on hazardous materials/waste transportation training requirements is presented later in this chapter

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DOT Docket HM-181

HM-181 outlines the new performance-oriented packaging standards for shipping containers and introduces packaging groups (which are based on relative hazard level). The new hazardous materials identification requirements under the HM-181 rules encompass proper shipping names, hazard classes, identification numbers, packaging (container) requirements, and vehicle placarding. As a result of these new standards, the DOT rules conform to United Nations (international) conventions for the transportation of hazardous materials.

Subtitle C of RCRA

RCRA is a broad and comprehensive environmental statute that contains several subtitles: Subtitle D for nonhazardous solid waste management, Subtitle I for underground storage tanks, and Subtitle J for medical waste management. The authorities and mandates for hazardous waste management are contained within Subtitle C of RCRA. Although the regulatory program developed under Subtitle C of RCRA is primarily concerned with the safe management and disposal of hazardous waste, Section 3003 of RCRA requires EPA to establish certain standards for transporters of hazardous waste and to coordinate regulatory activities with DOT. In addition, generators of hazardous waste who intend to offer waste for off-site transportation are required to meet specific pre-transport requirements established under the DOT rules in 49 CFR Parts 171-178. Consequently, EPA facilities and field operations generating hazardous waste are subject to joint regulatory provisions established by RCRA and the HMTA for the preparation and off-site shipment of hazardous wastes. The major RCRA regulatory requirements for the transportation of hazardous waste include generator pre-transport requirements in 40 CFR 262.30-34, uniform hazardous waste manifesting provisions in 40 CFR 262.20-23, and standards applicable to transporters of hazardous waste in 40 CFR Part 263.

In November 1984, Congress enacted the Hazardous and Solid Waste Amendments (HSWA) to RCRA, which mandated broad changes to the hazardous waste management program. Among the most significant portions of the amendments, HSWA required EPA to establish a comprehensive set of management standards governing the land disposal of untreated hazardous wastes. Under these rules, generators of hazardous waste have a responsibility to prepare land disposal restriction (LDR) notifications and certifications in 40 CFR 268.7 for each shipment of hazardous waste to a treatment, storage, and disposal facility (TSDF). This

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documentation generally accompanies the hazardous waste manifest to provide notice to prospective TSDFs of the treatment standards applicable to the wastestreams in the shipment.

HMTA Interface with
Other Environmental
Laws

The HMTA is integrated with several environmental laws. For example, as described above, both DOT and RCRA rules require the use of the uniform hazardous waste manifest as a shipping paper for the transportation of hazardous waste. DOT regulations at 49 CFR 172.310 provide marking requirements that are applicable to radioactive material shipments regulated under the Atomic Energy Act. In addition, the Superfund Amendments and Reauthorization Act (SARA) requires that the DOT list and regulate all Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances as hazardous materials. Consequently, the Hazardous Materials Table (49 CFR 172.101) identifies materials that are CERCLA hazardous substances, and the proper shipping name entries in the table specify the minimum amount of material that constitutes an RQ.

SYSTEMATIC
APPROACH TO
COMPLIANCE

Hazardous materials transportation requires attention to a number of function-specific activities including classification, marking and labeling, packaging, and preparation of shipping documentation. Each of these functions requires key information and specific procedural actions to prepare materials for safe transportation in an efficient manner while attending to relevant compliance considerations. To this end, hazardous materials transportation can be broadly viewed as composed of eight major steps, including

STEP 1. Hazardous Material Identification and Classification -
The critical first step in the process of hazardous material transportation is to identify the characteristics of the material to ensure proper classification against applicable DOT hazard classes. This step enables the proper selection of appropriate shipping names, marking and labelings, packagings, and placards to ensure safe transportation.

STEP 2. Developing a DOT Shipping Description - The DOT has developed the Hazardous Materials Table in 49 CFR

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172 101 which lists more than 3,000 acceptable Proper Shipping Names to be used in describing hazardous materials for transportation. Each name is listed with a hazard class, applicable identification number, specific packagings, and shipping rules. In concert, the proper shipping name, hazard class, identification number, and packaging group represent the complete description required for completing shipping papers and selecting appropriate packagings.

STEP 3 Package Selection - DOT provides various packaging alternatives for each hazardous material ranging from ampule-sized "limited quantity" packages to bulk shipments. Each package has explicit design and performance specifications that must be met. The type of package selected will vary depending on the nature of the hazardous material being transported.

STEP 4 Marking and Labeling - Each package of hazardous materials must be marked with the proper shipping name and United Nations/North American (UN/NA) identification number. The package will also be labeled with a DOT-specified diamond shaped label to indicate its hazard class. Additional marking and labeling requirements apply for the transportation of certain hazardous materials (e.g., marine pollutants) and for hazardous wastes.

STEP 5 Preparing Shipping Papers - A shipping paper must be prepared for each shipment of hazardous materials that identifies key information, such as the shipper name and address, consignee name and address, description of the shipment contents, and certification of compliance with transportation rules. The shipping paper is maintained in the transport vehicle and should be readily accessible to the driver or emergency responder in the event of an incident. Only the uniform hazardous waste manifest (EPA Form 8700-22 and State Equivalents) may be used for the transportation of RCRA regulated hazardous wastes.

STEP 6. Providing and Using Placards - Placards are large diamond shaped graphics, similar to labels, that are

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applied to transport vehicles and bulk tanks. Some extremely hazardous substances and radioactive materials require placards if they are shipped in any quantity. Most hazardous material shipments must be placarded if the total quantity of hazardous materials (including hazardous wastes) on a vehicle exceeds 1,000 pounds.

STEP 7 Emergency Response Considerations - DOT requires certain basic emergency response communication information to accompany every hazardous materials shipment and to be available if an emergency does arise. If an incident does occur during transportation, the DOT, EPA, and other agencies require formal reports.

STEP 8 Training - As specified in 40 CFR Part 172, Subpart H, employees must be trained within 90 days of accepting a position with hazardous materials transportation responsibilities. Such employees are also required to receive recurrent training at least once every two years thereafter to maintain awareness of current regulatory standards.

These major functional activities are described in detail in subsequent sections of this chapter. In addition, relevant process support tools and resources are identified to assist EPA employees in fulfilling their relevant hazardous material transportation duties. To facilitate your understanding of the terms used in this chapter, an acronym list is provided as Appendix A.

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**Section 13-04
Hazardous Materials Identification and Classification**

INTRODUCTION

This section describes a step-wise approach for identifying and classifying hazardous materials and wastes for transportation in accordance with DOT and RCRA regulations. Because the majority of regulatory standards established for shipping hazardous materials and wastes depend on accurate shipping descriptions and hazard class designations, it is imperative that EPA employees follow a standardized approach for hazardous materials classification. This section initially reviews key definitions and terminology established under the DOT hazardous material transportation rules and related environmental statutes. Subsequently, a proven methodology for satisfying the relevant requirements for hazardous material classification is presented to foster optimal compliance with downstream packaging, marking and labeling, and related requirements.

**RELEVANT
DEFINITIONS**

The following definitions and terminology derived from 49 CFR 171.8 are central to understanding the requirements for the identification and classification of hazardous materials.

Hazard Class The category of hazard assigned to a hazardous material under the definition criteria of 49 CFR Part 173 and the provisions of the Hazardous Material Table in 49 CFR 172.101. A material may meet the criteria from the more than one hazard class, but is assigned to only one hazard class.

Hazardous Material. Any material which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce. A material is a hazardous material under the DOT regulations if it: (1) is listed by name in the Hazardous Material Table in 172.101, (2) is listed by name in 49 CFR 172.102, or (3) meets a general hazard class definition in 49 CFR Part 173. In addition, CERCLA Section 306 (as added by SARA) requires that DOT list all CERCLA-regulated hazardous substances as hazardous materials. Consequently, the DOT Hazardous Materials Table in 49 CFR 172.101 includes CERCLA hazardous substances as a subset of the larger universe of DOT-regulated hazardous materials.

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Hazardous Substance: For the purposes of the DOT regulations, a hazardous substance is a material, including its mixtures and solutions, that:

- Is listed in the Appendix A to 49 CFR 172 101
- Is a quantity in one package that equals or exceeds the RQ listed in Appendix A to 49 CFR 172 101
- When in a mixture or solution (other than radionuclides) is in a concentration by weight that equals or exceeds the concentration corresponding to the RQ of the material as shown in the Exhibit 1

Exhibit 1. Reportable Quantity Threshold Criteria

If the RQ of the listed material is		The minimum concentration (by weight) of the listed material needed to make the solution or mixture a "hazardous substance" is:	
Pounds	(Kilograms)	Percent	ppm*
5,000	(2270)	10	100,000
1,000	(454)	2	20,000
100	(45.4)	.02	2,000
10	(4.54)	0.02	200
1	0.454	0.002	20

* ppm means "parts per million," which is another way to state the percentages shown above.

Pursuant to the CERCLA petroleum exclusion in 40 CFR 300.5, this definition does not apply to petroleum products that are lubricants or fuels

Hazardous Waste: For the purposes of the DOT regulations, a hazardous waste is any material that is subject to the hazardous waste manifest requirements specified by EPA in 40 CFR Part 262. Additional information on the definition of hazardous waste will be provided in a subsequent discussion of this section.

HAZARDOUS MATERIALS

The critical first step in determining applicable management standards under the hazardous material transportation regulations is

Hazardous Materials/Waste Transportation

IDENTIFICATION

to identify the physical and chemical characteristics of the material intended for shipment. The DOT regulations prohibit the use of various hazard communication mechanisms, such as hazard class assignments, markings, and labels unless the material is defined as a DOT-regulated hazardous material. If a material is being shipped for testing to determine its hazards, it is legal to make a tentative hazard class assignment based on your knowledge of the material (see 49 CFR 172.101(c)(11)). Additionally, the accurate selection of packaging methods and shipment procedures is dependent on a solid understanding of the hazards associated with the material to be transported. Therefore, accurate information regarding the material's identity on the Hazardous Materials Table in 49 CFR 172.101 and the hazard class criteria in 49 CFR Part 173 is essential.

Information Sources

The most useful information for identifying whether materials are regulated as hazardous under the DOT rules is provided by one or more of the following sources:

- Material safety data sheets (MSDSs)
- Chemical Substance Information Systems
- Internal health and safety committees
- Hazardous waste listings and characteristics
- EPA- or DOT-approved laboratory tests.

MSDSs are especially important sources of information for identifying the hazards associated with a particular material or product. It should be noted, however, that waste materials resulting from EPA facility or field activities may have acquired other characteristics or properties not addressed by the original product MSDS. In these situations, the hazardous waste listings and characteristics in 40 CFR Part 261, Subpart C, should also be consulted. Appendix B provides a decision flowchart for determining whether materials intended for shipment are regulated as a RCRA-regulated hazardous waste.

**Hazardous Material
Identification Queries**

Based on the information sources identified above, the following considerations should be reviewed to support the effective classification of DOT materials:

1. What is the physical state of the material (e.g., solid, liquid, gas)?

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- 2 What are the constituents of the material?
- 3 Is the material a product or waste?
4. What hazardous properties, if any, does the material exhibit?
 - Ignitable or flammable liquid (flash point less than 140 degrees Fahrenheit)
 - Corrosive liquid (pH \leq 2.5 or \geq 12.5, corrosive to skin or steel)
 - Poisonous material (known to be toxic to humans if ingested, inhaled, or absorbed through the skin)
 - Radioactive material
 - Spontaneously combustible or reactive with air
 - Reactive with water or dangerous when wet
 - Infection or etiologic substance
- 5 Does the material exhibit one primary hazard (e.g., flammable) or does it possess multiple hazards (flammable and corrosive such as concentrated nitric acid)?
- 6 How much material is intended for shipment, both individually and in aggregate?

The results of these review activities should be compiled and documented for use in hazardous material classification and as a future reference.

Guidance: Information, such as manufacturer's technical documents, laboratory test results, and other reports used to identify the characteristics of hazardous materials and wastes should be maintained by EPA facilities in their permanent environmental records file. This information will allow facility personnel to substantiate their hazardous material/waste classification decisions in the event of a regulatory inspection or inquiry. Such records should be retained for a minimum of five years from the date of shipment to ensure conformance with DOT and RCRA recordkeeping provisions while providing sufficient retention time for use in addressing CERCLA potentially responsible party claims.

**HAZARDOUS
MATERIAL**

Based on the data collected during hazardous material identification, the next activity in fulfilling hazardous material

Hazardous Materials/Waste Transportation

CLASSIFICATION

transportation requirements is to classify the material. Initially, the material is classified according to its respective DOT hazard class in 49 CFR Part 173. Materials that are not specifically identified in the Hazardous Materials Table or meeting the definition of a DOT hazard class are not regulated for DOT purposes. Subsequently, the proper shipping name must be assigned to develop a full shipping description for the material.

The following discussion reviews the DOT hazard classes, including those classes of particular relevance to EPA facility activities, and presents a methodology for determining the primary hazard class associated with a hazardous material. The selection of a proper shipping name and the development of a proper shipping description is then described.

DOT Hazard Classes

The DOT regulations currently define nine hazard classes. Several of these hazard classes are further categorized into divisions. These hazard classes and divisions are used to define the hazard of the material being shipped and provide standardized hazard communication information on placarding and shipping papers to facilitate safe packaging, segregation/loading, and emergency response. Exhibit 2 on the following pages provides a summary of the DOT hazard classes and divisions, listed in class order. For the full hazard class definition, refer to 49 CFR Part 173.

EPA facilities and field operations encounter a diverse range of hazardous materials and hazardous wastes that must be transported. EPA research and analytical laboratories, however, generally encounter selected types of hazardous materials and related hazard classes most frequently. To this point, a detailed description of hazard classes most commonly encountered by EPA personnel is described next.

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Exhibit 2. DOT Hazard Classes

Class and Division No (if any)	Name and description of class or division	49 CFR reference for definitions
1.1	<i>Explosives with a mass explosion hazard.</i>	173.50
1.2	<i>Explosives with a projection hazard</i>	173.50
1.3	<i>Explosives with predominately a fire hazard</i>	173.50
1.4	<i>Explosives with no significant blast hazard</i>	173.50
1.5	<i>Very insensitive explosives, blasting agents</i>	173.50
1.6	<i>Extremely insensitive detonating substances</i> Generally articles containing class 1.5 materials.	173.50
2.1	<i>Flammable gas</i> Is a gas at 68°F and burns readily in air.	173.115
2.2	<i>Non-flammable compressed gas</i> Gas shipped at a pressure \geq 41 psia which is neither flammable nor poisonous	173.115
2.3	<i>Poisonous gas</i> Is a gas at 68°F and has an $LC_{50} \leq 5000$ ml/m ³ (i.e., one half of one percent concentration in air will kill half of the animals in a laboratory test).	173.115
3	<i>Flammable liquid</i> Liquid with a flash point \leq 141°F (100°F for domestic transportation by rail or highway). <i>Combustible liquid</i> Liquid with a flash point < 200°F.	173.120
4.1	<i>Flammable solid</i> Strongly exothermic decomposition at normal temperatures <u>or</u> ignite through friction (e.g., matches) <u>or</u> burns very fast when ignited.	173.124
4.2	<i>Spontaneously combustible material</i> Spontaneously ignites or self-heats to > 392°F in 24 hours.	173.124
4.3	<i>Dangerous when wet material</i> Spontaneously ignites or emits flammable or toxic gasses when contacted with water.	173.124
5.1	<i>Oxidizer</i> Causes or enhances combustion of other materials (e.g., sodium nitrite, oxygen gas, hydrogen peroxide)	173.127
5.2	<i>Organic peroxide</i> A specific chemical group that is generally reactive.	173.128

Hazardous Materials/Waste Transportation

Exhibit 2. DOT Hazard Classes (continued)		
Class and Division No (if any)	Name and description of class or division	49 CFR reference for definitions
6.1	<i>Poisonous materials</i> Solids or liquids that are poisonous by ingestion, inhalation or skin contact.	173.132
6.2	<i>Infectious substance (etologic agent)</i> Disease-causing organisms, biotoxins, tissue or body fluid samples for medical diagnosis, biological products, and medical wastes.	173.124
7	<i>Radioactive material</i> Specific activity > .002 μ curie/gram.	173.403
8	<i>Corrosive material</i> Dissolves steel or aluminum or destroys skin tissue	173 136
9	<i>Miscellaneous hazardous material</i> Anesthetic or noxious or similar hazard to crew of an airplane, US EPA regulated hazardous waste or hazardous substance, MARPOL marine pollutants, plus other materials specifically listed by US DOT	173 140
None	<i>Other regulated materials, ORM-D</i> Small quantities of hazardous materials in secure packages classed down because of limited hazard presented.	173.144

Class 2 - Gases

Compressed gases under the DOT regulations are defined as any material or mixture having in the container an absolute pressure greater than 40 pounds per square inch absolute at a temperature of 68 degrees Fahrenheit (°F) Typical examples of Class 2 gases found at EPA facilities include nitrogen, hydrogen, argon, and cryogenic liquids

Class 3 - Flammable and Combustible Liquids

Any liquid having a flash point below 141°F is defined as a flammable liquid that does not meet the definition of any other hazard class and has a flash point above 141°F and below 200°F A number of substances used by EPA facilities or field operations will meet the definition of a flammable or combustible liquid when offered for transportation, such as acetone, benzene, hexane, petroleum ether, and methanol

Class 5 - Oxidizers and Organic Peroxides

A material such as chlorate, permanganate, inorganic peroxide or nitrate that readily yields oxygen and may consequently stimulate the combustion of organic matter is defined by the oxidizer or organic peroxide hazard class Relevant examples of hazardous materials transported from EPA facilities include concentrated nitric acid, hydrogen peroxide, and potassium permanganate

Hazardous Materials/Waste Transportation

**Class 6 - Division 6.1
Poisonous Materials**

A material is defined as a poisonous material under DOT if it is known to be so toxic to humans as to afford a hazard to health during transportation, or which, in the absence of adequate data on human toxicity, is presumed to be toxic because of oral toxicity, toxicity by inhalation, or dermal toxicity. Cyanide solutions resulting from analysis of cyanide-containing electroplating bath samples represent a potential example of a hazardous material defined as a Class 6, Division 6.1 poisonous material.

Class 8 - Corrosives

A material meets the definition of the DOT corrosive hazard class if it is a liquid or solid that causes visible destruction or irreversible alterations to human skin tissue at the site of contact based on a 4-hour white rabbit test, or is a liquid that has a severe corrosion rate on steel or aluminum of greater than 0.25 inch per year at a test temperature of 131°F. An acceptable test is described in the National Association of Corrosion Engineers Standard TM-01-69. Examples of corrosive materials used by EPA facilities include nitric acid, sulfuric acid, potassium hydroxide, and sodium hydroxide pellets.

Other

Many hazardous materials used by EPA operations may meet the definition of more than one hazard class. In such cases, the DOT regulations in 49 CFR 173.2a provide guidelines for shippers and generators for determining hazard class precedence. Specifically, a material not specifically listed in 49 CFR 172.101 that meets the definition of more than one hazard class or division, should be classed according to the highest possible hazard class of the following, which are listed in descending order of hazard:

- (1) Class 7 (radioactive materials, other than limited quantities)
- (2) Division 2.3 (poisonous gases)
- (3) Division 2.1 (flammable gases)
- (4) Division 2.2 (nonflammable gases)
- (5) Division 6.1 (poisonous liquids), Packing Group I, poisonous by inhalation
- (6) A material that meets the definition of a pyrophoric material in 49 CFR 172.124(b)(1) (Division 4.2)

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- (7) A material that meets the definition of a self-reactive material in 49 CFR 173 124(a)(2) (Division 4.1)
- (8) Class 3 (flammable liquids), Class 8 (corrosive materials), Division 4.1 (flammable solids), Division 4 2 (spontaneously combustible materials), Division 4 3 (dangerous when wet materials), Division 5 1 (oxidizers) or Division 6 1 (poisonous liquids or solids other than Packing Group I, poisonous by inhalation) The hazard class and packaging group for a material meeting more than one of these hazards should be determined using the precedence table provided in Appendix C
- (9) Combustible liquids
- (10) Class 9 (miscellaneous hazardous materials)

The following materials are not subject to the provisions above because of their unique properties regardless of whether they meet any other hazard classes or divisions a Class 1 explosive that meets any other hazardous class or division, a Division 5 2 organic peroxide, a Division 6 2 infectious substance, a material that meets the definition of a wetted explosive in 49 CFR 173 124(a)(1) (Division 4 1), and a limited quantity of Class 7 radioactive material

Appendix D presents a flow chart for users of this chapter to aid in the selection of the primary hazard applicable to hazardous materials or hazardous wastes destined for off-site transportation

Guidance for Shipping
Samples

EPA facilities and operations engage in the frequent shipment of samples from field sites to EPA laboratories, contract laboratories, and research and development institutions When any sample is to be shipped by common carrier or sent through the U S mail, it must comply with the DOT hazardous materials transportation regulations in 49 CFR Parts 171-178 Of special significance, the DOT Office of Hazardous Materials has determined that samples preserved in accordance with SW-846, Safe Drinking Water Act, and Clean Water Act mandated preservation techniques do not meet the definition of a DOT hazard class Specifically, the following types of samples have been determined by DOT not to meet the definition of a hazardous material by virtue of the preservation: hydrochloric acid in water solutions at concentrations of 0 04% by weight or less (pH about 1 96 or greater), nitric acid in

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water solutions at concentrations of 0.15% or less (pH about 1.62 or greater), sulfuric acid in water solutions at concentrations of 0.35% by weight or less (pH about 1.15 or greater, and sodium hydroxide in water solutions at concentrations of 0.080% by weight or less (pH about 12.30 or less). Thus, these materials are not subject to the DOT rules for the preparation of shipping papers (although chain of custody considerations must be addressed) or the DOT hazard communication requirements. EPA employees engaging in sample preparation, however, are cautioned to manage samples prudently to minimize the chance of inadvertent shipment of hazardous samples as non-hazardous materials.

The following guidelines with respect to the shipment of samples has been formulated to assist in determining whether a sample is subject to the DOT shipping rules. Samples should be considered hazardous under DOT transportation standards when one or more of the following criteria apply to the shipment:

- Samples of pure chemicals from drums or containers, of free product, or of hazardous waste streams listed in the Hazardous Materials Table and meet the DOT definition of a hazardous material.
- Liquid samples preserved in accordance with SW-846, Safe Drinking Water Act, and Clean Water Act sampling methods are not considered by DOT to be hazardous materials, however, other properties or constituents of the sample must be reviewed to determine whether they are listed in the Hazardous Material Table and/or exhibit a DOT hazard class.
- Samples that contain radioactive materials with an activity exceeding 0.002 $\mu\text{Ci}/\text{gram}$.

Samples that do not meet the criteria of a hazard class or division are not considered hazardous and do not have to be shipped as a hazardous material.

Proper Shipping Names

The DOT publishes a list of approximately 3,000 "Proper Shipping Names" to be used in shipping hazardous materials. These appear in the Hazardous Materials Table in 49 CFR 172.101. An excerpt of this table is presented for illustrative purposes in Appendix E to

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this chapter For each hazardous material (including RCRA-regulated hazardous wastes), there is one best shipping name to use Key considerations for selecting a proper shipping name are

- Always use the most specific name available from the list of proper shipping names from column 2 of the Hazardous Materials Table DOT considers the order of specificity to be
 - Specific technical (chemical) name (e g , acetone)
 - Chemical group or family (e g., alcohols, n o s)
 - End use of material (e g., paint)
 - Generic end use (e g , dyes, liquid, n o s)
 - Hazard Class (e g , flammable liquids, n o s)

Note Column 2 of the Hazardous Materials Table provides the shipping name in Roman type, italicized statements are for description purposes only

- The hazards ascribed to the name must be consistent with the hazards of the material
- Alterations or deletions may not be made to a specified name except as explicitly allowed by DOT For example, proper shipping names may not typically be abbreviated or expanded
- In the case of shipments of hazardous waste, the proper shipping name must be preceded by the word "waste "

Special Considerations for
State-Regulated
Hazardous Wastes

To ensure that DOT hazard information is used properly, the DOT prohibits their use unless the material being shipped is, in fact, hazardous This situation may present difficulties where a waste is regulated by state statute but does not meet the definition of a hazardous waste or material under EPA and DOT rules Under this situation, the waste still must be shipped under a hazardous waste manifest according to state rules, but it is not a hazardous material or hazardous waste by DOT definition The manifest asks for a DOT description, yet no DOT description exists for such wastes and it is inappropriate to use an existing DOT description on shipping papers and markings The same type of situation may arise when shipping a chemical product that does not meet the regulatory definition of a hazardous material

Guidance: The most programmatic approach for dealing with

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state-regulated hazardous wastes that do not meet the EPA definition of hazardous waste or DOT definition of a hazardous material is to use the best description of material possible. Where possible, a DOT proper shipping name can be used to describe the state-regulated waste provided that the associated hazard class, UN or NA identification number and other DOT required descriptors are not assigned to discriminate the shipment from DOT-regulated materials. It is also recommended that qualifiers be added such as "state-regulated waste" to assure the wastes is not confused with other materials posing greater hazards. State regulations should also be consulted to identify any specific manifest wording when shipping state-regulated wastes.

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Section 13-05
Developing a DOT Shipping Description

INTRODUCTION

The previous sections presented the prerequisite activities for hazardous material identification and classification. This section describes how classification information is used in concert with the Hazardous Materials Table to develop an appropriate shipping description for safe and compliant transportation of hazardous materials and wastes.

STEPS TO
DEVELOPING A DOT
SHIPPING
DESCRIPTION

A systematic approach to developing the DOT shipping description is useful in ensuring that all necessary information is identified and provided on the DOT shipping paper and packaging, as appropriate. The **DOT basic shipping description** consists of the proper shipping name of the material, hazardous class or division prescribed for the material, the applicable UN or NA identification number, and the packaging group in Roman numerals. Additional description requirements are required if the material meets one or more of the following conditions: special exemptions apply to the material, the material is being transported in small amounts known as "limited quantities," the material is a hazardous waste, the material meets the DOT definition of a hazardous substance, or the shipment is a radioactive material. The following process can be applied to develop an accurate DOT basic shipping description in an effective and logical manner:

- (1) **Hazard Class** - Determine the DOT hazard class of the material

- (2) **Proper Shipping Name** - Note all possible names in 49 CFR 172.101 for your material, using the following priority:
 - 2 1) Technical names (e.g., dimethyl ketone is acetone)
 - 2 2) Chemical Generic (family) names (e.g., pentyl alcohol is an "Alcohols, n o s")
 - 2 3) End Use of Material (e.g., Paint)
 - 2 4) n o s End Use of Material (e.g., Dyes, liquid, n o s)
 - 2 5) DOT Hazard Class (e.g., Flammable liquids, n o s)

If found, note the proper shipping name. Using this assignment, identify the associated hazard class and division,

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labels required, packaging group, packaging references, and any stowage limitations for the mode of transport using the Hazardous Materials Table in 49 CFR 172.101. Appendix F provides a users guide that explains the significance of each column with the Hazardous Materials Table.

- (3) **Hazardous Substance** - Determine if the hazardous material is listed as a hazardous substance in Appendix A to the Hazardous Materials Table in 49 CFR 172.101, "List of Hazardous Substances and Reportable Quantities." If the material meets the definition of a hazardous substance as defined previously, assign the additional letters "RQ" either before or after the basic description. For example, RQ, Allyl alcohol, 6.1, UN 1098, I or Environmentally hazardous substance, solid, n.o.s., 9, UN 3077, III, RQ (Adipic acid).
- (4) **RCRA Hazardous Waste** - Determine if the material is a RCRA solid waste as defined by 40 CFR 261.2 (i.e., is the material a discarded solid, semi-solid, sludge, liquid, or contained gaseous material that is not excluded from regulation)? If the material is defined as a solid waste, note whether the waste meets any of the hazardous waste listings in 40 CFR Part 261, Subpart D and/or exhibits any of the characteristics of a hazardous waste in 40 CFR Part 261, Subpart C. State hazardous waste statutes may regulate additional wastestreams through expanded listings or additional hazardous waste characteristics. If found, note the EPA/State waste designation and the EPA waste code.

***Guidance:** EPA facilities and operations should ensure that they review and remain cognizant of additional hazardous waste listings or characteristics that influence the classification of hazardous waste for shipment. For state-regulated wastes that do not meet the federal definitions of a hazardous material or hazardous waste, please note that a full DOT basic shipping description should not be developed. State waste codes, however, will typically be required, to be identified in Block I of the uniform hazardous waste manifest.*

- (5) **Hazard Class 9 Wastes** - If the material was not amenable to assignment of a proper shipping name under step (2) but is considered an EPA-regulated hazardous waste, then the

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proper shipping name is "Hazardous waste, liquid, n o s " or "Hazardous waste, solid, n o s " and the Hazard Class is Class 9

- (6) **Technical Names** - If the material is assigned a "generic" proper shipping name listed in 49 CFR 173.203(k), the technical name of the material should be inserted in parentheses between the proper shipping name and the hazard class or after the basic description. For example, "Corrosive liquid, n o s , (Capryl chloride), 8, UN 1760, II" or "Corrosive liquid, n o s , 8, UN 1760, II (Capryl chloride) ". When the material is a mixture of two or more hazardous materials, the description should include the technical names of at least two components "most predominantly contributing to the hazards of the mixture ". For example, "Flammable liquid, corrosive, n.o.s., 3, UN 2924, II (contains Methanol, Potassium Hydroxide)
- (7) **Poisons** - Where a material defined as a DOT poison is classified according to a non-technical proper shipping name, such as an end use or n o s designation, a technical name should also be provided. Poisons by inhalation also require the words "Poison-Inhalation Hazard" and the "Hazard Zone" to be specified on shipping papers. Refer to 49 CFR 172.203(m)
- (8) **Empty Packagings** - Per 49 CFR 173.29, any empty container that previously contained a DOT hazardous material may still be considered a regulated hazardous material for shipment purposes. Unless the container is "sufficiently cleaned of residue and purged of vapors to remove any potential hazard" and does not meet the definition of a hazardous waste, the empty packaging is subject to full hazardous material requirements. In such cases, the phrase "RESIDUE: Last Contained" should be inserted before the proper shipping name of the material. Conversely, if the empty container does not pose a hazard as described above and meets the RCRA definition of "empty" in 40 CFR 261.7, the package would not be a regulated hazardous material. Containers that held acutely hazardous waste are rendered empty by triple-rinsing with a substance capable of removing the acutely hazardous waste. Since residues from triple-rinsing come from containers that do not yet meet the applicable performance

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standards, they must be managed as acutely hazardous listed wastes. Containers that have held other listed or characteristic hazardous wastes are considered empty when they meet one of two standards: (1) no more than 2.5 centimeters (1 inch) of residue remains on the bottom of the container; or (2) no more than 3 percent by weight of the total capacity remains in a container that is less than or equal to 110 gallons in size, or no more than 0.3 percent by weight of the total capacity remains in a container that exceeds 110 gallons in size.

The application of this DOT Shipping Description procedure will ensure that the full complement of required information is contained in the description required by DOT shipping papers, including the uniform hazardous waste manifest.

**COMMON DOT
SHIPPING
DESCRIPTIONS FOR
EPA OPERATIONS**

Although EPA facilities and operations use a wide range of hazardous materials, the Agency's sampling, analysis and research efforts involve many common chemicals and solvents. Accordingly, Exhibit 3 provides some of DOT shipping descriptions for some of the most frequently encountered materials and wastes placed into transit by EPA.

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Exhibit 3: Common DOT Shipping Descriptions

Hazardous Material/Waste	U.S. DOT Shipping Description (Shipping Name, Hazard Class/Division, UN/NA Identification Number, Packing Group)	EPA Hazardous Waste Number¹
Reagents		
Hydrochloric acid Nitric acid >70% Potassium hydroxide soln. Sodium sulfate soln.	Hydrochloric acid, solution, 8, UN1789, II Nitric acid, 8, UN 2031, I Potassium hydroxide, solution, 8, UN1814, II Non-DOT regulated	D002 when discarded D001/D002 when discarded D002 when discarded N/A
Waste Solvents		
Acetone Hexane Isooctane Methanol Methylene Chloride	Waste Acetone, 3, UN1090, II Waste Hexane, 3, UN1208, II Waste Isooctane, 3, UN1262, II Waste Methanol, 3, UN1230, II Waste Methylene Chloride, 6.1, UN1593, III	U002/F003 D001 D001 U154/F003 F002/ U080
Experimental Residues		
Waste PCBs (non RCRA-regulated) Excess soil samples with heavy metals (e.g., lead)	Polychlorinated biphenyls, 9, UN2315, II Hazardous waste, solid, n.o.s., (soils with lead), 9, NA3077, II (D008)	N/A D008
¹ P/U listings refer to unused commercial chemical products; F-listings refer to spent solvents		

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**Section 13-06
Package Selection**

INTRODUCTION

The DOT rules prescribe specific packagings for hazardous materials that ensure the integrity of the shipment is maintained throughout the course of transportation. This section describes the different types of DOT packagings, exemptions, and package selection procedures.

DEFINITIONS

Relevant definitions to the selection of DOT packages and containers include the following.

Limited Quantity Packagings - These packages are not tested in accordance with the performance tests for UN specification packagings

Overpack - An enclosure used by a single shipper to contain one or more packages and to form one handling unit for convenience of handling and stowage. The most common type of overpack encountered by EPA facilities and operations is the laboratory pack, commonly referred to as "lab pack."

Package - The complete product of the packing operation consisting of the packaging and contents prepared for transport

Packaging - Receptacles and any other components or materials necessary for the receptacle to perform its containment function and to ensure compliance with minimum packaging requirements. An inner packaging is a receptacle that requires an outer packaging for transport. An outer packaging means the outermost enclosure of a packaging together with any absorbent materials, cushioning and any other components necessary to contain and protect inner receptacles or packagings.

Packing - The function by which articles or substances are enclosed in packagings or otherwise secured.

UN Specification Packagings - These are performed-tested packagings to ensure that the UN safety standards in 49 CFR Part 178 are achieved. These types of packagings are subject to rigorous performance testing

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**CATEGORIES OF DOT
PACKAGINGS**

The DOT packagings can generally be described by five categories, including.

Excepted Small Quantities These are very small packages (e.g., inner packaging less than 1 ounce for most liquids) subject to special reliefs as provided by 49 CFR 173.4. The small quantity exception is only available to Hazard Class 3, 4.1, 5.1, 5.2, 8, 6.1, 7, and 9 materials. If a package meets the minimal requirements of 49 CFR 173.4, it is not subject to any other DOT rules.

Limited Quantity Limited quantity exceptions are provided per material by reference in column 8a of the Hazardous Material Table in 49 CFR 172.101. Typically, limited quantity packages are not above one to five-gallons capacity, although some materials may not be allowed exceptions above several ounces. Most limited quantity packages are exempt from specification packaging, hazard class labeling, and placarding requirements. Limited quantity packages, however, are required to satisfy DOT general packaging requirements in 49 CFR Part 173, Subpart B as well as general limitations and conditions of the specific limited quantity exemption.

Consumer Commodity This is a special exception for limited quantity materials that are packaged and distributed in a form intended or suitable for sale through retail sales agencies for consumption by individuals for the purpose of personal care or household use. The consumer commodity exception, when allowed, changes the proper shipping name to "Consumer Commodity" and the hazard class to ORM-D (other regulated material - domestic). These designations replace the original name and hazard class of the material. The main advantage of the consumer commodity classification is its exemption from shipping paper requirements, unless shipped by air.

Non-bulk Packages These packages include any packaging that does not fulfill the above exceptions, but are below the quantity threshold for "Bulk" packaging (e.g., 450 liters (119 gallons) for liquids). Authorized non-bulk packages are referenced per material in column 8b of the Hazardous Materials Table. Non-bulk packages must meet DOT performance oriented packaging standards and tests contained in 49 CFR Part 178, Subparts L and M as well as DOT general packaging requirements. The non-bulk

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packagings specifications and codes for liquids are provided in 49 CFR 173 201- 203 and 49 CFR 173 211-.213 for solids

Bulk Packages This category encompasses those packages that are larger than non-bulk containers, ranging from portable tanks to railroad tank cars. Authorized bulk packages are referenced per material in column 8c of the Hazardous Material Table. Bulk packages are required to meet detailed construction standards and must be periodically inspected, tested and re-qualified under various DOT regulations in 49 CFR Parts 178 and 179.

**SPECIAL PACKAGING
CONSIDERATIONS**

Open Head Drums
49 CFR 173 12(a)

If a material that is a hazardous waste is required by the DOT regulations to be shipped in an closed head drum (i e , a drum with a 7 0 centimeter (3 inches) or less bung opening) and the hazardous waste contains solid or semisolids that make its placement in a closed head drum impracticable, an equivalent open head drum may be used for the hazardous waste. Refer to 49 CFR 173 12(a))

Lab Packs
49 CFR 173 12(b)

Waste materials classified as Class or Division 3, 4 1, 4 2, 4 3, 5 1, 6 1, 8, or 9 are excepted from specification packaging requirements for combination packagings if packaged in accordance with 49 CFR 173 12(b) and transported for disposal or recovery by highway only. In addition, a generic description from the Hazardous Materials Table may be used in place of specific chemical names, when two or more chemically compatible waste materials in the same hazard class are placed in the same outside packaging. Additional lab packing provisions that must be addressed by EPA employees shipping hazardous wastes include

- The outer packaging must be a steel or aluminum removable head drum (packaging specification codes UN 1A2 or UN 1B2), a UN 1D plywood drum, or UN 1G fiber drum or a UN 1H2 plastic drum tested and marked at least for the Packaging Group III performance level for liquids and solids
- The inner packagings must be either glass, not exceeding four liters (1 gallon) rated capacity, or metal or plastic not exceeding 20 liters (5.3 gallons) rated capacity

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- Each outer packaging may contain only one class of hazardous material
- Inner packaging containers containing liquid must be surrounded by a chemically compatible absorbent material in sufficient quantity to absorb the total liquid contents
- Gross weight of the complete package may not exceed 205 kilograms (452 pounds)

**PACKAGE SELECTION
PROCEDURES**

Once the proper shipping name and identity of the hazardous material or waste has been determined, an authorized package is required in which to ship the material. The DOT authorizes many packaging options for each hazardous material. Authorized packaging options are listed in 49 CFR Part 173. The specific regulatory section of 49 CFR Part 173 for packaging a particular hazardous material is found in column 8 of the Hazardous Material Table in 49 CFR 172.101. The proper shipping name for the material is used to determine the related reference of packaging options in column 8. By referring to the specific regulatory section called for by the Table, the type of packaging alternatives for the hazardous material can be readily determined. In addition, each proper shipping name is also subject to special packaging exemptions, restrictions and limitations as stipulated in column 7 of the Table.

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**Section 13-07
Marking and Labeling**

INTRODUCTION

The marking and labeling of packagings containing hazardous materials or wastes is a critical component of communicating applicable hazards in a standardized manner to shippers, carriers, and emergency response personnel. Each package of hazardous materials must have two types of communications: Markings and Labels. Labels are very precisely defined mechanisms for providing an immediate indication of overall hazards or precautions. Markings include more detailed communication information. This section describes the specific requirements for DOT markings and labels as well as the procedures for assigning them to hazardous material packagings.

MARKINGS

Once a hazardous material has been classified and an appropriate package selected, specific markings must be provided in accordance with 49 CFR Part 172, Subpart D. Markings offer description information on the specific hazardous material being shipped and any special handling considerations. This information must be provided so that it meets the following criteria contained in 49 CFR 172.304: durable, in English, on a background of sharply contrasting color, unobscured by labels or attachments, or is provided on the package away from other markings that could substantially reduce their effectiveness. Generally, EPA facilities and operations use non-bulk packages, requiring the following marking information:

- The proper shipping name for the hazardous material or hazardous waste
- ORM markings, where applicable (e.g., ORM-D)
- The appropriate UN or NA identification number
- The name and address of the shipper, the consignee, or both,
- Additional markings appropriate to the material being shipped (e.g., this side up package orientation)

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LABELS

In addition to markings, special labels must be affixed to packagings containing hazardous materials or hazardous wastes as specified in 49 CFR Part 173. DOT labels are diamond-shaped ("square on point") devices indicating the hazard class of the material being shipped (e.g., the flammable liquid label). The appropriate label for the hazardous material is identified in column 6 of the Hazardous Material Table for each listed proper shipping name.

In certain cases, hazardous materials may possess multiple hazards which requires the use of a label for the primary and subsidiary hazard (e.g., a flammable liquid which is also poisonous must be labeled for both hazard classes). The primary hazard label is also shown first, followed by the subsidiary hazard label. The primary hazard label should provide the class number in the bottom corner of the label. Conversely, the secondary hazard label must not show any class number in the bottom corner. Additional guidelines regarding the use of subsidiary labels for class 3, 4.1, 4.2, 4.3, 5.1, 6.1, and 8 hazardous materials is provided in 49 CFR 172.402(a)(2).

**LABELS PLACEMENT
AND SPECIFICATION**

DOT regulations provide specific placement instructions to ensure that labels provide an immediate source of hazard communication. Additionally, DOT labels must satisfy durability, design, size, and color requirements established in 49 CFR 172.407.

Generally, labels must be affixed to DOT packagings so that they are

- Securely affixed or printed to ensure complete visibility (Note: Unless clearly visible from outside, all labels required on packages within an overpack must be reproduced or affixed on the outside of the overpack.)
- Affixed or printed on a background of contrasting color
- Located near the proper shipping name
- Placed within 150 millimeters (6 inches) of one another when a primary and subsidiary hazard are required.

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Where packages contain radioactive materials or the package orientation "This Way Up" label is required, two labels must be used

**HAZARDOUS WASTE
LABEL**

Before transporting hazardous waste or offering hazardous waste for transportation off-site, the shipper/generator must mark each container of 110 gallons or less with the information in Exhibit 4

Exhibit 4. EPA Hazardous Waste Marking for Transportation

<p>EXAMPLE: The EPA Hazardous Waste Markings for containers of 110 gallons or less</p>
<p style="text-align: center;">HAZARDOUS WASTE</p> <p style="text-align: center;">Federal Law Prohibits Improper Disposal</p> <p>If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency.</p> <p>Generator's Name: _____</p> <p>Generator's Address: _____</p> <p>Manifest Document No: _____</p>

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**Section 13-08
Preparing Shipping Papers**

INTRODUCTION

With very limited exceptions, each shipment of hazardous materials must be accompanied by "shipping papers," which document the quantity and type of materials shipped. These must be signed by the shipper or generator and maintained by the transporter in a readily accessible manner. In addition to providing the transporter with explicit information on the contents of the shipment, the shipping paper is the key data source that will be used by emergency responders in the event of an incident. This documentation is also useful in substantiating that EPA facilities and operations have fulfilled applicable DOT and RCRA regulatory requirements with respect to hazardous materials management. This section describes the information required by shipping papers, including special considerations for completing the hazardous waste manifest and related documentation.

**SHIPPING PAPERS
PREPARATION
REQUIREMENTS**

A "shipping paper" is a document used to identify the freight being offered for transportation. This term covers any shipping order, bill of lading, waybill, manifest or other document serving a similar purpose. A special form of shipping paper is the uniform hazardous waste manifest. The general requirements for preparing shipping papers are summarized below.

- 1 All entries on the shipping paper must be legible, printed, and in English. Unless explicitly authorized (e.g., n o s), no abbreviations should be used in completing information required by the shipping paper.
- 2 Each hazardous material (including hazardous wastes) in the shipment must be identified and listed. The listing for each material generally must include the following:
 - Proper shipping name
 - Numerical hazard class (or division) designation
 - The UN or NA identification number
 - The Packing Group in Roman Numerals (the roman numeral may be preceded by the letters "PG")
 - The total quantity of material shipped
 - Special designations such as the letters "RQ" if the materials

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meets the definition of a hazardous substance, or the word "Waste" before the proper shipping name if the materials meets the definition of a hazardous waste

In addition the description should include the type and number of packages, and the technical name or constituents of the material See related discussion in the previous section entitled, Developing a DOT Shipping Description

- 3 If hazardous materials and other materials are listed on the same shipping paper, the hazardous materials must be clearly distinguished in one of three ways
 - Listing the hazardous materials first
 - Listing the hazardous materials in a contrasting color
 - Indicating the hazardous material by an "X" before the proper shipping name in the shipping paper column entitled "HM"
- 4 For hazardous waste, the corresponding EPA waste code should be assigned to Block I of the uniform hazardous waste manifest In addition, states may promulgate standards that regulate additional wastestreams not covered by the EPA rules For example, cleanup residues from underground storage tank removals, waste oils, and polychlorinated biphenyls are frequently regulated by more stringent state hazardous waste management statutes Accordingly, these codes should be entered in Block I of the manifest
- 5 The shipping paper should include of a certification statement attesting to the accuracy of the paperwork, the proper classification and naming of the material, the correctness and safety of the packaging, and the proper marking and labeling of the packages.
6. No material other than a hazardous material may be identified using a DOT hazard class or UN/NA identification number. The description of materials that do not meet the definition of a DOT hazardous material may be preceded with the words, "Non-DOT regulated "

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- 7 A 24-hour emergency response telephone number must be entered on the shipping paper (or manifest) The telephone number must be the number of the person offering the hazardous material for transportation, or the number of an agency or organization (e g , CHEMTREC) capable of, and accepting responsibility for, providing detailed information about the hazardous material in the event of an emergency
- 8 A copy of shipping paper or manifest should be retained by the shipper/generator. This information substantiates the actions taken to ensure that the shipment was prepared in accordance with applicable regulatory requirements and provides a record of the transaction in the event of a future inquiry or inspection

Guidance: EPA personnel offering hazardous materials or waste for transportation should use the compliance checklist in Appendix G to facilitate the preparation of shipper papers in accordance with DOT and EPA regulations.

**LAND DISPOSAL
RESTRICTIONS**

In November 1984, Congress enacted the Hazardous and Solid Waste Amendments to RCRA, which mandated broad changes to the hazardous waste management program Among the most significant portions of the amendments, HSWA required EPA to establish a comprehensive set of management standards governing the land disposal of untreated hazardous wastes These standards, known as the land disposal restrictions, are codified at 40 CFR Part 268. Hazardous wastes become "restricted" and, therefore, subject to the LDR program when they are prohibited from land disposal by either regulation or statute, regardless of any extensions, exemptions, or variances "Prohibited" wastes are a subset of the restricted wastes and are defined as those restricted wastes which are ineligible for land disposal since they do not meet designated treatment standards after the appropriate effective date Wastes for which no treatment standards have been promulgated, and which are not specifically designated by HSWA as ineligible for land disposal, are neither restricted nor prohibited, and are not currently subject to the LDR program. The areas of the LDR program most significantly impacting EPA facilities are described below

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**Notification and
Specification
Requirements**

Generators of restricted wastes must provide notice and certification, and comply with the recordkeeping and waste analysis requirements mandated by applicable sections of 40 CFR (§268.7, §268.9, and §268.7(a)) Exhibit 5 summarizes the notification and certification requirements applicable to EPA generators intended to ship waste off-site

**Exhibit 5
Summary of Basic Notification and Certification Requirements**

Scenario	Frequency	Recipient of Notification	Recordkeeping, Notification, and/or Certification Requirements
Waste does not meet applicable treatment standards or exceeds applicable prohibition levels (see §268.7(a)(1))	With each shipment	Treatment or storage facility	Notice must include: <ul style="list-style-type: none"> • EPA hazardous waste code • Constituents of concern • Treatability group • Manifest number • Waste analysis data, where available
Waste can be disposed without further treatment (meets applicable treatment standards or does not exceed prohibition levels upon generation) (see §268.7(a)(2))	With each shipment	Land disposal facility	Notice and certification statement that waste meets applicable treatment standards or applicable prohibition levels must also include: <ul style="list-style-type: none"> • EPA hazardous waste code • Constituents of concern • Treatability group • Manifest number • Waste analysis data, where available
Waste is subject to exemption from a prohibition on the type of land disposal used for the waste, such as a case-by-case extension, a no-migration exemption, or a national capacity variance (see §268.7(a)(3))	With each shipment	Treatment, storage, or disposal facility	Notice must include: <ul style="list-style-type: none"> • EPA hazardous waste code • Constituents of concern • Treatability group • Manifest number • Waste analysis data, where available • Date the waste is subject to the prohibitions

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With each shipment of restricted waste sent off-site, the generator must provide notification to the receiving TSDF. The notice must include

- EPA hazardous waste code
- Hazardous constituents to be monitored, if monitoring will not include all regulated constituents, for wastes F001-F005, F039, D001, D002, and D012-D043, for all wastes, the notice should also include whether the waste is a wastewater or nonwastewater, and any appropriate subcategory, if applicable
- Accompanying manifest number
- Waste analysis data, where available

This notification must accompany all shipments of restricted wastes, regardless of whether they are being shipped to a recycler, treatment facility, storage facility or disposal facility. Copies of the notifications must be maintained by the generator for five years.

If the generator determines that the waste meets the treatment standard and decides to ship the waste to a land disposal facility, the notification must include a signed certification that the waste meets the treatment standards. The language for the certification is provided in §268.7(a)(2). Copies of the notification, certification, and associated waste analysis data must also be retained for a minimum of five years.

Regardless of whether a generator identifies waste based on knowledge or testing data, all data and analytical results that support the determination must be maintained on-site. In addition to these materials, generators must also retain on-site copies of all notices, certifications, demonstrations, waste analysis data and any other records associated with shipments of restricted wastes for at least five years.

Alternative treatment
standard for lab packs

Laboratories frequently dispose of many small containers of hazardous wastes by placing them in overpacked drums called lab packs. Because lab packs are potentially subject to a different prohibition and associated treatment standard for each waste they contain, they have been given a single alternative treatment standard for ease of compliance. Lab packs satisfying the

Hazardous Materials/Waste Transportation

requirements of 49 CFR §173.121(b) and 40 CFR §§264.316/265.316 that **do not contain any of the mercury bearing wastes** listed in Appendix IV to Part 268 will be eligible for land disposal following incineration in a hazardous waste incinerator, so long as any incinerator ash then meets the treatment standards for metal wastes (D004-D011).

Small containers of laboratory wastes that are grouped together and placed in overpacked drums are subject to all the applicable waste-specific prohibitions; they are, however, also eligible for a single alternative treatment standard, as discussed below. Generators who wish to take advantage of the alternative treatment standard should provide the basic notification for wastes that do not meet treatment standards, except they need not note constituents of concern, and a special certification for lab packs containing the language found in 40 CFR §268.7(a)(8). Generators notifying for lab packs must also comply with the previously identified requirements for wastes excluded subsequent to the point of generation and for record retention.

Guidance: EPA facilities and operations that develop shipping documentation during the course of hazardous waste management such as the uniform hazardous waste manifest and LDR notifications are subject to conflicting time frames for records retention. Manifests are required to be maintained for three years after the date of shipment whereas LDR documentation is required to be maintained for five years. To reconcile this discrepancy while providing additional assurance that appropriate records will be available in the event of an inspection or CERCLA potentially responsible party inquiring, EPA facilities and operations should maintain shipping documentation developed for off-site hazardous waste transfers to TSDFs for a minimum of five years. These records should be managed in the permanent environmental records file or archive to ensure ease of retrieval and accessibility.

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**Section 13-09
Providing and Using Placards**

INTRODUCTION

Placards represent the primary device used to indicate the hazard of materials contained within the vehicle. Larger than labels used on packagings, placards are generally affixed to the front, back, and both sides of the vehicle. This section describes the requirements for providing and assigning placards for hazardous material shipments.

**REQUIREMENTS FOR
PLACARDS**

Each vehicle should be placarded based on the total load that is carried. For highway shipments, it is the responsibility of the shipper to provide placards to the carrier for the materials being shipped, unless the transporter's motor vehicle is already placarded for the materials. The transporter is responsible for affixing and maintaining placards, as necessary, for the entire load throughout the cycle of transportation. Placard specifications and examples are codified in 49 CFR 172.521-.560.

DOT defines three major groups of placarding requirements based on the hazard classes being shipped.

Any Quantity Placards Certain materials are considered so hazardous that any quantity on a vehicle is subject to placarding provisions. Specifically, these include explosives (Divisions 1.1-1.3), poison gases (Division 2.3), dangerous when wet materials (Division 4.3), poisons (Division 6.1, Packing Group I-inhalation hazard only) and radioactive materials (Class 7).

1,000/5,000 Pound Rule Placards The majority of the remaining hazard classes require placard if the total quantity of all such hazardous material (of all hazard classes) on the vehicle in non-bulk packages exceeds 1,000 pounds (See 49 CFR 172.504, Table 2). For mixed loads of non-bulk packages, a "Dangerous" placard can account for materials of any hazard class where the total quantity of materials in that class is less than 5,000 pounds. If the total quantity of hazardous materials in any given class exceeds 5,000 pounds, the placard for that particular hazard must be used. Bulk packages are required to be affixed with the specified placard for the hazardous material contained in the package, regardless of the amount.

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No Placard Required. Selected hazard classes do not require placards under any conditions. Relevant examples for EPA facilities and operations include infectious substances, "limited quantity" packages, combustible liquids in non-bulk packages, and ORM-D materials.

Placard Selection
Guidelines - Non-Bulk
Packages

The first step in determining applicable placarding requirements is to identify the hazard classes for all materials being transported. As noted above, certain types of materials (e.g., infectious substances and ORM-D materials) do not require placards under any circumstances. Conversely, some particularly hazardous materials require placarding in all cases (e.g., radioactive materials). If the hazardous materials being transported are not exempted or always placarded, the next step in identifying the appropriate placards is to determine the total quantity of hazardous material being transported by the vehicle in non-bulk packages. (Note: The majority of hazardous materials and wastes shipped by EPA facilities will be in non-bulk packages, however, bulk packages may be required for site cleanup, emergency response or CERCLA site activities.) Where the total quantity of all hazardous materials (of all hazard classes) is below 1,000 pounds, placarding is not required, but is permitted as a precautionary measure in accordance with 49 CFR 172.502(c). If the aggregate load exceeds 1,000 pounds in non-bulk packages, the vehicle must be placarded subject to the 5,000 pound rule explained previously. Once these determinations have been made, the appropriate placard should be selected for the hazard classes being transported. The specifications and makeup of the DOT placards for each hazard class (including divisions) are provided in 49 CFR 172.521-560.

Placard Selection
Guidelines - Bulk
Packages

Bulk packages (e.g., tanker truck) are required to have placards affixed for applicable hazard classes contained, regardless of the amount. This requirement ensures that applicable hazards are communicated immediately in the event of a transportation-related incident.

Hazardous Materials/Waste Transportation

**Section 13-10
Emergency Response Considerations**

INTRODUCTION

Transportation-related incidents may pose significant threats to public safety, property, and the environment. Prompt response based on accurate and readily available hazard information regarding the cargo is essential to mitigating these impacts. Accordingly, DOT has developed specific emergency response communication standards in 49 CFR Part 172, Subpart G. This section describes the requirements for emergency response communications.

**EMERGENCY
RESPONSE
INFORMATION**

DOT has identified seven specific areas of information that must accompany shipping papers for hazardous materials and wastes. This information should be present for each hazardous material being transported and be immediately available to emergency responders whenever there is a hazardous material present.

**Required Response
Information**
(49 CFR 172.602)

The minimum emergency response information required with each shipment includes:

- Basic description and technical name(s) of the material(s)
- Immediate hazards to health
- Fire and explosion risks
- Immediate precautions to be taken in the event of an incident
- Immediate methods for handling fires
- Initial methods for handling spills or leaks
- Preliminary first aid measures.

This information is similar to that provided by the DOT Emergency Response Guide or a manufacturer's MSDS.

The DOT rules allow several methods of supply the required information, however, all methods are required to be printed in English and available for use away from the package containing the hazardous material. Emergency response information can be printed:

- Directly on the shipping paper, or

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- On another document such as an MSDS or the DOT Emergency Response Guide which cross-references the material to specific emergency response procedures

Guidance: All EPA employees engaging in hazardous materials transportation should ensure that an MSDS, DOT Emergency Response Guidebook, or other hazard profile information is provided with each shipment off-site. Alternatively, EPA should obtain verification that its hazardous material and waste transporters maintain appropriate DOT emergency response information on the carrier vehicle during the normal course of transportation.

**Emergency Response
Telephone Number**
(49 CFR 172.604)

Shippers of hazardous materials are obligated to provide an emergency response telephone number on the shipping paper for each load destined for transit. This telephone number must appear on the shipping paper immediately following a hazardous materials entry, or in a conspicuous place on the shipping paper, if the a single number can be used for all hazardous materials listed. In addition, there must be an indication that this number is to be used for emergency response purposes (i.e., EMERGENCY CONTACT *** ***)

The telephone number provided by the shipper of the hazardous materials or wastes must be monitored at all times while the materials are in transport by one of the following methods:

- A person who is knowledgeable of the hazardous properties of the load and has comprehensive emergency response information and incident mitigation information for that material, or has immediate access to a person who possesses such knowledge and information
- An agency or organization such as CHEMTREC which is capable of, and accepts responsibility for, providing emergency response information

It is the responsibility of the person providing the telephone number of a third-party emergency response information agency to ensure that it has received current information regarding the material prior to being offered for transportation. In particular, the agency should be provided with the name and telephone

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number of an individual(s) who are thoroughly knowledgeable of the hazardous materials intended for transport

**INCIDENT
NOTIFICATIONS AND
REPORTS**

DOT regulations prescribe incident notification procedures in the case of an accident that occurs during the course of transportation, including loading, unloading, and temporary storage. Each carrier involved in an accident is required to contact the Coast Guard National Response Center at 800-424-8802 in addition to any contacts with local emergency authorities. Notification must occur when any of the following conditions result from the hazardous materials incident:

- A person is killed
- A person receives injuries requiring hospitalization
- Estimated carrier or other property damage exceeds \$50,000
- An evacuation of the general public occurs lasting one or more hours
- One or more major transportation arteries or facilities are closed from one hour or more
- The operational flight pattern or routine of an aircraft is altered
- Fire, breakage, spillage, or suspected radioactive contamination occurs involving shipment of radioactive material
- Fire, breakage, spillage, or suspected contamination occurs involving shipment of etiologic agents
- There has been a release of a marine pollutant in a quantity exceeding 450 liters (119 gallons) for liquids or 400 kilograms (882 pounds) for solids
- A situation exists of such nature that, in the judgment of the carrier, should be reported even though it does not meet the above conditions.

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The verbal notice must provide the following information. name of reporter name and address of carrier represented by reporter, phone number where reporter can be contacted, date, time, and location of incident, the extent of injuries, if any; classification, name, and quantity of hazardous materials involved, type of incident and nature of hazardous material involvement and whether a continuing danger to life exists at the scene.

Under the CERCLA regulations promulgated in 40 CFR 302.6, EPA also requires persons in charge of facilities (including transport vehicles, vessels and aircraft) to report any release of a hazardous substance in a quantity equal to or greater than its RQ, as soon as that person has knowledge of the release, to the U S Coast Guard National Response Center

Detailed Incident Report

Each carrier making such a verbal notice is subject to the preparation of a detailed hazardous material incident report using DOT Form F 5800.1 within 30 days of the date of discovery of the incident. Such report must be sent to the Information Systems Manager, DHM-63, Research and Special Programs Administration, Department of Transportation, Washington, D C 20590-0001. A copy of the report is required to be maintained for a period of two years.

The preparation of detailed incident reports is not stipulated for materials being transported under the following proper shipping names: consumer commodity; battery, electrical storage, wet, filled with acid or alkali, and paint/paint-related material when shipped in packagings of five gallons or less.

**Special Requirements for
Hazardous Waste
Releases**

Any quantity of hazardous waste that has been discharged during transportation requires the preparation of a detailed incident report. In addition, the report must provide:

- A copy of the hazardous waste manifest for the waste
- An estimate of the quantity of the waste removed from the scene, the name and address of the facility to which it was taken, and the manner of disposition of any removed waste must be entered in Section IX of the report form (Form F5800.1)

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**Section 13-11
Training**

INTRODUCTION

A thorough knowledge of proper handling procedures and appropriate use of DOT hazard communication systems (e.g., shipping papers, labels, placards) is essential to the safe transportation of hazardous materials and wastes. In recognition of this point, DOT issued a final rule on May 15, 1992 (57 FR 20952) that established specific training requirements for hazardous material employers and employees engaging in the shipment of hazardous materials. This final rule became effective on October 1, 1993 and was codified in 49 CFR Part 173, Subpart H. This section describes the provisions for hazardous materials training as they relate to EPA facilities and operations.

DOT TRAINING

The purpose of the DOT training provisions is to ensure that each hazardous materials employer trains its employees regarding safe loading, unloading, handling, storing, and transporting of hazardous materials and emergency preparedness for responding to accidents or incidents involving the transportation of hazardous materials.

Employees engaging in transportation-related activities on or before July 2, 1993 were required to receive training under the new rules by October 1, 1993. Training for a new employee must be completed within 90 days after employment. Each employee must receive recurrent training at least once every two years. On May 27, 1992 (57 FR 22182), DOT issued a final rule that amended these training requirements by requiring that a hazardous materials employer must test each employee to ensure that the training received is effective (see 49 CFR 172.702).

**Training Program
Contents**

The hazardous materials employee training program should address the following major considerations relative to hazardous materials transportation:

- **General awareness training** - To ensure that employees are familiar with the requirements for hazardous material transportation and to identify hazardous materials consistent with the DOT hazard communication provisions for marking, labeling, and placarding.
- **Function-specific training** - To provide function-specific

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training (e.g., preparing shipping papers, selecting packages, marking and labeling) which is specifically applicable to the duties the employee performs

- **Safety training** - To provide education on emergency response information required by 49 CFR Part 172, Subpart G, measures to protect the employee from the hazards associated with hazardous materials, and methods for avoiding accidents, such as the proper procedures for handling packages containing hazardous materials

NOTE: Training conducted by EPA facilities and operations to comply with the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) standard in 29 CFR 1910.120, to the extent that this training addresses the areas specified above, may be used to satisfy the DOT training requirements to avoid unnecessary duplication of training

Guidance: Where feasible, EPA employees with emergency response and hazardous materials transportation responsibilities should seek training that integrates both DOT and OSHA requirements to enhance training efficiencies and the interface of applicable regulatory standards. RCRA hazardous waste management and transportation considerations should also be addressed. For example, the HAZWOPER curriculum developed by the EPA Emergency Response Training Program includes a comprehensive description of provisions for DOT, OSHA, and EPA regulations as they relate to hazardous materials response. A catalog of emergency response curricula and training programs can be obtained by contacting the Hermina Williams, EPA Emergency Response Training Program, Externalization Training Coordinator, at (513) 569-7537. EPA training coordinators may want to use these course descriptions as a benchmark when securing prospective training support organizations for HAZWOPER or hazardous material educational activities.

Recordkeeping

The results of hazardous materials training activities should be documented and retained for each employee for the duration of their employment and for 90 days thereafter. The record of training should include the following

- Employee's name

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- Most recent training completion date of the employee's training
- A description, copy, or the location of the training materials used to meet these training requirements
- Name and address of the person providing the training
- Certification that the employee has been trained and tested to demonstrate his or her proficiency

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APPENDIX A

Acronyms

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**APPENDIX A
Acronyms**

CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
DOT	Department of Transportation
EPA	Environmental Protection Agency
HAZWOPER	Hazardous Waste Operations and Emergency Response
HMTA	Hazardous Materials Transportation Act
HSWA	Hazardous and Solid Waste Amendments
IATA	International Air Transport Association
LDR	Land Disposal Restrictions
MSDS	Material Safety Data Sheet
ORMD-D	Other Regulated Material-D
OSHA	Occupational Safety and Health Administration
ppm	parts per million
psia	pounds per square inch absolute
RCRA	Resource Conservation and Recovery Act
RQ	Reportable Quantities
RSPA	Research and Special Programs Administration
SARA	Superfund Amendments and Reauthorization Act
SHEMP	Safety, Health and Environmental Management Program
TSDf	Treatment, Storage, and Disposal Facility
UN/NA	United Nations/North American

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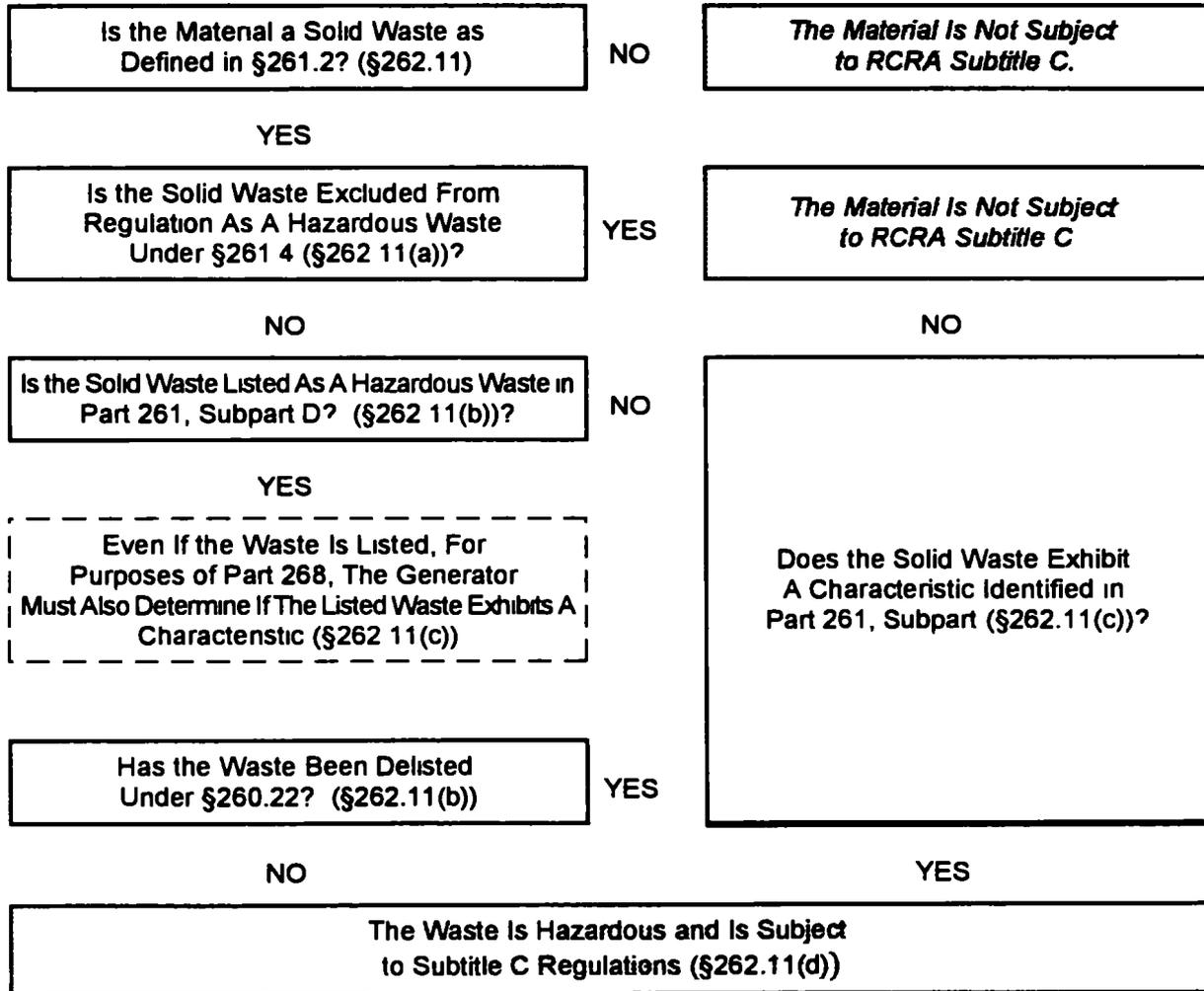
APPENDIX B

The Hazardous Waste Determination Hierarchy

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APPENDIX B
The Hazardous Waste Determination Hierarchy



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APPENDIX C

Precedence of Hazard Table (Hazard Class and Packing Group)

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APPENDIX C
Precedence of Hazard Table (Hazard Class and Packing Group)

	42	43	51 I ¹	51 II ¹	51 III ¹	61 I dermal	61 I oral	61 II	61 III	8 I liquid	8 I solid	8 II liquid	8 II solid	8 III liquid	8 III solid
3 I II III						3 3 61	3 3 61	3 3 61	3 3 3 ⁴	3 8 8	' ' '	3 3 8	' ' '	3 3 3	' ' '
41 II ² III ²	42 42	43 43	51 51	41 41	41 41	61 61	61 61	41 61	41 41	' '	8 8	' '	41 8	' '	41 41
42 II III		43 43	51 51	42 51	42 42	61 61	61 61	42 61	42 42	8 8	8 8	43 8	42 8	42 42	42 42
43 I II III			51 51 51	43 43 51	43 43 43	61 61 61	43 43 61	43 43 61	43 43 43	43 8 8	43 8 8	43 8 8	43 43 8	43 43 43	43 43 43
51 I ¹ II ¹ III ¹						51 61 61	51 51 61	51 51 61	51 51 51	51 8 8	51 8 8	51 8 8	51 51 8	51 51 51	51 51 51
61 I, dermal I, oral II, inhalation II, dermal II, oral III										8 8 8 8 8	61 61 61 61 8	61 61 61 8 8	61 61 61 61 8	61 61 61 61 8	61 61 61 61 8

¹ There are presently no established criteria for determining Packing Groups for liquids in Division 51. For the time being, the degree of hazard is to be assessed by analogy with listed substances, allocating the substances to Packing Group I (great danger), II (medium danger), or III (minor danger)

² Substances of Division 4.1 other than self-reactive substances

³ Indicates an impossible combination

⁴ For pesticides only; where a material has the hazards of Class 3, packing Group III, and Division 6.1, Packing Group III, the primary hazard is Division 6.1, Packing Group III

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APPENDIX D

Identifying the Primary Hazard

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**APPENDIX D
Identifying the Primary Hazard**

Is the Material Explosive? NO	YES	<i>The Primary Hazard Class is Class 1 (Explosive)</i>
Is the Material an Organic Peroxide? NO	YES	<i>The Primary Hazard Class is Class 5.2 (Organic Peroxide)</i>
Is the Material an Infectious Substance? NO	YES	<i>The Primary Hazard Class is Class 6.2 (Infectious Substance)</i>
Does the Material Meet the Definition of "Wetted Explosive" [49 CFR 173.124(a)(1)]? NO	YES	<i>The Primary Hazard Class is Class 4.1 (Flammable Solid)</i>
Is the Material a Limited Quantity Radioactive? NO	YES	<i>The Primary Hazard Class is determined in accordance with 49 CFR 173.421-2</i>
Is the material specifically listed on Table 172.101? NO	YES	<i>The Hazard Class indicated in column (3) of Table 172.101 is the Primary Hazard</i>
Is the Material Class 7 - Radioactive, 2.3 - Poison gas, 2.1 - Flammable gas, 2.2 - Nonflammable gas, 6.1 Poison, PG I, PIH, 4.2 - Pyrophoric materials only, or 4.1 - Self-reactive materials only? NO	YES	<i>The Hazard Class is assigned in descending order of priority, as listed</i>
Is the Material Class 3 - Flammable liquid, 8 - Corrosive, 4.1 - Flammable solid, 4.2 - Spontaneously combustible, 4.3 - Dangerous when wet 5.1 - Oxidizer, or 6.1 - Poison? NO	YES	<i>The Primary Hazard is determined according to the "Precedence of Hazard" table at 49 CFR 172.2a(b)</i>
Is the Material a "Combustible Liquid"? NO	YES	<i>The Primary Hazard Class is Combustible liquid</i>
Is the Material a Class 9 "Miscellaneous Hazardous Material"? NO	YES	<i>The Primary Hazard Class is Class 9</i>

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APPENDIX E

Sample of Hazardous Materials Table

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APPENDIX E
Sample of Section 172.101 Hazardous Materials Table

Symbol	Hazardous materials description and proper shipping names	Hazard class or division	ID numbers	Packing group	Label(s) required (if not excepted)	Special provisions	(8) Packaging authorizations (§173 ***)			(9) Quantity limitations		(10) Vessel stowage requirements	
							Exceptions	Non-bulk packaging	Bulk packaging	Passenger aircraft or railcar	Cargo aircraft only	Vessel stowage	Other storage provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Accelerene, see p-Nitrosodimethylaniline												
	Accumulators, electric, see Batteries, wet etc												
D	Accumulators, pressured, pneumatic or hydraulic (containing non-flammable gas)	2.2	NA1956		NONFLAMMABLE GAS		306	306	None	No limit	No limit	A	
	Acetal	3	UN1088	II	FLAMMABLE LIQUID	17	150	202	242	5 L	60 L	E	
	Acetaldehyde	3	UN1089	I	FLAMMABLE LIQUID	A3, B16, F20, F26, F29	None	201	243	Forbidden	30 L	E	
A	Acetaldehyde ammonia	9	UN1841	II	CLASS 9		155	204	241	200 kg	200 kg	A	34
	Acetaldehyde oxime	3	UN2332	II	FLAMMABLE LIQUID	18	150	202	242	5 L	60 L	A	
	Acetic acid, glacial or Acetic acid solution, more than 80 percent acid, by mass	8	UN2789	II	CORROSIVE	A3, A6, A7, A10, B2, T8	154	202	242	1 L	30 L	A	12, 21, 48
	Acetic acid solution, more than 10 percent but not more than 80 percent acid, by mass	8	UN2790	II	CORROSIVE	A3, A6, A7, A10, B2, T8	154	202	242	1 L	30 L	A	112
	acetic anhydride	8	UN1715	II	CORROSIVE	A3, A6, A7, A10, B2, T8	154	202	242	1 L	30 L	A	40
	Acetone	3	UN1090	II	FLAMMABLE LIQUID	18	150	202	242	5 L	30 L	B	
	Acetone cyanohydrin, stabilized	6.1	UN1541	I	POISON	2, A3, B9, B14, B32, B76, B77, N34, T38, F43, F45	None	227	244	Forbidden	30 L	D	25, 40, 49
	Acetone oils	3	UN1091	II	FLAMMABLE LIQUID	F7, T30	150	202	242	5 L	60 L	D	
	Acetonitrile, see Methyl cyanide												
	Acetyl acetone peroxide with more than 9% by mass active oxygen	Forbidden											

Hazardous Materials/Waste Transportation

APPENDIX E
Sample of Section 172.101 Hazardous Materials Table

Symbol	Hazardous materials description and proper shipping names	Hazard class or division	ID numbers	Packing group	Label(s) required (if not excepted)	Special provisions	(8) Packaging authorizations (§173 ***)			(9) Quantity limitations		(10) Vessel stowage requirements	
							Exceptions	Non-bulk packaging	Bulk packaging	Passenger aircraft or railcar	Cargo aircraft only	Vessel stowage	Other storage provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Accelerene, see p Nitrosodimethylaniline												
	Accumulators, electric, see Batteries, wet etc												
D	Accumulator, pressurized, pneumatic or hydraulic (containing non flammable gas)	2.2	NA1956		NONFLAMMABLE GAS		306	306	None	No limit	No limit	A	
	Acetal	3	UN1088	II	FLAMMABLE LIQUID	17	150	202	242	5 L	60 L	E	
	Acetaldehyde	3	UN1089	I	FLAMMABLE LIQUID	A3, B16, T20, T26, T29	None	201	243	Forbidden	30 L	E	
A	Acetaldehyde ammonia	9	UN1841	III	CLASS 9		155	204	241	200 kg	200 kg	A	34
	Acetaldehyde oxime	3	UN2332	II	FLAMMABLE LIQUID	T8	150	202	242	5 L	60 L	A	
	Acetic acid, glacial or Acetic acid solution, more than 80 percent acid, by mass	8	UN2789	II	CORROSIVE	A3, A6, A7, A10, B2, T8	154	202	242	1 L	30 L	A	12, 21, 48
	Acetic acid solution, more than 10 percent but not more than 80 percent acid, by mass	8	UN2790	II	CORROSIVE	A3, A6, A7, A10, B2, T8	154	202	242	1 L	30 L	A	112
	Acetic anhydride	8	UN1715	II	CORROSIVE	A3, A6, A7, A10, B2, T8	154	202	242	1 L	30 L	A	40
	Acetone	3	UN1090	II	FLAMMABLE LIQUID	T8	150	202	242	5 L	30 L	B	
	Acetone cyanohydrin, stabilized	6.1	UN1541	I	POISON	2, A3, B9, B14, B32, B76, B77, N34, T38, T43, T45	None	227	244	Forbidden	30 L	D	25, 40, 49
	Acetone oils	3	UN1091	II	FLAMMABLE LIQUID	T7, T30	150	202	242	5 L	60 L	D	
	Acetonitrile, see Methyl cyanide												
	Acetyl acetone peroxide with more than 9% by mass active oxygen	Forbidden											

APPENDIX F

Hazardous Materials Table User's Guide

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Hazardous Materials/Waste Transportation

APPENDIX F
Using Section 172.101 Hazardous Materials Table

Symbol	Hazardous materials description and proper shipping names	Hazard class or division	ID numbers	Packing group	Label(s) required (if not excepted)	Special provisions	(8) Packaging authorizations (§173 ***)			(9) Quantity limitations		(10) Vessel stowage requirements	
							Exceptions	Non-bulk packaging	Bulk packaging	Passenger aircraft or railcar	Cargo aircraft only	Vessel stowage	Other storage provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
D	Accumulators, pressurized, pneumatic or hydraulic (containing non-flammable gas)	2.2	NA1956		NONFLAMMABLE GAS		306	306	None	No limit	No limit	A	
	Acetal	3	UN1088	II	FLAMMABLE LIQUID	17	150	202	242	5 L	50 L	E	

COLUMN DESCRIPTIONS

(1) SYMBOLS

"A" means regulated only when shipped by air
 "W" means regulated only when shipped by water
 "+" fixes the name, hazard class, division and packing group without regard to hazard definitions
 "D" indicates optional domestic names which are not generally recognized internationally
 "I" indicates International Names which are optional for domestic shipment.

(2) PROPER SHIPPING NAME (PSN)

Roman print only, italics and punctuation are supplementary and not part of the PSN. They are optional wherever the PSN is required. PSN's required on packages and shipping papers. See also 172.203, etc. for additional descriptions.

(3) HAZARD CLASS & DIVISION

Determines placarding (see 172.504). Required on shipping papers.

(4) ID NUMBERS

Required on Shipping papers, packages, Orange panels (tanks), Placards (tanks), (see 172.302 et seq)

(5) PACKING GROUP

Measures "degree of hazard". Determines packaging, per hazard class and division.

(6) LABELING

Minimum requirements (see 172.402 for additional labels).

(7) SPECIAL PROVISIONS

Includes packaging limitations, restrictions and added requirements (see 172.102 for details). Number-only codes apply to all packages.

"A" prefix = air shipments only
 "B" prefix = bulk packages only
 "H" prefix = highway shipment only
 "N" prefix = non-bulk packages only
 "R" prefix = rail shipment only
 "T" prefix = intermodal (IM) tanks only
 "W" prefix = water shipments only

(8) PACKAGING AUTHORIZATIONS

(A) EXCEPTIONS

For limited quantity packages may also reference consumer commodity (ORM-D) options.

(B&C) BULK means

>450 liters for liquids
 >400 kg for solids
 >454 kg water capacity for gases

(9) QUANTITY LIMITATIONS

Quantity limitations for passenger aircraft or railcar or cargo aircraft only.

(10) STOWAGE ON VESSEL

(BOATS)
 See 172.101(k), 176.63 and 176.84

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APPENDIX G

Shipping Papers Compliance Checklist

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Hazardous Materials/Waste Transportation

Compliance Checklist

Shipping Papers

Shipping Paper		Violation	Reference
1	Shipping Paper		172 200(a)
2	Contents		
	(a) Order/color/x ^a		172 201(a)(1)
	(b) Legible English		172 201(a)(1)
	(c) Unauthorized Code/Abbrev		172 201(a)(3)
	(d) Consistent Additional Information		172 201(a)(4)
3	Name of Shipper if Water		172 201(b)
4	Proper Shipping Name		172 202(a)(1)
5	Hazard Class		172 202(a)(2)
6	Identification Number		172 202(a)(3)
7	Packing Group		172 202(a)(4)
8	Total Quantity/Unit of Measure		172 202(a)(5)&(c)
9	Sequence		172 202(b)
10	Additional Descriptions		172 203
	(a) Exemption		172 203(a)
	(b) Limited Quantity		172 203(b)
	(c) Hazardous Substance		172 203(c)
	(d) Radioactive Materials		172 203(d)
	(e) Empty Packaging		172 203(e)
	(f) Air Requirements		172 203
	(g) Rail Requirements		172 203(g)
	(h) Highway Requirements		172 203(h)
	(i) Water Requirements		172 203(i)
	(j) Dangerous When Wet		172 203(j)
	(k) Technical Name for N O S		172 203(k)
	(l) Marine Pollutants		172 203(l)
	(m) Poisonous Material		172 203(m)
	(n) Elevated Temperature Material		172 203(n)
	(o) Oil		172 203(o)
	(p) Emergency Response Information		172 602(a)-(c)
	(q) Emergency Telephone Number		172 6024(a)
11	Uniform Hazardous Waste Manifest		172 205(a)
	Signatures - Originals		172 205(c)(1)&(2)
	Signatures - Copies		172 205(d)

Shipper Certification		Violation	Reference
1	Basic Paragraph		
	(a) General Requirements		172 204(a)(1)or(2)
	(b) Air Certification		172 204(c)
2	Signature		172 204(d)

Hazardous Materials/Waste Transportation

**SAFETY, HEALTH, AND
ENVIRONMENTAL MANAGEMENT
PROGRAM GUIDE**

Guide No. 14

Issued 05/98

Revised _____

**COMPREHENSIVE ENVIRONMENTAL RESPONSE,
COMPENSATION, AND LIABILITY ACT (CERCLA) PROGRAM**

SCOPE OF THE PROGRAM

This Program Guide provides an overview of the requirements EPA facilities must fulfill to comply with the regulations, guidance, and procedures associated with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLA was enacted by Congress in 1980 and amended under the Superfund Amendments and Reauthorization Act (SARA) in 1986. CERCLA was created to establish a national program for hazardous substance releases and the clean up of abandoned or uncontrolled hazardous waste sites. SARA required federal facilities to comply with the substantive and procedural requirements of CERCLA. For the purpose of this Program Guide, the major focus is on releases of hazardous substances, transfer of federal property, and facility closure procedures.

REGULATORY REQUIREMENTS

The key or basic elements of the CERCLA Program required by law and/or EPA policy are to:

- Comply with release reporting requirements of hazardous substances
- Ensure a notice is placed in the facility deed or records which indicates the past or present use of hazardous substances at the site
- Ensure facility closure procedures are conducted in accordance with the Community Environmental Response Facilitation Act (CERFA)

- Conduct an Environmental Due Diligence Process in accordance with EPA internal policy at facilities being transferred or vacated to ensure environmental conditions are documented and potential future risks are minimized

AUTHORITIES

The following documents are the sources of the legal authority that establish the applicability and requirements of this program.

- Comprehensive Environmental Response, Compensation, and Liability Act, 42 United States Code, 9601, et seq.
- Superfund Amendments and Reauthorization Act, 10 United States Code, 2701
- Community Environmental Response Facilitation Act
- Title 40 Code of Federal Regulations (CFR), Parts 300 through 373
- EPA Safety, Health, and Environmental Management Guidelines
- EPA Facility Safety, Health, and Environmental Management Manual

REFERENCES

The documents listed below can help you implement the CERCLA Program and specifically are intended for facility operations.

- EPA RCRA/CERCLA Training Module, an overview of these two statutes
- Environmental Law Handbook, Government Institutes, Inc., 9th Edition, May 1987
- Environmental Reporter, Bureau of National Affairs
- EPA CERCLA/Superfund Orientation Manual, EPA/540/R-94/005, an introduction into the CERCLA process

IMPLEMENTATION ACTIVITIES

The following list gives an overview of the activities that this program will require. To implement and operate this program, you must:

- Be familiar with the CERCLA requirements applicable to laboratory operations
- Be familiar with the reportable quantity thresholds for all hazardous substances used or stored on-site to ensure release reporting is done, if required
- Prior to disposing (i.e., sale) of a property, place a notice in the facility record which indicates hazardous substances are or were managed on-site
- Be familiar with facility closure procedures and implement them at the appropriate time
- Play an active role in the Environmental Due Diligence Process to ensure all required data are accurate and made available to the audit team.

IMPLEMENTATION IMPLICATIONS

The management systems and internal controls required to implement this program include:

- Procedures to ensure compliance with CERCLA requirements
- A system to manage an accurate

hazardous substances inventory

- A system to provide a step-by-step process on facility closure
- Procedures on the Environmental Due Diligence Process
- A system for tracking changes to CERCLA
- A system for tracking reporting and notification requirements
- CERCLA training to promote staff awareness and educate staff on specific implementation procedures.

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and Liability Act

Section 14-01
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CER 14-01 Table of Contents

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Section 14-02
Introduction

PURPOSE

This chapter provides policy, guidance, information, and procedures for complying with EPA regulations on releases of hazardous substances into the environment

SCOPE

This chapter addresses the investigation and remediation of past releases of hazardous substances into the environment from EPA facilities, the notification requirements for releases from current EPA operations, and the precautions facilities can take at closure to limit their potential for future liability

AUTHORITY

Section 104 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) grants the Administrator of EPA the authority to respond to releases of hazardous substances. Section 120 of CERCLA delineates the applicability of these response authorities to federal agency facilities. Two provisions of CERCLA provide the authority for investigation of past disposal practices at federal agency facilities: Section 103(c), which requires facilities to notify EPA of known or suspected hazardous waste sites; and Section 120(h), which requires facilities to document past on-site storage, release or disposal of hazardous substances prior to transfers of federal real property. In an effort to identify active sites requiring remediation and to prevent the creation of future ones, Sections 103(a) and 111(g) mandate report of current releases of hazardous substances. Where codified, these CERCLA provisions appear in 40 CFR Parts 300-302, and 373.

POLICY

EPA facilities and operations shall comply with the requirements set forth in the CERCLA statute, Title 40 of the Code of Federal Regulations Parts 300-302, and 373, this chapter, other applicable EPA memoranda and policy documents, and applicable federal, state, county and municipal regulatory requirements relating to past and present releases of hazardous substances into the environment

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OBJECTIVES

Effective hazardous substance management is designed to

- Protect employees, the public and the environment from uncontrolled releases of hazardous substances
- Increase employee awareness of the environmental risks associated with hazardous substance releases
- Ensure regulatory compliance of facility hazardous substance management operations
- Reduce the potential for long-term liability from the handling of hazardous substances

RESPONSIBLE
OFFICERS

The management of hazardous substances at EPA facilities should be supervised by Safety, Health and Environmental Management managers (SHEM managers) in conjunction with facility engineering and maintenance staff

REFERENCES

Topics discussed in this chapter were developed from the following sources

- 40 CFR Parts 300-302, 373
- RCRA/CERCLA Hotline Training Module
- EPA CERCLA/Superfund Orientation Manual, EPA/542/R-92/005
- Questions and Answers on Release Notification Requirements and Reportable Quantity Adjustments, EPA/540/R-94/005
- Environmental Law Handbook, Government Institute, Inc , 11th Edition, March 1991
- OSWER Directives
- Environmental Closure Process for EPA Laboratories.

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Section 14-03
Hazardous Substance Releases and Remediation

NATIONAL
CONTINGENCY PLAN
(40 CFR Part 300)

Purpose
(300 1)

The National Oil and Hazardous Substances Pollution Contingency Plan, also known as the National Contingency Plan (NCP), is required by Section 105 of CERCLA and by Section 311(c)(2) of the Clean Water Act (CWA). EPA has been delegated the responsibility to coordinate amendments to the NCP with the other federal agencies

The NCP provides for the organization of a response system, including the assemblage of a National Response Team, and outlines procedures for removals and response actions. The NCP only is applicable to response actions authorized under the CERCLA and CWA statutes

Scope
(300 3)

The National Contingency Plan applies only to

- CERCLA - Releases of hazardous substances, and pollutants or contaminants in quantities which may endanger human health and the environment. This chapter will address CERCLA releases
- CWA - Discharges of hazardous substances or oil into or upon navigable waters of the United States (refer to the CWA chapter of this manual)

Definitions
(300 5)

Feasibility Study (FS) - Serves as the mechanism for the development, screening, and detailed assessment of potential remedial alternatives

Hazard Ranking System (HRS) - The revised HRS is a numerical scoring system designed to identify the sites in the nation that are most in need of remedial actions. The system develops four scores relating to a site, each addressing the relative risk posed by a separate exposure pathway.

1. Risks from exposure to ground water
2. Risks from exposure to surface water
3. Risks from exposure to air emissions
4. Risks from exposure to soil exposure

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The combined HRS score is not designed "to fully characterize the source and extent of contamination, rather its purpose is to evaluate the potential of uncontrolled hazardous substances to cause damage to human health or the environment" (The Revised Hazard Ranking System. Q's and A's, OSWER Directive 9320 7-02FS, November 1990) Nonetheless, the HRS numerical score does not reflect a full risk assessment and should not be used to quantitatively rank sites or to draw exact conclusions between specific sites

National Priorities List (NPL) - Pursuant to CERCLA Section 105, EPA developed a list of contaminated sites that are priorities for remedial evaluation and response While releases from federal facilities are include on the NPL, they are not eligible for fund-financed remedial action At a minimum, the NPL is updated annually

On-Scene Coordinator - The federal official, predesignated by EPA or the Coast Guard, responsible for coordinating federal responses or removals.

Preliminary Assessment - The systematic initial evaluation of a site suspected of hazardous substance contamination

Site Inspection (SI) - An on-site investigation, including field sampling, to determine whether there exists a release of hazardous substances and the nature of any associated threats The inspections are used to augment the data collected during the preliminary assessment and to determine if further action or investigation is appropriate.

Record of Decision (ROD) - A document stating the preferred remedy that is ultimately identified from the list of alternatives evaluated during the remedial investigation/feasibility study Before the ROD is issued, this preferred remedy is presented to the public for comment in a proposed plan, and these comments are evaluated for consideration in the ROD

Remedial Project Manager - The official designated by the lead agency to oversee remedial or response actions.

Removal Action - Generally short-term actions, requiring less than one year to complete and costing less than \$2 million, that are undertaken to abate, stabilize, or eliminate immediate threats

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Remedial Action - Longer-term, more complicated actions which generally take more than one year to complete, involve a longer remedy selection process, and for which there is no limit on cost

Remedial Investigation (RI) - Used to collect data necessary to adequately characterize the site for the purpose of evaluating effective remedial alternatives. RIs consist of field investigations, including detail evaluation of the extent of contamination, treatability studies, and a baseline risk assessment

Establishing Remedial
Priorities
(300 425)

There are three mechanisms through which sites become eligible for placement on the NPL. The first is by using the HRS, any release with an HRS score of 28 50 or greater is eligible. Second, states have the one-time statutory authority to designate a release as their highest priority, and this site is automatically eligible for placement on the NPL regardless of HRS score. Third, a site may be added to the NPL if the Agency for Toxic Substances and Disease Registry (ATSDR) issues a health advisory recommending separation of individuals from the release and EPA both determines that the release poses a significant threat to public health and anticipates that it will be more cost effective to use its remedial instead of its removal authority.

Eligible sites are added to the NPL through the formal rulemaking process, subject to public participation. The Agency may finalize listings only after responding to comments and new data received pursuant to the publication of a proposed listing in the Federal Register.

Superfund Process

The Superfund remedial process consists of three distinct phases

Pre-Remedial Phase

- 1 Site Discovery
- 2 Removal Preliminary Assessment (if applicable)
- 3 Removal Site Inspection (if applicable)
4. Removal Action (if applicable)
- 5 Remedial Preliminary Assessment
- 6 Remedial Site Inspection
- 7 Expanded Site Inspection
8. HRS Scoring and NPL Listing

Remedial Phase

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1. Remedial Investigation
2. Feasibility Study
3. Record of Decision - Alternative Selection

Implementation Phase

1. Remedial Design
2. Remedial Action
3. Construction Completion
4. Operation and Maintenance
5. Deletion from the NPL

Past Releases of
Hazardous Substance
from Federal Facilities

Although CERCLA Section 111(e) bars the use of fund money to finance remediation at federal facilities, releases from them are subject to the remedial and liability provisions of the statute

All facilities, federal or otherwise, were bound by statute to report to EPA by June 9, 1981, if in the past they had treated, stored, disposed of, or released any of the subset of hazardous substances that are RCRA hazardous wastes (CERCLA Section 103(c)) From an enforcement perspective, however, EPA views this reporting requirement as an ongoing responsibility, regardless of the date upon which this past handling is identified Reports filed pursuant to this authority should be submitted on the form published with the April 15, 1981, Federal Register (46 FR 22144).

With the data from these reports and from information gathered under RCRA Section 3005, 3010, and 3016, EPA has generated a comprehensive list, mandated by CERCLA and known as the Federal Agency Hazardous Waste Compliance Docket, that identifies federal facilities of potential remedial concern While all the standard methods of site discovery (40 CFR Section 300.405) may be used to identify past releases from federal facilities that merit response, facilities listed on the Docket are automatically subject to preliminary assessments by EPA, followed by site inspections and HRS scoring where it is warranted (CERCLA Section 120(d))

Once a federal site progresses through listing on the NPL, the agency that owns or operates the site assumes responsibility for the remedial and implementation phases of the Superfund process These actions, however, are still subject to a timetable and deadlines established by EPA and the appropriate state authority,

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with action plans and deadlines documented in interagency agreements. Interagency agreements of this nature are enforceable by citizen suits and subject to penalties pursuant to CERCLA Section 109. Agencies responsible for remediation of releases on the NPL must make their own budget request to cover the cost of remedial activities and must provide to Congress an annual report detailing their progress in release remediations (CERCLA Section 120(e)).

**HAZARDOUS
SUBSTANCE
RELEASES**
(40 CFR Part 302)

This regulation codifies the list of hazardous substances, identifies their reportable quantities (RQs), and details the notification procedures required in response to releases of hazardous substances which meet their respective RQ levels.

Definitions
(302.3)

Discharge - As defined by Section 311(a)(2) of the CWA, a discharge includes any spilling, leaking, pumping, pouring, emitting, emptying, or dumping of oil, but excludes discharges in compliance with permits issued under section 402 of CWA which covers releases under the National Pretreatment program (CWA Section 307), the NPDES program (CWA Section 402), and the Dredge and Fill program (CWA Section 404).

Environment - Includes navigable waters such as ocean waters, lakes, streams and wetlands, any other surface or ground waters or drinking waters, surface or subsurface lands, and ambient air within the United States.

Facility - For notification purposes, "EPA will consider the entire contiguous plant or installation and contiguous grounds under common ownership to be the reporting facility rather than each vent, pipe, or piece of equipment at such a plant" (50 FR 13459; April 4, 1985).

Federally Permitted Release - The definition of federally permitted releases is given in CERCLA Section 101(10). Essentially, it provides that certain types of releases may be allowed under permits related to other federal environmental statutes such as

- Clean Air Act (CAA)
- CWA - as it pertains to the definition of discharge given above

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- Resource Conservation and Recovery Act (RCRA) - releases from interim status and permitted hazardous waste treatment, storage, and disposal facilities

Discharges to publicly owned treatment works (POTWs) are considered federally permitted only if they are explicitly included in and are in compliance with a pre-treatment agreement. Properly manifested shipments of hazardous substances to a permitted or interim status RCRA Subtitle C facility for disposal also will be considered a federally permitted release. However, disposal of hazardous substances in a RCRA Subtitle D, solid waste facility is not federally permitted and might necessitate reporting under CERCLA Section 103(a).

Hazardous Substance - Those chemicals specifically identified under other environmental acts, including CAA, CWA, Toxic Substances Control Act (TSCA), and Safe Drinking Water Act (SDWA). Yet the definition explicitly excludes petroleum, such that crude oil, refined fractions, and even hazardous substances indigenous to petroleum, like benzene, are not included. This exclusion has been interpreted broadly to encompass petroleum-derived mineral spirits and oxygenated gasoline. The list of hazardous substances is delineated in 40 CFR Section 302.4.

Notification - Reporting of releases of hazardous substances in excess of reportable quantities during any 24-hour period, to the National Response Center in Washington, D C.

Person - The statutory definition of person includes United States government entities.

Release - The definition of a release as provided in CERCLA 101(22) is also codified at 40 CFR Section 300.5. This broad definition encompasses any emissions, spills, or discharges of hazardous substances into the environment, including air, land, or water. Releases, however, does not include spills which result in exposure solely to workers within the facility and which are subject to OSHA regulations, or emissions from motor vehicles.

Reportable Quantity - The quantity at or above which the release requires notification. All releases into the environment of a given hazardous substance from the same facility in any 24-hour period

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must be aggregated to determine whether a reportable quantity has been released

Statutory RQ - By statute, newly listed hazardous substances are automatically assigned an RQ of one pound until EPA has the opportunity to set final RQs. Facilities must report releases of newly listed hazardous substances based on the statutory RQs until those levels are adjusted by the final, regulatory RQs.

Hazardous Substance List
(302.4)

Table 302.4 in 40 CFR 302.4 provides an alphabetical list of hazardous substances. The table contains columns for the substance's chemical abstract services (CAS) number, regulatory synonyms, statutory RQ, statutory source for listing, RCRA hazardous waste number, and final RQ. The table also includes substances that meet the definition of hazardous waste either by characteristic or listing. F- and K-listed wastes are located alphanumerically at the end of the table, while unlisted, characteristic, hazardous wastes can be found under the letter "U" for "Unlisted Hazardous Waste Characteristic of _____".

Section 302.4, Appendix A, is a list of hazardous substances organized numerically by CAS number.

Section 302.4, Appendix B, is a list of radionuclides with their respective reportable quantities.

Newly identified hazardous substances are not incorporated into Table 302.4 until EPA assigns final RQs. Nonetheless, facilities are responsible for notification of their release according to the statutory RQ (see above). For example, the CAA Amendments of 1990 created 47 new hazardous air pollutants that were automatically listed as hazardous substances by statute. These new hazardous substances were subject to one pound statutory RQs and were not added to Table 302.4 until EPA adjusted their final RQs on June 12, 1995 (60 FR 30926).

Determining Reportable
Quantities
(302.5)

Listed hazardous substances - RQs are located under the column "Final RQ" in Table 302.4 and Appendix B to Table 302.4.

Unlisted hazardous substances - Unlisted hazardous wastes exhibiting the characteristic for ignitability, reactivity and corrosivity have RQs of 100 pounds. Unlisted hazardous wastes exhibiting the toxicity characteristic (TC) have RQs based on their

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specific TC contaminants If an unlisted characteristic hazardous waste contains more than one TC constituent, the lowest RQ applicable to the waste should be used

Newly identified hazardous substances - RQs applicable by statute alone may be identified by consulting the SARA Title III List of Lists, or by contacting the EPCRA/Superfund Hotline at (800) 424-9346

Notification Requirements
(302.6)

The person in charge of a vessel or any onshore or offshore facility must notify the National Response Center (NRC) in Washington, D.C. at (800) 424-8802, or (202) 426-2675 as soon as he or she has knowledge of a release to the environment of a reportable quantity of a hazardous substance within any 24-hour period Federally permitted releases, such as those to a POTW in compliance with a pretreatment agreement, and the application of pesticides are not considered releases subject to notification Exhibit 14-1 provides an overview of the steps involved in determining if NRC notification is required

When determining the applicability of notification requirements, the definition of "environment" is both important and contentious, as releases of hazardous substances are not subject to CERCLA reporting unless they are "into the environment" ("release" is defined in CERCLA 101(14)) While "environment" is defined in both the statute and the regulations, EPA had interpreted the term quite broadly so as to include open containment structures. Identifying releases to the environment remains difficult, however, since a court ruling, *TFI v. EPA*, 33 ERC 1309, vacated the Agency's interpretation of "environment" and EPA has yet to respond with additional guidance Nonetheless, when in doubt regarding the necessity to report a release, EPA encourages a proactive approach, since "reporting ensures positive referral of every incident to each federal agency with jurisdiction and/or regulatory interest" (55 FR 8676; March 8, 1990).

Continuous Releases
(302.8)

While a series of releases or a continuous release of a hazardous substance which exceed reportable quantities during a 24-hour period must be reported, they may qualify for more liberal reporting requirements if they are stable in nature, or intermittent but predictable Releases meeting the narrow constraints of this section are only subject to an initial telephone notice, a written follow-up,

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and a one-time annual update, in lieu of the daily reporting that would otherwise be required

Calculating Releases in
Mixtures

Known mixture - When a release of a mixture with known constituents and concentrations occurs, notification is required when one or more hazardous constituents have exceeded their individual RQs. EPA facilities should use the Clean Water Act "mixture rule" to calculate whether RQs have been exceeded. For example, a release of 200 pounds of a mixture containing 60% acrylonitrile would require notification, because the effective release of 120 pounds of acrylonitrile is greater than its 100 pound RQ threshold.

It should be noted that RQs for different substances in a known mixture are not additive. For instance, a release of a mixture containing two substances, each individually representing 1/2 RQ, would not require notification because the separate RQs cannot be added.

Unknown mixture - Where there is a release of a mixture, and the concentration(s) of one or more hazardous constituent(s) are unknown, then the notification for the release is determined by comparing the total weight of the mixture with the RQ for the constituent with the lowest RQ. If the total weight is greater than or equal to the lowest RQ, then notification is required. By way of example, take a release of a 200 pound mixture of acetonitrile and tetrachloroethylene (PCE). Since exact concentrations or even ranges are unknown, the lower reportable quantity (PCE's is 100 pounds while acetonitrile's is 5000) must be applied to the whole mixture, such that the release must be reported.

Notice to Potentially
Injured Parties
(CERCLA Section
111(g))

In addition to notifying the NRC of certain releases of hazardous substances, owners and operators of vessels and facilities are required to provide notice to parties potentially injured by the release of a hazardous substance. Until the President promulgates regulations delineating this requirement, as required by CERCLA, owners and operators must provide reasonable notice to potentially injured parties by publication in newspapers local to the affected area.

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**FEDERAL TRANSFERS
OF PROPERTY**
(40 CFR Part 373)

As a general requirement, pursuant to CERCLA 120(h), all federal agencies are required to include a notice with every real estate sale or transfer contract, which describes the history of hazardous substance management at the facility. The Agency must provide information on any hazardous substance in storage in certain quantities for over one year, or known to have been released or disposed on-site.

Applicability
(373.2)

The requirements under Part 373, including notice provisions, are applicable when one or more of the following conditions are met:

Storage - The facility has stored for one year or more any hazardous substance in quantities greater than or equal to 1000 kilograms, or the RQ listed in 302.4, whichever is greater. Hazardous substances that are also RCRA hazardous wastes listed as acutely hazardous under 40 CFR 261.30, and that are stored for one year or more, are subject to these requirements when present in quantities of 1 kilogram or greater.

Release - The facility has released a hazardous substance in quantity greater than or equal to its RQ listed in Table 302.4.

Disposal - The facility has disposed of hazardous substances on-site in any quantity.

Content of Notice
(373.3)

As part of the contract between the respective parties involved in the transfer or sale of federal real property, federal entities subject to the requirements of this part must provide notice which includes the following information:

- Names of the hazardous substances and CAS numbers
- Regulatory synonyms
- RCRA hazardous waste number specified in 40 CFR Section 261.30
- Quantity, in both kilograms and pounds, of substances stored for one year, released, or disposed on-site
- Dates of storage, release, or on-site disposal

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- A standard information disclosure statement reading, "The information contained in this notice is required under the authority of regulations promulgated under section 120(h) of the Comprehensive Environmental Response, Liability, and Compensation Act (CERCLA or "Superfund") 42 U S C section 9620(h) "

**Definitions
(373 4)**

Storage - The holding of hazardous substances after which the substances are either used, treated, disposed or transported off-site for treatment, storage, or disposal

Release - Defined in CERCLA 101(22) This broad definition encompasses any emissions, spills, or discharges of hazardous substances into the environment, including air, land, or water Releases to POTWs are considered releases into the environment and are reportable unless the substance is covered by, and in compliance with, a pretreatment standard under Section 307 of the CWA Other federally permitted releases and the application of pesticides are likewise not considered regulated releases

Disposal - The placement of a hazardous substance into or on any land or water

**Deed Notices and
Remediation Covenants**

Although not codified, Section 120(h) of CERCLA, as amended on October 19, 1992, by the Community Environmental Response Facilitation Act (CERFA), also requires the addition of specific provisions to deeds for the sale or transfer of federal real property Where a hazardous substance has been stored for one year or more, or is known to have been released or disposed of on the property involved, each deed entered into for transfer of the property to a non-federal entity must include the following information, where available on the basis of a complete search of Agency files

- The type and quantity of hazardous substances handled in these manners
- The time at which storage, release, or disposal took place
- A description of the remedial action taken, if any

Similarly, the deed must include a covenant warranting that the government agency has performed all remedial action necessary to protect human health and the environment, prior to the transfer of

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ownership, and that the United States will remain responsible if additional remedial action is necessary. Remedial action will not be considered complete until remedy construction and installation has been finished and the federal agency has demonstrated to the Administrator of EPA that the remedy is functioning properly and successfully. To allow for fulfillment of the covenant, the deed must also secure for the Agency a right to future access for performance of remedial action if necessary.

**Identification of
Uncontaminated Property**

The transfer of federal real property to the private sector is often a lengthy process due to concern over possible hazardous substances on the property. Section 120(h) of CERCLA, therefore, includes provisions that require federal agencies to identify "uncontaminated" properties where no hazardous substances, petroleum products, or petroleum derivatives have been stored in excess of one year, or are known to have been disposed of or released. At minimum, identification of properties shall be based on a detailed search of

- Agency records
- The chain of title
- Aerial photographs reflective of prior uses and available through state or local government agencies
- Visual inspection of the property and adjacent properties, where possible, including buildings, structures, and equipment
- Obtainable records detailing releases of petroleum or hazardous substances from adjacent facilities
- Interviews with current or former employees involved in operations at the property

Results of this process are submitted to the Administrator of EPA and to appropriate state and local officials. For a property to be identified as uncontaminated, the EPA Administrator, in the case of NPL sites, or the appropriate state official, for releases not appearing on the NPL, must concur with the determination of the agency. State concurrence may be assumed where no response has been received within 90 days of delivering such a request to a state.

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RECOMMENDED
FACILITY CLOSURE
PROCEDURES

The language of CERCLA Section 120(h) provides that the sale of property does not terminate the federal government's liability, and that any undiscovered environmental problems with respect to any hazardous substances, petroleum or petroleum derivatives present on the property at the time of sale or transfer remain the responsibility of the federal government. Nonetheless, federal agencies may limit the necessity for future remedial activities by following proper facility closure procedures.

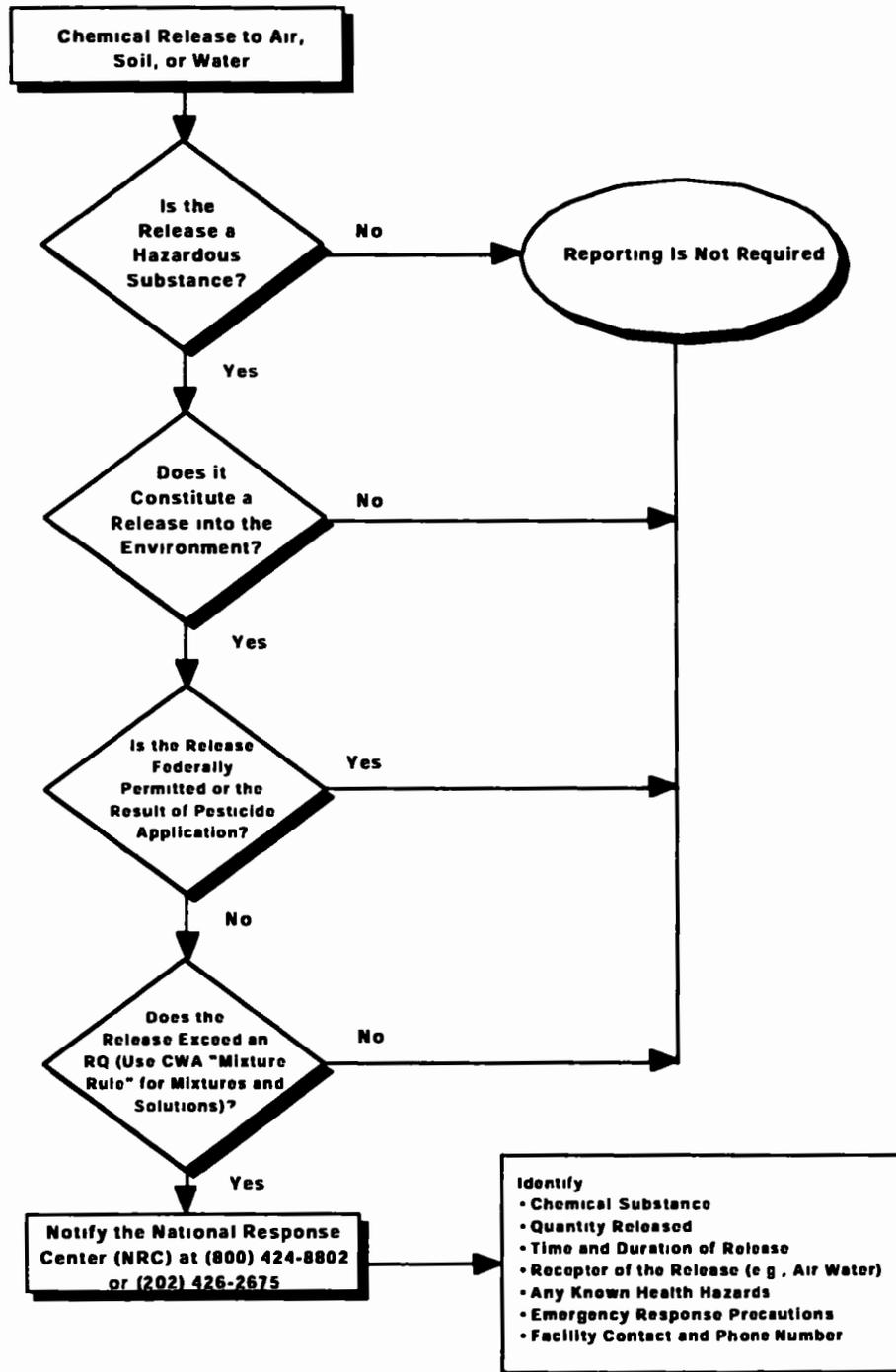
The Architectural Engineering and Real Estate Branch (AEREB) has developed standardized guidelines for conducting EPA facility closure reviews. A systematic closure review process will enable the Agency to identify requirements for decontamination and reduce potential long-term CERCLA cleanup liabilities. The guidelines are titled, *Guidelines for Transferring EPA Real Property and Complying with the Community Environmental Response Facilitation Act (CERFA) (Interim Draft, 10/97)*.

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Comprehensive Environmental Response, Compensation
and Liability Act

Section 14-04
Exhibits

Exhibit 14-1. CERCLA Release Notification



Comprehensive Environmental Response, Compensation
and Liability Act

Exhibit 14-2

List of Acronyms

ASTDR	Agency for Toxic Substances and Disease Registry
CAA	Clean Air Act
CAS	Chemical Abstract Services
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CWA	Clean Water Act
FS	Feasibility Study
HRS	Hazard Ranking System
NCP	National Contingency Plan
NPL	National Priorities List
NRC	National Response Center
PCE	Tetrachloroethylene
POTW	Publicly Owned Treatment Works
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
RQ	Reportable Quantity
SDWA	Safe Drinking Water Act
SI	Site Inspection
TC	Toxicity Characteristic
TSCA	Toxic Substances Control Act

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**SAFETY, HEALTH, AND
ENVIRONMENTAL MANAGEMENT
PROGRAM GUIDE**

Guide No. 16

Issued 05/98

Revised _____

OFFICE ENVIRONMENTAL COMPLIANCE ISSUES PROGRAM

SCOPE OF THE PROGRAM

This Program Guide provides an overview of the policy, guidance, information, and procedures EPA office facilities must fulfill to comply with the regulations promulgated pursuant to the Clean Air Act, Clean Water Act, Atomic Energy Act, Resource Conservation and Recovery Act, Comprehensive Environmental Response, Compensation and Liability Act, Toxic Substance Control Act, Federal Insecticide, Fungicide and Rodenticide Act, National Environmental Policy Act, Emergency Planning and Community Right-To-Know Act, and the Pollution Prevention Act. Executive Order 12856 complements these requirements by establishing provisions for promoting federal facilities as leaders in emergency planning and pollution prevention. This chapter presents information and guidance on air pollution control, water pollution control, radioactive materials management, nonhazardous solid waste management, underground storage tank management, hazardous waste management, toxic substance control, pesticides management, environmental review requirements under the National Environmental Policy Act, emergency planning and community right-to-know, and pollution prevention.

REGULATORY REQUIREMENTS

The key or basic elements of the Office Environmental Compliance Issues Program required by law and/or EPA policy are to:

- Comply with applicable environmental regulatory and executive order requirements

- Implement integrated pollution prevention approaches

AUTHORITIES

The following documents are the sources of legal authority that establish the applicability and requirements for this chapter

- Atomic Energy Act; 10 CFR Parts 19-70
- Clean Air Act, as amended, 40 CFR Parts 50-82
- Comprehensive Environmental Response, Compensation and Liability Act, as amended, 40 CFR Parts 300-302, 373
- Emergency Planning and Community Right-to-Know Act, 40 CFR Parts 355-372
- Federal Insecticide, Fungicide, and Rodenticide Act, as amended, 40 CFR Parts 151-170
- Federal Water Pollution Control Act as amended by the Clean Water Act; 40 CFR Parts 110-136, 403-699
- Lead Contamination Control Act of 1988, Internal Agency Policy April 24, 1989
- National Environmental Policy Act, 40 CFR Parts 6, 1500-1508
- Resource Conservation and Recovery Act, as amended, 40 CFR Parts 240-281
- Safe Drinking Water Act, as amended, 40 CFR Parts 141-143

- Toxic Substances Control Act, as amended, 40 CFR Parts 721-763
- Executive Orders 12088, 12856, 12873, 12902

REFERENCES

The documents listed below can help you implement the Office Compliance Issues program

- 40 CFR Parts 6-1508
 - 53 FR 40562, October 17, 1988
 - 53 FR 47631, November 23, 1988
 - 55 FR 30082, July 24, 1990
- Government Institutes, Inc. Environmental Laws Handbook
- Bureau of National Affairs. Environment Reporter
- EPA, Office of Water, Environmental Regulations and Technology The National Pretreatment Program
- EPA. EPA CERCLA/Superfund Orientation Manual
- EPA. EPA Facility Safety, Health and Environmental Management Manual
 - EPA, EPA RCRA Orientation Manual
- EPA, Report to Congress on the Discharge of Hazardous Wastes to Publicly Owned Treatment Works
- *GSA Environmental Management Technical Guides pursuant to Instructional Letter PBS IL-92-4*

IMPLEMENTATION ACTIVITIES

The following list gives an overview of the activities that this program will require. To implement and operate this program, you must.

- Maintain a copy of the applicable state and local air pollution control regulations and be aware of the types of emissions, pollutants, and emission increases that may require permits
- Identify and fulfill any permit program requirements triggered by an NSPS
- Investigate emissions of any NESHAP pollutants, determine whether your office facility is subject to any NESHAP subparts, and comply with the applicable general and specific NESHAP requirements.
- Where a discharge of industrial effluents to the POTW exists, monitor the discharge to verify compliance with the POTW's pretreatment standards
- Identify and comply with any additional hazardous waste listings, characteristics, or management standards imposed by state or local regulations
- Ensure that all pesticide service contracts specify the appropriate training and certification requirements for the pesticide applicators
- Establish an awareness in all office facility staff to promote sound environmental compliance and pollution prevention practices

IMPLEMENTATION IMPLICATIONS

The management systems and internal controls required to implement this program include

- Maintain discharge monitoring records for five years instead of the minimum retention period of three years provided by the recordkeeping provisions in 40 CFR Part 122
- Where the discharge of industrial effluents to the POTW exists, maintain a current copy of the local sewer-use ordinance on-site in addition to the applicable federal pretreatment regulations (40 CFR Parts 400 to 459)

- **Implement a drinking water monitoring program that conducts initial sampling upon the occupancy of a new space or after installing newly plumbed systems. Follow-up monitoring should be performed whenever significant facility modifications or renovations have been undertaken**
- **Implement a recycling program when beverage containers are offered for sale on the facility premises**
- **Verify facilities that have released shipment of nonhazardous solid wastes for disposal to contractor facilities, are in accordance with Subpart B Part 241.200, titled Requirements and Recommended Procedures**
- **Include all relevant hazardous waste codes (listed and characteristic) when performing hazardous waste determinations**
- **Ensure that only federal and state licensed or permitted transporters are used for the transportation of hazardous wastes on public highways**
- **Maintain a log to quantify CESQG waste generation volumes each month and implement a waste tracking system to ensure the waste is being sent to and received by an approved facility**
- **Create a central file for all PCB records. It is recommended that these records be retained indefinitely. PCB waste manifests and related Certificates of Disposal (CDs) should be retained longer than the three-year mandatory time period to document compliance with PCB management standards.**
- **Develop a pollution prevention program that reduces releases and off-site transfers of toxic pollutants or hazardous materials to ensure compliance with the requirements of Executive Order 12856**

Office Compliance Issues

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Section 16-02
Introduction

PURPOSE

This chapter of the Safety, Health and Environmental Management (SHEM) Guidelines provides policy, guidance, information, and procedures for ensuring that the U.S. Environmental Protection Agency (EPA) office facilities operate in full compliance with the regulations promulgated pursuant to the Clean Air Act, Clean Water Act, Atomic Energy Act, Resource Conservation and Recovery Act, Comprehensive Environmental Response, Compensation and Liability Act, Toxic Substances Control Act, Federal Insecticide, Fungicide and Rodenticide Act, National Environmental Policy Act, Emergency Planning and Community Right-To-Know Act, and the Pollution Prevention Act

SCOPE

This chapter addresses major environmental requirements of particular relevance to EPA office and administrative facility operations. Specifically, it contains information and guidance on air pollution control, water pollution control, radioactive materials management, nonhazardous solid waste management, underground storage tank management, hazardous waste management, toxic substances control, pesticides management, environmental review requirements under the National Environmental Policy Act, emergency planning and community right-to-know, and pollution prevention. Where appropriate, additional references to other sections of the SHEM Guidelines or to other Agency documents are provided for detailed information and consultation.

AUTHORITY

The following laws and regulations are the sources of legal authority that establish the applicability and requirements for this chapter:

- Atomic Energy Act, 10 CFR Parts 19-70
- Clean Air Act, as amended; 40 CFR Parts 50-82
- Comprehensive Environmental Response, Compensation and Liability Act, as amended, 40 CFR Parts 300-302, 373
- Emergency Planning and Community Right-to-Know Act, 40 CFR Parts 355-372

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- Federal Insecticide, Fungicide, and Rodenticide Act, as amended, 40 CFR Parts 151-170
- Federal Water Pollution Control Act as amended by the Clean Water Act, 40 CFR Parts 110-136, 403-699
- Lead Contamination Control Act of 1988, Internal Agency Policy April 24, 1989
- National Environmental Policy Act; 40 CFR Parts 6, 1500-1508
- Resource Conservation and Recovery Act, as amended; 40 CFR Parts 240-281
- Safe Drinking Water Act , as amended, 40 CFR Parts 141-143
- Toxic Substances Control Act, as amended, 40 CFR Parts 721-763
- Executive Orders 12088, 12856, 12873, 12902

OBJECTIVES

A central objective of this chapter is to support EPA office facility compliance with applicable environmental regulations and to implement integrated pollution prevention approaches. Moreover, this chapter is intended to provide guidance and recommendations to assist Safety, Health and Environmental Management Program (SHEMP) Managers in implementing management systems and internal controls to ensure that EPA facilities uphold the Agency's mission of minimizing pollution burdens to the environment and protecting the nation's natural resources.

**R E S P O N S I B L E
O F F I C E R S**

Compliance with environmental regulations is primarily the responsibility of facility management and the SHEMP Manager at each facility. However, the collective efforts and awareness of all office facility staff are needed to promote sound environmental compliance and pollution prevention practices. Where specialized environmental management expertise may be necessary to adequately address a concern, the SHEMP Manager should coordinate with the EPA headquarters Safety, Health and Environmental Management

Office Compliance Issues

Division (SHEMD) and Architecture, Engineering and Real Estate
Branch (AEREB)

REFERENCES

Topics discussed in this chapter were developed from the following
sources

- 40 CFR Parts 6-1508
- *Environmental Law Handbook*, Government Institutes, Inc , 9th
Edition, May 1987
- Environment Reporter, Bureau of National Affairs
- Environmental Regulations and Technology The National
Pretreatment Program, EPA/625/10-86/005, Office of Water, U S
EPA, July 1986
- *EPA CERCLA/Superfund Orientation Manual*, EPA/542/R-92-
005, October 1992
- EPA Facility Safety, Health and Environmental Management
Manual, EPA 4844
- EPA RCRA Orientation Manual, 1990 Edition, EPA/530/SW-90-
036
- GSA Environmental Management Technical Guides pursuant to
Instructional Letter PBS IL-92-4
- Report to Congress on the Discharge of Hazardous Wastes to
Publicly Owned Treatment Works, EPA/530/SW-86, U S EPA,
February 1986
- 53 FR 40562, October 17, 1988
- 53 FR 47631, November 23, 1988
- 55 FR 30082, July 24, 1990

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Office Compliance Issues

Section 16-03
Air Pollution Control

INTRODUCTION

This section of the Office Compliance Issues chapter provides guidance to assist EPA office facilities and operations in complying with applicable technical and procedural requirements of federal, state, and local air pollution controls

The Clean Air Act (CAA) and the Clean Air Act Amendments of 1990 (CAAA) give the EPA the responsibility of controlling air pollution. The CAA and CAAA address a range of topics relating to air pollution. Those most relevant to EPA office facilities include State Implementation Plan (SIP) requirements to protect air quality, construction and operating permit requirements, performance standards for new or modified stationary sources of air pollution standards, standards for hazardous and toxic air pollutants, and the reduction and phase-out of stratospheric ozone-depleting chemicals.

This section also discusses general guidelines for maintaining good indoor air quality in office type buildings and applicable sections of the air quality programs of the CAA and CAAA as proposed or promulgated under Subchapter C of Title 40 - Protection of the Environment of the Code of Federal Regulations. Certain activities at EPA office facilities are affected by these regulations, which address the use, control, and release of a wide variety of air contaminants.

NATIONAL AMBIENT
AIR QUALITY
STANDARDS
(40 CFR Part 50)

The National Ambient Air Quality Standards (NAAQS) define levels of ambient air quality necessary to protect public health and welfare. NAAQS have been set for the following criteria pollutants:

- Carbon monoxide
- Nitrogen oxides
- Sulfur dioxides
- Lead
- Ozone
- Particulate matter

Volatile organic compounds (VOCs) also are regulated with the pollutants indicated above since they contribute to the formation of ground-level ozone.

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S T A T E
IMPLEMENTATION
PLANS
(40 CFR Parts 51-52)

The CAA delegates implementation and enforcement of the Act's provisions to the states through SIPs. The SIP is the mechanism by which the state imposes emission controls on stationary sources to ensure compliance with the NAAQS. If a state fails to adopt a SIP adequate to meet the NAAQS, EPA is to impose such controls on the state and take other measures to meet the NAAQS.

SIP PERMITTING

Permits are the most common mechanism used by states to enforce air pollution control standards. Permits provide state regulatory agencies with many benefits, including

- Inventory of major air pollution sources
- Information on the nature and magnitude of pollutants emitted
- Mechanism for imposing pollutant limitations, control and reporting requirements

EPA office facilities should be aware of, and comply with, the specific permitting requirements contained in its state's SIP. Emission sources of criteria pollutants from EPA office facilities that may trigger permitting include:

- Fossil fuel-fired boilers
- Internal combustion engines (for emergency power)
- Storage tanks for fuels
- Painting operations

The requirement to obtain a permit may be based on actual emissions or potential emissions. Actual emissions are typically the emissions from a new source, or due to a modification, after any emission controls have been installed. Potential emissions usually are the maximum capacity of a source to emit a pollutant when it is operating at full capacity, 24 hours a day, 365 days a year. Federally enforceable restrictions, such as minor source permit limits, can be used as the "potential to emit" under EPA regulations. EPA office facilities should review the specific emission type, emission thresholds and regulatory definitions for their area.

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Guidance: EPA office facilities shall maintain a copy of the applicable state and local air pollution control regulations and be aware of the types of emissions, pollutants, and emission increases that may require permits.

**STANDARDS OF
PERFORMANCE FOR
NEW STATIONARY
SOURCES**
(40 CFR Part 60)

EPA has developed new source performance standards (NSPS) for approximately 75 specific industrial categories to provide a ceiling for emissions from new sources. They are based on the application of the best demonstrated technology available to reduce emissions. In addition to emission standards, NSPS includes requirements for notification, performance tests, maintenance, monitoring, recordkeeping and reporting.

Office complexes and administrative facilities are not among the industrial categories for which EPA has established an NSPS, therefore these facilities do not have an NSPS specifically applicable to them. EPA office facilities, however, may have specific units, such as storage tanks or combustion units, that may have to comply with the specific NSPS requirements for those units, such as NSPS Subparts Db, Dc, and Kb.

Relevant Examples

NSPS Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units apply to each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and has a heat input capacity of greater than 100 million Btu per hour. This subpart, found in 40 CFR 60.40b, contains emission and performance standards.

NSPS Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, for example, apply to each steam generating unit, such as a boiler, that has a maximum heat input capacity between 10 and 100 million Btu per hour for which construction, modification or reconstruction commenced after June 9, 1989. This subpart, found at 40 CFR 60.40c, contains emission and performance standards, as well as performance test, monitoring, recordkeeping and reporting requirements for particulate matter and sulfur dioxide.

NSPS Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction or Modification Commenced after July 23, 1984, are found at 40 CFR 60.110(b). Subpart Kb

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applies to storage vessels with a storage capacity of more than 40 cubic meters (approximately 10,000 gallons) and controls emissions of volatile organic compounds through requirements that vary depending on the capacity of the storage vessel

NSPS/Permitting Interface

A facility that is subject to NSPS may also be subject to requirements to obtain a permit for construction or operation.

Guidance: All EPA office facilities must investigate whether any of the source categories apply to their facilities and comply with the applicable general and specific NSPS requirements for specific units, such as combustion units and storage tanks. EPA office facilities should also identify and fulfill any permit program requirements triggered by an NSPS.

NESHAPs
(40 CFR Part 61)

EPA has developed health-based national emission standards for hazardous air pollutants (NESHAP) for the following pollutants

- Asbestos (Subpart M)
- Benzene (Subpart J, L, Y, BB, and FF)
- Beryllium (Subparts C and D)
- Fugitive emissions (Subpart V)
- Inorganic arsenic (Subparts N, O, and P)
- Mercury (Subpart E)
- Radon (Subparts B, Q, R, T and W)
- Radionuclides (Subparts H, I, and K)
- Vinyl chloride (Subpart F).

NESHAP regulatory provisions also include notification, emissions testing, monitoring, recordkeeping and reporting requirements. Some of these standards, however, only apply to specific processes

Relevant Example

Subpart M - National Emission Standard for Asbestos includes various standards including requirements for demolition and renovation of buildings containing asbestos, as well as labeling provisions for asbestos waste

Asbestos is the main hazardous air pollutant (HAP) that an EPA office facility would need to be concerned with out of the specific compounds listed above. Requirements and guidelines for the operation and maintenance of facilities with asbestos-containing materials are specified in the *EPA Policy and Program for the*

Office Compliance Issues

Management of Asbestos-Containing Building Materials at EPA Facilities

Title III of the Clean Air Act Amendments of 1990 established a list of 189 HAPs in addition to those compounds regulated under 40 CFR Part 61. Sources of HAPs at EPA office facilities may include.

- Fuel loading/unloading operations
- Maintenance operations
- Painting operations

Facilities that emit one or more of these HAPs may be subject to maximum achievable control technology (MACT) standards. EPA office facilities are not anticipated to exceed the 10 ton per year single HAP or 25 ton per year aggregate HAP emission thresholds that trigger regulation by these standards.

NESHAP/Permitting Interface

A facility that is subject to NESHAP may also be subject to pre-construction or operating permit requirements.

Guidance: All EPA office facilities must investigate whether they emit any NESHAP pollutants, determine whether they are subject to any NESHAP subparts, and comply with the applicable general and specific NESHAP requirements.

STRATOSPHERIC OZONE PROTECTION
(40 CFR Part 82)

Title VI of the CAA includes provisions to phase-out the production and use of ozone-depleting compounds that are commonly used as refrigerants, cleaning solvents, and fire suppressants. The manufacture of certain chlorofluorocarbons (CFCs), halons, carbon tetrachloride and methyl chloroform were eliminated on December 31, 1995. The manufacture of hydrofluorocarbons (HCFCs) will be eliminated by 2030.

CFC-Containing Systems

EPA office facilities should not install HVAC systems that contain CFCs because of the production phase out of ozone-depleting substances covered under Title VI of CAAA. New systems must use refrigerants acceptable under the Significant New Alternatives Policy (SNAP) 40 CFR Part 82, Subpart G. SNAP regulations prohibit users from replacing CFCs with chemicals that pose an even greater risk to human health and the environment. Existing HVAC systems that contain CFC refrigerants shall be maintained in accordance with the recovery, recycling and retrofit practices described in 40 CFR Part 82.

Office Compliance Issues

Detailed information on the management of existing CFC refrigerant systems is provided in Chapter 8 of the *EPA Facility Safety, Health, and Environmental Management Manual*

Halon Fire Extinguishing
Systems

All EPA facility fire protection systems containing Halon 1301, Halon 1202, or Halon 1211 in existing EPA office facilities have been inventoried and are either already removed or planned for removal. These systems are to be replaced with alternatives under the SNAP. New halon fire extinguishing systems should not be installed in EPA facilities. This policy applies to both fixed systems containing Halon 1301 and portable extinguishers containing Halon 1211. Chapter 8 of the *EPA Facility Safety, Health and Environmental Management Manual* provides guidance on the management of halons removed from EPA facility fire extinguishing systems.

INDOOR AIR QUALITY

The quality of indoor air has been identified as a complex health problem. Since office workers spend up to 90 percent of their time indoors, poor indoor air quality (IAQ) can be a problem. Presently, no regulatory agency has promulgated acceptable levels of indoor air contaminants for office environments. The American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) has developed guidelines for acceptable ventilation rates intended to avoid adverse health effects.

SOURCES OF
CONTAMINANTS

Contaminants may be present in outside, or make-up, air or be produced by indoor activities. The *EPA Facility Safety, Health and Environmental Management Manual* addresses acceptable ventilation rates, make-up air, and overall design and maintenance criteria for HVAC systems. The focus is on air contaminants generated inside the building.

Smoking and VOCs

Smoking is a main contributor to poor IAQ and is restricted in all EPA buildings. Also, personnel should not bring VOC-containing materials into the office environment (e.g., field samples, solvents) because the ventilation system and fire protection systems are not designed to control these types of exposures. Application of certain cosmetic-type materials can generate significant localized concentrations of air contaminants (e.g., acrylic nail repair, nail polish and remover, hairsprays, colognes), which can contribute to employee discomfort and stress. Cosmetic materials should be used in the

Office Compliance Issues

restrooms only, as that part of the ventilation system is designed to exhaust all air contaminants.

New Office Furnishings

New office furnishings, such as carpet, desks, bookcases, cabinets and similar items brought into the work environment, can create problems due to off-gassing material. Generally, newly purchased products should be of the low VOC type or allowed sufficient time to off-gas in a controlled environment.

Other Contaminants

Other sources of air contaminants include chemicals used in copy machines, cleaners, waxes, carpet shampoos, and so on, used by janitorial service companies. Pesticides used by pest-control companies also can contribute to poor indoor air quality. Facility management should work with contractors to select the most environmentally safe products and schedule application of pesticides, floor waxes, or other chemicals on weekends or evenings to allow sufficient time to ventilate the environment prior to occupancy.

Radon

Radon is a radioactive gas that is generated naturally by the decay of thorium and uranium, which are naturally occurring elements found in varying amounts in rock and soil. Radon is found in outside air in very low concentrations. Occasionally, radon gas can enter a building through cracks in floors or walls in contact with the ground. This should not be a problem in EPA buildings because steps are taken to identify and mitigate sources of radon there.

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Office Compliance Issues

Section 16-04
Clean Water Management

INTRODUCTION

This portion of the Office Compliance Issues chapter focuses on the requirements applicable to EPA office and administrative facilities under the Clean Water Act (CWA) and the Safe Drinking Water Act (SDWA). The purpose of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. This goal is achieved primarily through preventing and controlling discharges of pollutants to navigable waters. These measures are implemented through federal, state, and local wastewater discharge standards.

The Safe Drinking Water Act (SDWA) provides a complementary legislative framework to the CWA and is the basis for protecting the nation's drinking water supplies from contaminants that may impact public health. The SDWA's statutory mandates direct EPA to develop national primary drinking water regulations (NPDWRs) that set limits for physical, chemical, biological, and radiological contaminants in drinking water and require specific treatment techniques to ensure safe drinking water.

This section describes the requirements applicable to EPA office facilities and operations according to the following CWA and SDWA program areas:

- Oil pollution prevention
- National Pollutant Discharge Elimination System (NPDES) permits
- Pretreatment standards for discharges to the sanitary sewer
- Safe drinking water management (e.g., lead and copper).

OIL POLLUTION
PREVENTION (40 CFR
PARTS 110-112)

EPA office and administrative facilities frequently require the use of oil and other petroleum products for heating, power, or motor vehicles fueling. These substances typically are stored in aboveground or underground storage tanks, which potentially threaten nearby waterways in the event of a system failure or if overfilling occurs.

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Section 311 of the CWA establishes the oil pollution prevention program to mitigate risks associated with releases from bulk storage facilities and vessels. It creates a general prohibition of discharging oil to navigable waters of the United States, codified in 40 CFR Part 110. In addition, certain types of facilities are required under 40 CFR Part 112 to prepare a spill prevention, control, and countermeasure (SPCC) plan to prevent releases from entering these types of waters.

Discharge Of Oil
(40 CFR Part 110)

Prohibited discharges of oil into navigable waters include

- Discharges that violate applicable water quality standards
- Discharges that create an emulsion under the surface of the water
- Discharges that cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines

It should be noted that the definition of navigable waters under the CWA has been broadly interpreted to include very small bodies of water such as tributaries, small creeks, and storm sewer systems that discharge directly to surface waters.

Notification
(110.10)

Facilities must notify the National Response Center (1-800-424-8802) in the event of any of the prohibited oil discharges identified in the above discussion.

Spill Prevention Control
and Countermeasures
(40 CFR Part 112)

In addition to the prohibitions and reporting obligations, the CWA also establishes preventive requirements and response measures to minimize water quality impacts if spills occur. This is achieved by requiring certain facilities to prepare a SPCC plan. EPA facilities are required to have an SPCC plan if oil is stored on-site in excess of the following quantities:

- 42,000 gallons underground
- 660 gallons in any single container aboveground
- 1,320 gallons aboveground total

The SPCC plan must include information on proper operating requirements for various facilities (e.g., bulk onshore storage tanks), necessary spill response equipment, specific response actions for spills or leaks, inspections, security, and training requirements for facility employees (40 CFR 112.7).

Office Compliance Issues

Requirements for
Preparation of SPCC Plans
(112.3)

The SPCC plan must be certified by a registered professional engineer to be deemed complete.

Amendments to SPCC
Plans (112.4-5)

An SPCC plan must be updated and amended following a discharge of oil greater than 1,000 gallons to a navigable water, or two or more discharges to a navigable water within one year that are reportable under 40 CFR Part 110. The plan must also be amended when there is a change in the facility design, construction, operation, or maintenance that may affect possible oil discharges. In addition to reviews conducted for facility modifications or changes in operation, the SPCC plan must be reviewed at least every three years and be amended to include new technologies or spill control techniques that will reduce the likelihood of a spill event at the facility. It is important that an SPCC plan reflects current conditions at a facility to ensure proper response in the event of a oil spill. All amendments to SPCC plans must be certified by a registered professional engineer.

Contents of SPCC Plans
(112.7)

The required contents of an SPCC plan are provided in 40 CFR 112.7. To ensure that all items are included, the plan should address the required items in the same order they are listed in the regulation. These elements include the following: (1) history of spills occurring at the facility, (2) prediction of the direction, rate of flow, and total quantity of oil that could be discharged as a result of equipment failure, (3) description of containment or diversionary structures, (4) discussion of conformance with applicable guidelines in 40 CFR 112.7(e) for facility drainage, bulk storage tanks, and facility transfer operations, (5) inspections and records, (6) security, and (7) personnel, training and spill prevention procedures.

NATIONAL
POLLUTANT
DISCHARGE
ELIMINATION
SYSTEM PERMITS
OVERVIEW

The NPDES program is a system for issuing, monitoring, and enforcing permits for point source discharges of wastewaters into navigable waters of the United States. The NPDES program is established under Section 402 of the CWA. The implementing standards are codified in 40 CFR Parts 122-124. If a facility plans to discharge wastewater, such as noncontact cooling waters, or sanitary wastes from any point source (e.g., a pipe, ditch, or a container) into navigable waters of the United States, the operator of that facility must submit an application for a NPDES permit to the EPA Region or a state agency with an approved NPDES program. Once issued, a permit can be viewed as a license to discharge wastewaters.

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containing specified amounts of pollutants, under specified circumstances, into navigable waters of the United States

General Program Requirements

Any EPA office facility with a point source discharge into navigable waters must obtain an NPDES permit from the EPA Regional office or an approved state authority. Pertinent examples include non-contact cooling water, boiler blowdown, or maintenance area discharges to surface waters.

Exclusions (122.3)

The NPDES program provides exclusions for several types of wastewater discharges. Relevant exclusions for EPA office facilities and operations include discharges to the publicly owned treatment works (POTW) and discharges consisting solely of stormwater that have not contacted industrial activities.

Expired Permits (122.6)

The conditions of an expired permit remain in force until the effective date of a new permit.

Permit Application (40 CFR Part 122, Subpart B)

Any EPA facility applying for an NPDES permit must submit an application 180 days prior to commencing the point source discharge. Those facilities with an NPDES permit must reapply at least 180 days prior to the expiration date of their existing permit (unless written permission for a later date is obtained from the Regional Administrator or State NPDES Program Director).

Signature to Permit Application and Reports (122.22)

A principal executive officer (i.e., EPA Regional Administrator) must sign the NPDES permit application. Discharge monitoring reports (DMRs) may be signed by an authorized representative of the facility director. The authorization of such an individual must be in writing.

Permit Conditions (40 CFR Part 122, Subpart C)

Permitted facilities must establish and maintain discharge monitoring procedures and submit DMRs to EPA (or the state authority for states with approved programs). Some NPDES permits require facilities to prepare a written operating plan that specifies monitoring procedures. Monitoring data must be maintained for a minimum period of three years.

Guidance: Since the statute of limitations applicable to permit violations is five years, EPA facilities should maintain monitoring records for five years instead of the minimum retention period of

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three years provided by the recordkeeping provisions in 40 CFR Part 122.

Permit Modification
(40 CFR Part 122, Subpart D)

The NPDES permit may need to be modified if there have been substantial alterations or additions to the facility operations since the original permit issuance. The permitting authority will modify or revoke and reissue the permit accordingly. There are "anti-backsliding" provisions in the CWA that prevent renewal, reissue, or modification of the permits where effluent limitations are less stringent than those in previous permits.

NPDES Stormwater Permits

Because of the number of cases of water quality impairment caused by stormwater run-off, Congress amended the CWA in 1987 to require EPA and the states to regulate stormwater discharges. EPA promulgated standards in 40 CFR 122.26 that require certain point source stormwater discharges to be regulated in accordance with a permitting process. The following stormwater point source discharges require permits under the regulations issued by EPA:

- A discharge associated with industrial activities identified in 40 CFR 122.26(b)(14)
- A discharge from certain municipal separate sewer systems serving a population between 100,000 and 250,000
- A discharge that violates water quality standards

EPA facilities generally will only trigger permitting requirements under two of the industrial activities categories in 40 CFR 122.26(b)(14). Specifically, relevant activities include (1) any EPA facility conducting construction activities on an area greater than five acres, or (2) an EPA facility that has a RCRA treatment, storage, or disposal permit. These facilities would be required to submit a NPDES stormwater permit application, unless a waiver is obtained from the EPA Region or State NPDES Program Director.

CWA NATIONAL PRETREATMENT STANDARDS
(40 CFR Part 403)

The pretreatment program under the CWA provides that industrial users must observe specific discharge limitations for wastewaters to the POTW. Where contributed necessary to meet these limits, facilities must pretreat wastewaters to prevent the pollutants from interfering or passing through POTWs. Two sets of national

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pretreatment standards are presently in effect prohibited discharge standards (also known as general standards) and categorical pretreatment standards

On July 24, 1990 (55 FR 30082), EPA promulgated new CWA regulations that significantly revised the pretreatment regulations. These new requirements are set forth to assure that hazardous wastes discharged to POTWs are adequately controlled to protect human health and the environment. All new regulatory provisions relevant to EPA facilities and operations have been incorporated into this section, where appropriate

Prohibited Discharge
Standards
(403.5)

These standards prohibit discharges that will interfere with the POTW's operation. Potential discharges from EPA office complexes regulated under this program include activities associated with the print shop, graphic arts, photographic facilities, motor pools, and maintenance areas. EPA facilities must not introduce the following pollutants into a POTW:

- Flammable or explosive pollutants including, but not limited to, wastestreams with a closed cup flashpoint of less than 140 degrees Fahrenheit (or 60 degrees Centigrade)
- Corrosive pollutants (including all pollutants with pH lower than 5.0 unless the POTW is designed to accommodate such discharges)
- Solid or viscous pollutants which obstruct the flow to or the operation of the POTW
- Any pollutants at a flow rate or concentration which may interfere with the operation of the POTW (e.g., pollutants with a high biological oxygen demand (BOD))
- Heat exceeding 40° C (104° F).
- Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin
- Any pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW that may cause worker health and safety problems

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The prohibited discharge standards, outlined above, apply to all facilities discharging pollutants, whether or not the facility also is subject to local sewer use standards (40 CFR 403 5(a)(1)). Table 1 provides examples of EPA wastes that may exceed regulatory standards if discharged to the POTW

**Table 1
National Pretreatment Standards Guide**

Pretreatment Standard Limitations	EPA Office Waste Streams Affected
Flammable or explosive pollutants including, but not limited to, waste streams with a flashpoint of less than 140 degrees Fahrenheit (60 degrees Centigrade) using a test method identified in 40 CFR 261.21	<ul style="list-style-type: none"> ● Cleaning solvents (e.g., acetone and 1,1,1-trichloroethane) ● Chemicals used in photographic, print shop, or graphics arts operations
Corrosive pollutants (including all pollutants with a pH below 5.0, unless the POTW is designed to accommodate such discharges)	<ul style="list-style-type: none"> ● Battery acids ● Muriatic acids ● Other bulk janitorial supplies
Solid or viscous pollutants that may obstruct the flow to the POTW	<ul style="list-style-type: none"> ● Environmental media or other materials containing solids (e.g., sediment, soils)
Pollutants, including oxygen-demanding pollutants (e.g., BOD) which will interfere with the POTW	<ul style="list-style-type: none"> ● High-concentration ethylene and propylene glycol compounds
Discharges exceeding 104 degrees Fahrenheit or 60 degrees Centigrade, unless approved by the POTW	<ul style="list-style-type: none"> ● Discharges exceeding these standards are uncommon at the majority of EPA office facilities
Discharges of petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin that will interfere with or pass through the POTW	<ul style="list-style-type: none"> ● Oil-containing wastewaters ● Wastes from machine, maintenance, and automotive shop areas
Pollutants that result in the presence of toxic gases, vapors, or fumes that pose a danger to worker health and safety	<ul style="list-style-type: none"> ● Cyanide-containing photographic bleaches

Local Ordinances
(403.8)

POTWs have the authority to establish their own pretreatment standards for contributors to their systems. These standards often are incorporated into local sewer system ordinances or permits. Local authorities may set more stringent standards than the national standards.

Guidance: Where EPA office facilities discharge industrial effluents to the POTW, a current copy of the local sewer-use ordinance should be maintained on-site, in addition to the applicable federal pretreatment regulations (40 CFR Parts 400 to 459).

Prohibitions

Local ordinances usually contain prohibitions more stringent and

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specific than those in the national pretreatment standards. SHEMP Managers must carefully review these prohibitions and instruct facility personnel on procedures to comply with the prohibitions.

Guidance: One way to comply with the prohibitions, both local and national, is to instruct facility personnel to dispose of no hazardous or toxic wastes via the print shop, maintenance area, or other facility sinks. If an EPA facility chooses this approach, it should post a sign instructing personnel not to dispose of hazardous or toxic substances in the vicinity of such areas.

Monitoring

A POTW may require industrial users to perform periodic water quality effluent monitoring in accordance with sewer use ordinance or user's permit guidelines. Additionally, significant industrial users (SIUs) with discharges of greater than 25,000 gallons per day are required to perform monitoring of wastewater discharges every six months. The results of the biannual monitoring must be provided to the POTW, along with a description of the nature, concentration and flow of pollutants discharged.

Guidance: EPA office facilities discharging industrial wastes to the POTW should periodically monitor its discharge to verify compliance with the POTW's pretreatment standards. This strategy will provide data that support an affirmative defense of compliance with applicable discharge standards in the event that a POTW initiates an enforcement investigation against its industrial users.

Spills and Releases

All EPA facilities must immediately notify the POTW of any discharge that may cause problems for the POTW or violate the prohibited discharges in 40 CFR 403.5(b) (40 CFR 403.12(f); 53 FR 40613, October 17, 1988). Notification requirements vary, some POTWs have notification forms and require a description or analysis of the discharge, while other POTWs simply require notification by phone.

Several local ordinances require that the POTW's phone number be placed in a prominent place (e.g., on a bulletin board which employees regularly pass) in case a release to the POTW occurs. Employees should be made aware of this notification requirement.

Guidance: EPA facilities should adopt the above posting and notification requirements regardless of whether or not they are specified in their local POTW ordinance to do so.

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Spill Prevention

Many POTWs previously required industrial users to take preventative measures to eliminate spills and other slug discharges into the system's treatment works. EPA has formalized this requirement in its revised pretreatment regulations. Accordingly, POTWs must evaluate SIUs, at least once every two years, to determine the need to implement a slug control program. Users subject to this requirement would include those with a high risk of discharging toxic or hazardous materials into the sewer system.

Guidance: SHEMP Managers should identify and inventory areas of the facility where hazardous substances may enter either the POTW or storm sewer system. These areas should be diked or bermed when there is potential for a release. For example, EPA office facilities may have storm sewers located near hazardous material storage areas or loading docks. These sewers should be protected from spills during the packing and transport of hazardous materials. Also, floor drains located in areas where hazardous materials are located (e.g., print shops, storage rooms) should be plugged or bermed, unless a dedicated spill catchment basin or tank is provided. If such devices are used, the facility should ensure that measures are taken to prevent spill basins and tanks from receiving incompatible materials.

Notification

Under section 403.12(p) of the new pretreatment regulations, all industrial users were required to provide a one-time notification by February 23, 1991, to the local POTW, State, and Regional Waste Management Division Director for discharges of hazardous wastes to the POTW. If discharges would be considered hazardous waste if not disposed of through the POTW in accordance with 40 CFR Part 261, then they must be reported unless the amount of these discharges is below 15 kg per month. Discharges of any quantity of acute hazardous wastes are subject to the one-time notification. Reporting requirements are divided into two tiers for dischargers of non-acute hazardous wastes: 15-100 kg/month tier and greater than 100 kg per month tier. Discharges of between 15 and 100 kg of non-acute hazardous waste per month must provide the following information:

- Name of the hazardous waste
- EPA waste code
- Type of discharge (continuous, batch, other).

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For discharges of greater than 100 kg per month, the following additional information must be provided.

- Identification of hazardous constituents
- Mass and concentration of these constituents
- An estimate of the mass of hazardous constituents to be discharged during the following twelve months

**CWA REGULATORY
GUIDE**

Table 2 on the next page summarizes the major regulatory programs under the CWA that may have an impact on EPA facilities and references applicable standards.

**SAFE DRINKING
WATER ACT**

The SDWA, enacted on December 16, 1974, is the basis for protecting the nation's drinking water supplies from physical, chemical, biological, and radiological contaminants that may have an impact on public health. The Act's statutory mandates direct EPA to develop NPDWRs that set limits for contaminants in drinking water and require specific treatment techniques to ensure safe drinking water. The SDWA also directs EPA to develop underground injection regulations for protecting underground sources of drinking water.

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**Table 2
Clean Water Act Regulatory Guide**

Topic	Action Involved	Regulatory Citation
Oil Discharges	Reporting is required for discharges of oil into navigable water that <ul style="list-style-type: none"> • Violates water quality standards • Causes a film or sheen on the water or shoreline 	40 CFR Part 110
Spill Prevention Control and Countermeasure Plans	SPCC plans must be developed when petroleum is being stored in quantities greater than <ul style="list-style-type: none"> • 42,000 gallons underground • 1,320 gallons total aboveground • 660 gallons in any single aboveground container 	40 CFR Part 112
Hazardous Substance Release Reporting	Reporting is required for releases of hazardous substances that exceed CWA reportable quantities (listed in 40 CFR Part 116) within a 24-hour period	40 CFR Part 117
National Pollutant Discharges Elimination System (NPDES) Permits	NPDES permits are required for point source discharges of wastewaters into navigable waters of the United States	40 CFR Part 122
NPDES Effluent Limitations Guidelines	These requirements apply to point source discharges of wastewaters from specific activities into navigable waters (these will not be applicable to most EPA facilities)	40 CFR Parts 405 through 471
NPDES Stormwater Discharge Permits	These requirements apply to point source discharges of stormwater that have come in contact with industrial or construction activities into navigable waters. These standards also apply to RCRA treatment, storage, and disposal facilities	40 CFR 122.26
National General Pretreatment Standards	Discharges of wastewater and sanitary waste to the sewer system are subject to the National General Pretreatment Standards, which prohibit discharges of certain wastes to the sewer system	40 CFR 403.5(b)
National Categorical Pretreatment Standards	Discharges of wastewater to the sewer system from specific activities are regulated under the national categorical pretreatment standards.	40 CFR Parts 405 through 471
Local Pretreatment Standards	Discharges of wastewater and sanitary wastes to the sewer system will be regulated by a municipal discharge permit or a local sewer use ordinance issued by the local sewer authority	Municipal Discharge Permit or local Sewer Use Ordinance

Applicability

The SDWA regulations protect human health by regulating public water systems. A public water system is defined as a system that

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(141.3)

provides water for human consumption and is comprised of at least 15 service connections or serves 25 individuals daily, at least 60 days out of the year

Public water systems are divided into community and noncommunity systems. A community water system is a public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents. This definition primarily pertains to residential communities. A noncommunity water system includes those systems that do not fit the above definition (e.g., schools, factories, and mobile home parks).

EPA office facilities are served by public water systems and typically are not subject to the SDWA regulations governing the delivery of treated drinking water. EPA facilities, however, should be cognizant of other major provisions of the drinking water regulations, especially those associated with the control of drinking water contaminants typically arising from building plumbing systems (e.g., lead and copper). Additional information on these areas is provided in subsequent discussions of this section.

MAXIMUM
CONTAMINANT
LEVELS AND
MAXIMUM
CONTAMINANT
LEVEL GOALS

(CFR 40 Parts 141.11-16,
141.50-52, 141.60-63)

EPA has established two types of standards for contaminants in drinking water: primary standards and secondary standards. Primary standards, discussed here, are enforceable, health-based contaminant levels. Secondary contaminants are nonenforceable guidelines established to ensure the aesthetic quality of drinking water provided by public systems and will be discussed in a later section. In regulating primary (health-based) drinking water contaminants, EPA establishes two different types of levels, maximum contaminant level goals (MCLGs) and maximum contaminant levels (MCLs).

Maximum Contaminant
Level Goals

The MCLG is a concentration-based contaminant level that has been identified by EPA as having no adverse health effects. MCLGs are determined through extensive toxicology studies and represent a nonenforceable goal for drinking water systems. For example, the MCLG for certain known and suspected carcinogenic chemicals (e.g., vinyl chloride) is zero.

Maximum Contaminant
Levels

MCLs are the enforceable primary standards established for public water systems. The MCL for a particular contaminant represents

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the maximum level, usually in terms of concentration, that may be present in drinking water. This level is set as close to the MCLG as possible, while taking economic and technological factors into consideration.

**CONTROL OF LEAD
AND COPPER**

As mentioned previously, EPA facilities should be aware of major provisions of the drinking water regulations associated with the control of drinking water contaminants arising from building plumbing systems. Lead and copper are two major contaminants of concern from these types of systems. Considerations for monitoring the levels of these contaminants are discussed in the following paragraphs.

General Requirements

Beginning July 1, 1993, all water systems must comply with the requirements set forth for the control of lead and copper in drinking water. These regulations, codified in 40 CFR 141.80, establish treatment technique requirements for corrosion control, source water treatment and under special circumstances lead service line replacement.

**Monitoring Requirements
For Lead and Copper**

To ensure safe levels of lead and copper in drinking water, the municipal water supply system is required to conduct a materials survey of the distribution system to identify a pool of sampling sites. Tap water sampling will be conducted at high risk locations, such as homes or buildings that recently were built using lead solder and/or lead service lines.

Guidance: Given the random nature of municipal supply tap water sampling, EPA office facilities should implement a drinking water monitoring program. At a minimum, the program should provide for conducting initial sampling upon taking occupancy of new space or after installing newly plumbed systems. In addition, follow-up monitoring should be performed whenever significant facility modifications or renovations have been undertaken that may have influenced the integrity of the drinking water supply system within the facility. Specific sampling strategies are described in the following discussion.

Sample Collection

Drinking water within EPA office space should be monitored to determine its conformance with the current EPA lead action level of 15 µg/L. Samples should be collected in accordance with the

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Office of Water guidance document on sampling for lead in drinking water in nonresidential facilities (EPA 812-B-94-002). This document is available upon request through the Safe Drinking Water Act Hotline (202-260-7908) or SHEMD

Copper monitoring also is recommended to evaluate the drinking water supply against the action level of 1.3 mg/L. For copper monitoring of EPA office water supplies, the Office of Water recommends that at least one 30-second flush sample be taken at an internal tap from which water typically is drawn for consumption

NATIONAL
SECONDARY
DRINKING WATER
STANDARDS
(40 CFR Part 143)

The secondary drinking water standards establish secondary MCLs (SMCLs) to ensure the aesthetic quality of the water, such as color, odor and taste. Contaminant levels above the SMCLs are not of significance in terms of adverse health effects, but may decrease the palatability of the water. The levels are not enforceable and are only to be used as guidelines. States are free to adopt these standards as enforceable levels in the implementation of their own program.

Monitoring

The drinking water quality in all newly leased or constructed facilities should be tested to ensure conformance with the following SMCLs: aluminum (0.2 mg/L), chloride (250 mg/L), color (15 color units), iron (0.3 mg/L), manganese (0.05 mg/L), pH (6.5-8.5), silver (0.1 mg/L), sulfate (250 mg/L), total dissolved solids (500 mg/L), and zinc (5 mg/L).

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Section 16-05
Radioactive Materials Management

STORAGE AND
CONTROL OF
LICENSED MATERIAL
(10 CFR Part 20,
Subpart I)

Requirements for the storage and control of licensed material are contained in 10 CFR Part 20, Subpart I. It requires licensees to secure from unauthorized removal or access licensed materials that are stored in controlled or unrestricted areas. It also requires licensees to control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area when it is not in storage.

Note that there currently is no de minimis quantity or concentration of radioactive material that is exempt from these requirements. The requirements in this subpart apply to any and all forms of licensed radioactive material, including contamination of surfaces in unrestricted areas with radioactive material.

PRECAUTIONARY
PROCEDURES
(10 CFR 20 Part,
Subpart J)

Subpart J of 10 CFR Part 20 contains requirements for posting areas and labeling containers to apprise personnel that radiation hazards or radioactive materials are present. It also contains requirements for monitoring packages containing radioactive material that are received by the facility to ensure that no damage to packaging integrity has occurred during transit that could pose unexpected radiological hazards.

Section 20.1902 contains requirements for posting of radiological areas. Signs must be posted conspicuously and must contain the wording specified in the regulations. Separate signs are required for radiation areas, high radiation areas, very high radiation areas, airborne radioactivity areas, and areas or rooms in which licensed material is used or stored.

Section 20.1901 of 10 CFR Part 20 contains specifications for signs used in posting areas. It requires that signs have magenta, purple, or black words and symbols on a yellow background. This section also has specifications for the radiation symbol that is required on signs. Internal Nuclear Regulatory Commission (NRC) guidance recommends the purchase of radiation symbol signs that conform to the specifications in ANSI N2.1.

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Section 20 1903 provides exceptions to posting requirements in the following situations:

- Areas or rooms containing radioactive materials for periods of less than eight hours do not have to be posted with signs, if the materials are constantly attended during these periods and precautions are taken to limit the exposure of individuals to radiation or radioactive materials, and the area or room is subject to the licensee's control
- A room or area is not required to be posted with a caution sign because of the presence of a sealed source unless the radiation level at 30 centimeters from the surface of the source container or housing exceeds five millirem per hour.

Section 20 1904 contains requirements for labeling containers of licensed material. It specifies required wording and minimum information necessary to permit individuals handling or using the containers, or working in the vicinity of the containers, to take precautions to avoid or minimize exposures. It also requires that labels be removed or defaced prior to disposing of empty uncontaminated containers or removing them to unrestricted areas.

Exemptions to labeling requirements are provided in Section 20 1905 and include

- Containers holding small quantities of licensed material or material of very low concentration (numerical values are specified in the regulation)
- Containers attended by an individual who takes precautions to limit the exposure of nearby individuals
- Containers in transport and packaged and labeled in accordance with the regulations of DOT
- Containers that are accessible only to individuals authorized to handle or use them, or to work in the vicinity of the containers

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GENERAL DOMESTIC
LICENSES FOR BY-
PRODUCT MATERIAL
(10 CFR Part 31)

General licenses for the possession and use of by-product material in certain items and a general license for ownership of by-product material are established in 10 CFR Part 31. This part also describes the requirements of each of the general licenses, and the records that must be maintained for measuring, gauging, and controlling devices as described by the general license. The types of sources found at EPA office facilities, if present at all, will be primarily limited to sealed sources covered under a general domestic license (e.g., X-ray analyzer for field screening).

ITEMS AND
MATERIALS
LICENSED
(10 CFR 31.3, 31.5,
and 31.8)

A general license for by-product material is any license granted by 10 CFR Part 31. General licenses are granted by the regulation itself, without application to NRC, and there usually will not be any documentation at the facility to indicate that the general license exists.

A general license allows EPA facilities to transfer, receive, acquire, own, possess, and use by-product material that is incorporated in static elimination devices and ion generating tubes.

A general license permits facilities to transfer, receive, acquire, own, possess, and use by-product material contained in devices designed and manufactured for the purpose of detecting, measuring, gauging or controlling

- Thickness
- Density
- Level
- Interface location
- Radiation
- Leakage
- Qualitative or quantitative chemical composition
- Producing light or an ionized atmosphere

A general license also allows offices to own, receive, acquire, possess, use and transfer americium-241 in the form of calibration or reference sources. However, this applies only to persons in a non-Agreement State or any government agencies that hold a specific license issued pursuant to 10 CFR Part 30.

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TERMS AND
CONDITIONS OF
LICENSE
(10 CFR 31.3, 31.5,
and 31.8)

Static elimination devices must not contain more than 500 microcuries of polonium-210 per device. Ion-generating tubes must not contain more than 500 microcuries of polonium-210 per device or more than 50 millicuries of tritium per device.

Measuring, gauging and controlling devices are required to meet the following conditions.

- Labels, which bear the statement that removal is prohibited, cannot be removed from the device.
- Instructions and precautions provided on the labels must be implemented.
- The device must be tested for leakage and proper operation of the on-off mechanism and indicator, if any, at no longer than six-month intervals or as indicated on the label. This does not apply to devices containing krypton, tritium, not more than 100 microcuries of other beta and/or gamma emitting material, or not more than 10 microcuries of alpha emitting material. Additionally, this does not apply to devices kept in their original shipping container.
- For testing, installation, servicing, and removal from installation involving the radioactive material, its shielding or containment shall be performed either in accordance with label instructions or by a person holding a specific license to perform such activities.
- Records showing compliance with the activities indicated above are to be maintained as specified in the following section.
- Upon failure of or damage to the shielding or on-off mechanism or upon detection of 0.005 microcurie or more of removable radioactive material, the device will be removed from service until repaired by the manufacturer or person holding a specific license for repairs; or disposed of by transfer to a person holding a specific license to receive the material contained in the device.
- Such failure, damage or leakage must be reported to the NRC Regional Office within 30 days.

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- The device must not be abandoned or exported
- Transfer or disposal of the device only is to a person having a specific license pursuant to 10 CFR Parts 30 and 32
- Such transfer, unless to receive a replacement device, must be reported to the NRC Regional Office within 30 days
- Transfer to another general licensee can only occur if the device remains in use or is held in storage in the original shipping container

There must be no more than five microcuries of americium-241 in any one location of storage or use. In addition, the source or storage container for americium-241 must bear a label containing the following statement:

The receipt, possession, use and transfer of this source, Model --, Serial No. --, are subject to a federal license and the regulations of the United States Nuclear Regulatory Commission or of a State with which the Commission has entered into an agreement for the exercise of regulatory authority. Do not remove this label.

CAUTION - RADIOACTIVE MATERIAL - THIS SOURCE CONTAINS AMERICIUM-241. DO NOT TOUCH RADIOACTIVE PORTION OF THIS SOURCE.

----- (Name of manufacturer or initial transferor)

Americium-241 must be handled as follows

- The source shall not be transferred, abandoned, or disposed of except by transfer to a person authorized by 10 CFR 31.8 or an Agreement State
- The source must be stored in a closed container that is adequately designed and constructed
- The source cannot be used for purposes other than calibration of radiation detectors or the standardization of other sources

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Manufacture, import, and export of americium-241 are not authorized by the general license.

**RECORDS FOR
MEASURING,
GAUGING, OR
CONTROLLING
DEVICES**
(10 CFR Part 31.5)

Records must show the names of persons performing and the dates of testing, installing, servicing, and removing radioactive material and its shielding from the facility

Unless the source or device has been transferred or disposed of, records must be retained as follows:

- Each record of a test for leakage or radioactive material must be retained for three years after the next required leak test
- Each record of a test of the on-off mechanism and indicator must be retained for three years from the date of the recorded event

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Section 16-06
Nonhazardous Solid Waste Management

INTRODUCTION

This portion of the Office Compliance Issues chapter focuses on the requirements applicable to EPA office and administrative facilities to use nonhazardous solid waste management facilities that conform with applicable federal, state, and local guidelines for solid waste management. These requirements are established pursuant to Subtitles D and F of the Resource Conservation and Recovery Act (RCRA). The objective of this program is to effectively manage nonhazardous solid waste in such a manner as to not pose a threat to human health or the environment. Additionally, this section addresses the mandated requirements for the establishment of returnable containers and high-quality paper recycling programs.

This section describes the requirements applicable to EPA office facilities and operations according to the following program areas:

- Guidelines for nonhazardous solid waste management
- Required recycling practices for aluminum containers
- Required recycling practices for high-grade paper

SOLID WASTE
MANAGEMENT
GUIDELINES
(40 CFR 241.100)

The agency shall make every effort to use solid waste disposal facilities for the processing or disposal of EPA-generated nonhazardous solid wastes that comply with federal regulatory requirements.

Guidance: Prior to the release of shipment of nonhazardous solid wastes for disposal to a contractor facility, the EPA facility should verify the selected site operates in accordance with Subpart B Part 241.200, titled Requirements and Recommended Procedures. This may be accomplished by contacting the disposal site directly and obtaining a copy of applicable state and federal documentation demonstrating the site operates in accordance with applicable state and federal regulatory requirements.

NONHAZARDOUS
SOLID WASTE
STORAGE
(40 CFR 243.200)

All solid wastes shall be stored in such a manner that it does not constitute a fire, health, or safety hazard. Care shall be taken to ensure that solid wastes awaiting off-site transport do not provide food or harborage for vectors.

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Guidance: All wastes containing food should be stored in securely stored areas with containers that are covered or closed. These containers should be made of non-absorbent materials, leak proof, durable and easily cleaned. Containers should be maintained in a clean condition so that they are not a nuisance, and will not harbor vector and stored in such a manner as to not collect excessive water or create condition to harbor vectors.

The waste shall be contained or bundled so as not to result in spillage.

Guidance: Containers should be of adequate size and numbers to contain the waste materials for the period between collection. The collection point should be designed to facilitate collection and handling of wastes. Additionally, the wastes are most effectively stored in containers that are not easily tipped over.

Returnable Beverage
Recycling
(40 CFR 244 200)

Federal facilities are required to implement recycling program when beverage containers are offered for sale on the facility premises

Guidance: The facility should institute a collection program for the collection of reusable beverage containers sold on-site. This should include the sale of these containers to a licensed contractor for proper collection, handling and recycling.

All beverages offered for sale on the premises should be sold in returnable containers.

Guidance: EPA office facilities should require all beverages sold on-site to be dispensed in returnable containers.

High-Grade Paper
Recycling
(40 CFR 246 200)

High-grade paper generated by office facilities of more than 100 office workers should be separated at the source of generation, separately collected and sold for the purpose of recycling. For smaller operations this is a recommended practice that should be evaluated on a site-by-site basis.

Guidance: The facility can utilize the recommended procedures for market study and paper collection methods outlined in 246.200-3 through 246.200-9. These regulatory provisions identify specific methods to analyze and implement a recycling program.

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Section 16-07
Underground Storage Tank Management

INTRODUCTION

This section provides policy, guidance and information to ensure that EPA facilities and operations are in compliance with applicable technical and procedural requirements of federal, state and local underground storage tank controls

EPA finalized regulations impacting underground storage tanks (UST) on September 23, 1988, which are found in 40 CFR Parts 280 and 281. These regulations apply to all tanks containing petroleum products and hazardous substances as defined by EPA. The regulations direct facilities to implement technical standards and corrective actions for the management of and releases from underground storage tanks. Further, the legislation specifically charges federal agencies to follow not only the federal requirements, but also applicable state and local regulations.

UST PROGRAM

The information in this section is intended to ensure that EPA facility operations pose a minimal risk to the environment due to releases of hazardous substances. It combines the federal requirements in 40 CFR Part 280, GSA Technical Guides, and best practices for UST management.

In addition to following applicable environmental requirements, the underground storage tank program shall follow the applicable OSHA standards found in 29 CFR Parts 1910, 1926 and 1960.

**REQUIREMENTS AND
RECOMMENDATIONS**

Tank Inventory

EPA office facilities should identify all USTs, and complete an inventory of EPA-owned and operated tanks. Exhibit I contains a standard form that can be used for UST inventoring. The inventory must include all tanks that are currently regulated by federal, and applicable state and local regulations. The inventory must also include tanks used for storing heating oil for consumptive use on premises where stored and for emergency power generator tanks. Each office should retain a copy of the completed inventory on-site. These actions will provide key information in the event of a regulatory compliance inspection or data request from AEREB or SHEMD.

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Exhibit 1
Underground Storage Tank Inventory Report

Name and Address of Facility:				
	Tank # ___	Tank # ___	Tank # ___	Tank # ___
Where is the tank located?				
What is the tank made of?				
What is the capacity of the tank?				
What substance is stored in the tank?				
When was the tank installed?				
Is the tank in use? (Y/N)				
Detail leak detection results				
Specify if the tank was replaced or upgraded and date of action.				
Is there corrosion on the tank and piping system? If yes, describe.				
Specify if the tank was closed or removed and date of a action.				
Comments:				

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Leak Testing and Tank Upgrading

Underground storage tanks installed before December 1988, must institute release detection by December 22, 1993. EPA also requires existing tanks to have corrosion protection and spill/overflow preventive devices by 1998. Exhibit 2 illustrates tank upgrading requirements applicable to USTs managed by EPA office facilities. Specific UST design and construction criteria are contained in Chapter 8 of the EPA *Facility Safety, Health and Environmental Management Manual*.

**Exhibit 2
UST Upgrading Requirements**

Type of Tank & Piping	Leak Detection	Corrosion Protection	Spill/Overflow Prevention
New Tanks and Piping*	At installation	At installation	At installation
Existing Tanks ** Installed:	By No Later Than:		
Before 1965 or unknown	December 1989	"	"
1965-1969	December 1990	"	"
1970-1974	December 1991	" December 1998	" December 1998
1975-1979	December 1992	"	"
1980-December 1988	December 1993	"	"
Existing Piping **			
Pressurized Suction	December 1990	December 1988	Does not apply
Pressured Suction	Same as existing tanks	December 1988	Does not apply
* New tanks and piping are those installed after December 1988 ** Existing tanks and piping are those installed before December 1988			

Tank Leaks

If a tank leak occurs at an EPA-owned or -operated facility, the UST or SHEMP Manager should be notified. The UST or SHEMP Manager should immediately contact the appropriate authorities within SHEMD. The notifications should be performed in accordance with emergency action plans or other contingency plans already in place at the facility.

Tank Closure

Before tank closure, a tank assessment must be conducted according to applicable federal, state and local requirements. During tank closure, removed materials should be managed through recycling as a preferred option. Where significant contamination of

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the material exists, disposal should be accomplished through appropriately licensed waste management facilities. Closures must follow the guidance of 40 CFR Parts 280 and 281, the National Fire Protection Association (NFPA), and the American Petroleum Institute (API).

Management Plan

At EPA office facilities where there is an EPA-owned or -operated underground tank, the UST manager or SHEMP Manager must develop a management plan for the tanks under his or her jurisdiction. This plan will identify applicable federal, state and local requirements, specify the action planned for the tanks, and provide for a compliance schedule. The plan must contain the following at a minimum:

- A list of all tanks located at EPA-owned or -leased facilities
- An up-to-date inventory of all EPA-owned or -operated tanks
- Records of tank notifications to implementing state agencies
- A priority ranking system for tank closure, replacement and upgrade. Give attention first to those tanks that are known to be leaking. Second, consider tanks that are not leaking but are in noncompliance with applicable local, state and federal regulations
- An approach to mitigate releases from underground storage tanks
- A determination of estimated funds for tank projects and schedule for implementation
- A plan for ongoing leak detection tests and repairs
- Reporting procedures for notification of releases from tanks
- Records management system and internal reporting of data

Tank Installation

All new tank installations must meet applicable local, state and federal requirements. Additional guidance on tank installations is provided in Chapter 8 of the EPA *Facility Safety, Health and Environmental Management Manual*.

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Reporting and
Recordkeeping

The UST inventory should be reviewed and updated on an annual basis. The specific type and use of each tank (e.g., heating oil tank, emergency power generator tank, EPA-regulated tank) should be included on the underground storage tank inventory report.

EPA office facilities should track information about underground storage tank upgrade, replacement and closure due to leaks. In addition, information concerning the extent of contamination, corrective action, and estimated costs associated with cleanup should be documented. These records should be placed in the facility's environmental documentation file for future reference and consultation.

All records related to tank activities should be kept at the facility location where the tanks are operated and located. These records include leak detection tests, closures, or tanks transferred to an owner or operator other than EPA. EPA requires facilities to keep significant release detection records for five years after the date of release and all other records for at least five years. Tank closure records should be kept indefinitely for liability avoidance and future property transfer.

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Section 16-08
Hazardous Waste Management

INTRODUCTION

Although not typically generating hazardous wastes in large quantities on a routine basis, EPA office facilities may generate solid wastes that meet the definition of a hazardous waste as a result of maintenance operations, print shop activities, or surplus chemical inventories. Thus, these facilities should be aware of the requirements for the cradle-to-grave management of hazardous waste. A systematic review of RCRA Subtitle C requirements of major importance to EPA office and administrative operations is presented below.

DEFINITION OF SOLID WASTE
(40 CFR 261.2)

A solid waste is any material that is abandoned, recycled or inherently waste-like, as explained in 40 CFR 261.2. Solid waste, as defined in RCRA, refers not only to solids, but also to semi-solids, sludges, liquids, and contained gases.

DEFINITION OF HAZARDOUS WASTE
(40 CFR 261.3)

Section 3001 of RCRA charges EPA with developing criteria for identifying the characteristics of hazardous waste and for listing hazardous waste based on toxicity, persistence or degradability in nature, potential for accumulation in tissue, and other related hazardous properties.

EXCLUSIONS FROM SUBTITLE C
(40 CFR 261.4)

Two classes of materials are excluded from the hazardous waste regulations: materials that are not solid wastes and solid wastes that are not hazardous wastes.

Not Solid Wastes
(40 CFR 241.4(a))

Two materials specifically excluded from the definition of solid waste are domestic sewage and mixtures of domestic sewage with other wastes (including hazardous) that pass through a sewer system to a POTW. Requirements for these materials are established under the Clean Water Management portion of this chapter. For example, a maintenance shop of an EPA office facility may generate a corrosive waste during routine operations. Once the waste is discharged via a sink or drain to the sewer which is connected to a POTW, the waste is no longer subject to RCRA regulation. CWA general pretreatment standards or local sewer use

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ordinances, however, will have to be met prior to discharge into the municipal wastewater collection system. Refer to Section 261 4(a) for the full list of materials that are excluded from the definition of a solid waste

Nonhazardous Wastes
(40 CFR 261 4 (b))

Two exemptions primarily are applicable to EPA office facilities. First, CFCs used in air conditioning or refrigeration systems are exempt from Subtitle C regulation when they are reclaimed for further use, but not when they are sent off-site for disposal. Additionally, used oil filters may also be exempt from the hazardous waste regulations. Non-terne plated (e g , automobile) oil filters are excluded from the definition of hazardous waste if they are gravity hot-drained and have not been mixed with a listed hazardous waste. Refer to Section 261 4(b) for a full list of solid wastes that are excluded from hazardous waste regulations.

LISTED HAZARDOUS WASTE
(40 CFR 261 Subpart D)

If a solid waste has not been excluded, it is a hazardous waste if it is specifically listed. The listed hazardous wastes in 40 CFR 261 31- 33 comprise four groups

- F-listed wastes
- K-listed wastes
- P-listed wastes
- U-listed wastes.

In establishing the lists, EPA arbitrarily identified F-, K-, P- and U-designations. The letters carry no purpose other than to identify particular listing categories.

Only a portion of the listed wastes are defined as acutely hazardous. They are F020-F023, F026-F027, and all P-listed wastes. Such wastes are not commonly generated by EPA office operations.

F-Listed Hazardous Wastes
(40 CFR 261 31)

The F-list includes nonspecific source wastes that are not attributable to a specific industry or process unit. EPA office facilities may generate spent solvents (F001-F005) in maintenance shop or motor pool areas.

Spent Solvents

The spent solvent wastes F001-F005 are from nonspecific sources. The F001 listing, however, only applies to solvents used in industrial degreasing operations. Office solvent wastes may fall

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into one or more of the F002-F005 listings. Additional detailed information on the classification of F-listed organic solvents is presented in the RCRA chapter of the SHEM Guidelines.

K-Listed Wastes
(40 CFR 261.32)

The K-list consists of wastes from specific hazardous waste generating processes and specific types of industries (e.g., K009 is distillation bottoms from the production of acetaldehyde from ethylene). Generally, EPA office facilities do not generate K-list wastes.

P- and U-Listed Wastes
(40 CFR 261.33)

P- and U-lists include commercial chemical products and manufacturing chemical intermediates that are hazardous wastes when discarded or intended to be discarded. This applies only to unused formulations of these chemicals, or situations where chemical products or intermediates are mixed with other solid wastes for the purpose of disposal (as discussed in the definition of hazardous waste, 40 CFR 261.3). U-listed chemicals may include selected hazardous materials that are being disposed of because they have exceeded their shelf life or are no longer needed to support facility operations. P-listed chemicals are acutely hazardous wastes when discarded and typically are not generated by EPA office facilities.

Unused chemical formulations in which a P- or U-listed chemical is the sole active ingredient also would be regulated as a P- or U-listed waste when discarded, regardless of concentration.

**CHARACTERISTIC
HAZARDOUS WASTE**
(40 CFR Part 261,
Subpart C)

In addition to the hazardous waste listings, a solid waste is a hazardous waste if it exhibits one or more characteristics of hazardous waste. These characteristics, along with their corresponding regulatory citation and waste code, follow.

<u>Regulatory Citation</u>	<u>Characteristic</u>	<u>Waste Code</u>
261.21	Ignitability	D001
261.22	Corrosivity	D002
261.23	Reactivity	D003
261.24	TC Toxicity	D004 - D043

Ignitability
(40 CFR 261.21)

A liquid waste, other than an aqueous solution containing less than 24 percent alcohol by volume, is considered ignitable if it has a flash point less than 60°C (140°F). The ignitability characteristic also

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*Petroleum distillates and
stoddard solvents often
exhibit the characteristics
of ignitability*

includes a small category of nonliquids which are capable of causing fire through friction, absorption of moisture, or spontaneous chemical change. In addition, compressed gases defined as flammable under DOT standards (e g , hydrogen, oxygen, acetylene, propane), as well as DOT defined oxidizers (e g , nitric acid, perchloric acid, chromic acid,hydrogen peroxide), are ignitable hazardous wastes and carry the D001 waste code

Corrosivity
(40 CFR 261 22)

*Excess chemicals such as
nitric or sulfuric acid
commonly display the
corrosivity characteristic*

A waste is considered corrosive if it is aqueous and has a pH of less than or equal to 2, or greater than or equal to 12 5, or if it is a liquid and corrodes steel at a rate of more than 6 35 mm (0 25 inches) per year The regulations only address the concept of corrosivity for liquid or aqueous wastes Waste sodium hydroxide pellets, for example, are not a hazardous wastes Generators, however, should be warned that some solids may be corrosive when dissolved in a liquid, and thus should be handled cautiously (even though they are not hazardous wastes)

Reactivity
(40 CFR 261 23)

EPA office facilities may generate limited quantities of reactive hazardous waste Generally, this characteristic is defined in subjective terms For example, if a waste normally is unstable or reacts violently with water, it is considered a reactive hazardous waste One quantitative criterion for determining reactivity is the generation of cyanide and sulfide gases when exposed to pH conditions between 2 and 12 5 Although the regulations do not specify a regulatory level of gas generation, EPA has published interim threshold levels of 250 mg HCN/kg waste and 500 mg H₂S /kg waste.

The most common examples of reactive wastes at EPA office facilities are spent concentrated sulfuric acid or cyanide-containing photographic bleaches

Toxicity
(40 CFR 261 24)

In March 1990, EPA promulgated the final Toxicity Characteristic (TC) rule (55 FR 11798) This rule established the Toxicity Characteristic Leaching Procedure (TCLP), which replaced the extraction procedure (EP) toxicity test as the method for determining the characteristic of toxicity The TCLP more accurately reproduces the leaching conditions of a landfill. Additionally, the technical procedures associated with the TCLP have allowed EPA to add 26 new organic constituents to the contaminant list, which previously included eight metals (D004-

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D011) and six pesticides (D012-D017). The TCLP procedure yields an extract of the waste. For each hazardous contaminant, EPA has established a threshold level in this waste extract above which the waste is considered hazardous

The TC final rule promulgated a number of parameter changes to the originally proposed contaminant list. The entire TC constituent list is found in Exhibit 3 on the next page.

The most common types of TC wastes potentially generated by EPA offices include: lead-containing paint residues (D008), excess paints (D005, D006, D008, D035), high-intensity discharge (HID) lamps (D009), and used oil filters from motor pools (D018). Guidance on the management of HID lamps from Green Lights and routine maintenance operations is contained in the joint AEREB and SHEMD memorandum (June 15, 1995) on waste fluorescent and HID bulb management.

MIXTURES
(40 CFR 261.3)

Mixtures of solid wastes and hazardous wastes can, in some cases, be regulated as hazardous wastes.

Characteristic Waste and Solid Waste

If a solid waste is mixed with a characteristic hazardous waste through normal operations, and the mixture exhibits any hazardous waste characteristic, the entire volume would be considered a hazardous waste.

Listed Waste and Solid Waste

If a solid waste or characteristic hazardous waste is mixed with a listed hazardous waste, the mixture would require management as the listed hazardous waste. For example, if an F-listed solvent is mixed with an aqueous-based solvent, the entire mixture would be regulated as a listed hazardous waste.

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Exhibit 3
TC Regulatory Levels

Contaminants	CASNO	HWNO *	Regulatory level (mg/l)
Arsenic	7440-38-2	D004	5 0
Barium	7440-39-3	D005	100
Benzene	71-43-2	D018	0 5
Cadmium	7440-43-9	D006	1 0
Carbon tetrachloride	56-23-5	D019	0 5
Chlordane	57-74-9	D020	0 03
Chlorobenzene	108-90-7	D021	100
Chloroform	67-66-3	D022	6 0
Chromium	7440-47-3	D007	5 0
o-Cresol	95-48-7	D023	200
m-Cresol	108-39-4	D024	200
p-Cresol	106-44-5	D025	200
Cresol		D026	200
2,4 D	94-75-7	D016	10 0
1,4 - Dichlorobenzene	106-46-7	D027	7 5
1,2 - Dichloroethane	107-06-2	D028	0 5
1,1 - Dichloroethylene	75-35-4	D029	0 7
2,4 Dinitrotoluene	121-14-2	D030	0 13
Endrin	72-20-8	D012	0 02
Heptachlor (and hydroxide)	76-44-2	D031	0 008
Hexachlorobenzene	118-74-1	D032	0 13
Hexachlorobutadiene	87-68-3	D033	0 5
Hexachlorethane	67-72-1	D034	3 0
Lead	7439-92-1	D008	5 0
Lindane	58-89-9	D013	0 4
Mercury	7439-97-6	D009	0 2
Methoxychlor	72-43-5	D014	10 0
Methyl ethyl ketone	78-93-3	D035	200
Nitrobenzene	96-95-3	D036	2 0
Pentachlorophenol	87-86-5	D037	400
Pyridine	110-86-1	D038	5 0**
Selenium	7782-49-2	D010	1 0
Silver	7440-22-4	D011	5 0
Tetrachloroethylene	127-18-4	D039	0 7
Toxaphene	8001-35-2	D015	0 5
Trichloroethylene	79-01-6	D040	0 5
2,4,5 - Trichlorophenol	95-95-4	D041	400
2,4,6 - Trichlorophenol	88-06-2	D042	2 0
2,4,5 - TP (Silvex)	93-72-1	D017	1 0
Vinyl Chloride	75-01-4	D043	0 2

* Hazardous waste number

** Wastestreams from nutrient analyses should be evaluated against the TC where pyridine is used as a reagent for possible classification as D038

STATE REGULATED
HAZARDOUS WASTE

Although some states adopt the federal standards verbatim, many exercise their right to regulate hazardous waste more stringently by

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applying hazardous wastes controls to additional wastestreams and adopting more restrictive standards.

Some of the most common wastestreams subject to regulation at the state level are those protected by RCRA exclusions that states have chosen not to adopt. For example, wastes containing polychlorinated biphenyls (PCBs) are not specifically regulated under the federal RCRA program, and some are even subject to an exclusion from certain characteristics of hazardous waste. The RCRA chapter of the SHEM Guidelines identifies more stringent state requirements.

Guidance: EPA facilities should identify and comply with any additional hazardous waste listings, characteristics, or management standards imposed by state or local regulations.

GENERATOR
REGULATIONS
(40 CFR Part 262)

The RCRA regulations found in 40 CFR Part 262 contain the requirements applicable to generators of hazardous waste. The summary table at the end of this section lists the requirements for hazardous waste generators from Part 262.

HAZARDOUS WASTE
DETERMINATION
(40 CFR 262.11)

The first step in determining which, if any, generator regulations are applicable to a facility is to determine if solid wastes generated at the facility are hazardous wastes. This determination may be based either on testing of the waste or by applying knowledge of the materials or processes generating the waste. The hazardous waste determination hierarchy in Section 262.11 requires that a generator must first determine if the solid waste is excluded from RCRA regulation under Section 261.4. Second, if the waste is not excluded, the generator must determine if the waste meets one of the F-, K-, P-, or U-listings. Third, for the purposes of compliance with the land disposal restrictions (LDRs), or if the waste is not listed, the generator must identify all relevant hazardous waste characteristics (i.e., ignitability, corrosivity, reactivity, and toxicity) in Subpart C of Part 261. The final determination step ensures that all applicable waste codes, both listed and characteristic, are assigned to afford comprehensive treatment of all hazards associated with a waste as mandated under the Hazardous and Solid Waste Amendments (HSWA) of 1984.

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Guidance: To afford consistent waste classification and enhance the availability of pertinent information for DOT description, as well as employee health and safety, EPA facilities should include all relevant hazardous waste codes (listed and characteristic) when performing hazardous waste determinations.

GENERATOR CLASSIFICATION

EPA facilities must count the quantity of hazardous waste generated each month to determine their generator classification. The regulations stating which hazardous wastes are to be counted in a generator's monthly quantity determination are found in Sections 261.5(c) and (d). While the regulations for counting hazardous waste appear in the section of the regulations applicable to conditionally exempt small quantity generators, all generators must comply with the counting requirements found in Sections 261.5(c) and (d), not just conditionally exempt generators. Table 3 provides a summary of the quantity thresholds for generator classifications and identifies the applicable regulations. The majority of EPA office facilities normally are regulated under the minimal provisions for conditionally exempt small quantity generators (CESQG).

**Table 3
Hazardous Waste Generator Classifications**

Generator	Quantity	Applicable Regulations
Large Quantity Generator (LQG)	≥1000 kg/month hazardous waste (approx. ≥2200 lbs.) >1 kg/month acute waste	40 CFR Part 262
Small Quantity Generator (SQG)	Between 100-1000 kg/month hazardous waste (approx. 220-2200 lbs.)	40 CFR Part 262, Subparts A, B, C (Section 262.34(d) is specific to SQGs), E, and portions of Subpart D as specified in Section 262.44
Conditionally Exempt Small Quantity Generator (CESQG)	≤100 kg/month hazardous waste ≤1 kg acute waste ≤100 kg acute residue	40 CFR 261.5

CONDITIONALLY EXEMPT SMALL

A conditionally exempt small quantity generator may generate up to 100 kg of hazardous waste or up to 1 kg of acutely hazardous waste in a calendar month and be exempt from most RCRA.

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QUANTITY
GENERATORS
(40 CFR 261.5)

generator requirements. There is no on-site accumulation time limit unless imposed by state law. Nonetheless, to remain conditionally exempt, these generators should not accumulate in excess of 1,000 kg of nonacute hazardous waste, 1 kg of acute hazardous waste or 100 kg of spill residue from acute hazardous waste. If the 1,000 kg limit is exceeded, the entire waste volume immediately becomes subject to all requirements for facilities that generate between 100 and 1,000 kg of hazardous waste per month (refer to 40 CFR 262.34). If the 1 kg limit for acute waste is exceeded, that acute waste is subject to large quantity generator standards. As long as generators remain conditionally exempt, they are not required to obtain an EPA identification number unless stipulated by the state hazardous waste agency.

Occasionally, CESQGs may generate in excess of 100 kg of hazardous waste in a single month. If this occurs, all hazardous waste generated that month would be subject to the 100-1000 kg per month generator requirements. Therefore, it would be prudent to manage the waste volumes subject to different regulatory schemes separately.

Guidance: The CESQG bears the burden of proof of demonstrating that the facility is exempt from the regulations. It is therefore essential that a log be maintained to quantify waste generation volumes each month and that a waste tracking system be implemented to ensure the waste is being sent to and received by an approved facility.

Waste Disposal
(40 CFR 261.5(f)
and (g))

To retain exempt status, CESQGs must ensure that their hazardous waste is disposed of at a permitted or interim status RCRA treatment storage or disposal facility (TSDF), a facility that is licensed by a state to manage municipal or industrial solid waste, or a recycling/reclamation facility that legitimately recycles the waste.

Guidance: All EPA facilities, regardless of generator status, must ensure that only federal and state licensed or permitted transporters are used for the transportation of hazardous wastes on public highways.

EPA IDENTIFICATION
NUMBERS
(40 CFR 262.12)

Each generator of hazardous waste, except a CESQG, must obtain an EPA identification number (EPA ID No.). Generators may obtain an EPA ID No. by completing EPA Form 8700-12, which

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can be obtained from the state hazardous waste management agency or the appropriate EPA Regional Office.

The EPA ID No. is site-specific; if a facility relocates, it will need to apply for a new number. Additionally, if the previously occupied property is taken over by a new owner, the facility should be sure its name is no longer associated with the past EPA ID No. This can be accomplished by the new owner of the property filing a subsequent form 8700-12 identifying the change in ownership. Because the EPA ID No. is site-specific, an EPA facility with multiple noncontiguous generation sites must have a different EPA ID No. for each site.

Guidance: While not required, it is recommended that all EPA generators obtain an EPA ID No. to safeguard CESQG in case they, on occasion, slip into regulated generator status. Further, most transporters will not accept hazardous waste from a facility that does not have an EPA ID No. To address this problem, some states will issue a temporary EPA ID No. for CESQG waste shipments. In addition, EPA facilities should ensure, where possible, that contractors and landlords who generate hazardous waste have a separate EPA ID No. and that contracts specify hazardous waste management responsibilities for waste generated by contractors or landlords.

**HAZARDOUS WASTE
MANIFESTS**
(40 CFR 262.20-23)

Manifests are used to track hazardous waste from the point of generation to the point of ultimate disposal. Generators should acquire manifests from the state to which the waste is being shipped (consignment state). If this is not possible, they may acquire manifests from their state hazardous waste officials. If manifests are not available from either source, they may obtain copies of the manifests from commercial printers. The facility must sign a copy of the original manifest that will accompany the waste to the treatment, storage and disposal facility. The facility must receive a signed copy of the manifest from the TSD facility confirming that the waste reached its ultimate destination. If a signed copy of the manifest is not received from the disposal facility within 45 days for large quantity generators or 60 days for small quantity generators, the facility must follow the exception reporting procedures in Section 262.42. Although the manifest is typically completed by the hazardous waste transporter, it is important to review this

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paperwork for accuracy prior to signing the manifest. Common manifest errors include improper waste characterization, inaccurate DOT classification, and missing information.

Facilities that generate between 100 and 1,000 kg of hazardous waste a month may be exempt from manifest requirements if the generator recycles the waste pursuant to a contractual agreement with a recycler. The agreement must stipulate the waste types and recycling frequency, and the vehicle used to transport the waste and return the regenerated product is owned by the reclaimer. This is referred to by many as the "Safety Kleen" exemption, and is commonly employed to manage spent solvents.

ACCUMULATION STANDARDS
(40 CFR 262.34)

Accumulation standards for generators include on-site accumulation time limits, training, preparedness and prevention requirements, and contingency planning. The differences in the requirements for LQG and SQG generators of hazardous waste are explained in each subsection. LQGs may accumulate hazardous waste on-site for up to 90 days, while facilities generating 100-1,000 kg per month may accumulate waste on-site for 180 days, or 270 days if the waste must be transported more than 200 miles. The accumulation start date is considered to be the date waste is first placed in the accumulation drum, tank or other container. The time period limitation does not apply while the waste is in a satellite accumulation area. Table 4 provides the accumulation standards for LQGs, SQGs, and CESQGs.

**Table 4
Generator Classification Determines Length of Accumulation Time**

Generator Category	On-Site Accumulation Time	On-Site Quantity Limit
Large Quantity Generators	≤ 90 days on-site	No Limit
Small Quantity Generators	≤ 180 days on-site or ≤ 270 days if shipped > 200 miles	6,000 kg
Conditionally Exempt Small Quantity Generators	No time limit	1,000 kg nonacute waste 1 kg acute waste 100 kg acute spill residue

Waste Accumulation Units

Hazardous waste containers are the most common waste accumulation units at EPA facilities. Small and large quantity generators accumulating hazardous waste in containers are subject

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to the container management standards for TSDFs in Part 265, Subpart I Containers and tanks accumulating hazardous waste must be labeled "Hazardous Waste" and marked with the date that waste initially accumulates in the container. These standards are discussed in more detail in the standards for TSDFs section. Two other waste management units may be used by generators for accumulating hazardous waste: (1) tanks that meet the Part 265, Subpart J standards, and (2) containment buildings that meet the Part 265, Subpart DD standards.

Accumulation at the Point
of Generation
(40 CFR 262.34(c)(1))

Generators may accumulate up to 55 gallons of hazardous waste, or up to one quart of acutely hazardous waste, at or near the point of generation provided they comply with marking requirements and container management standards. Accumulations of waste not exceeding the 55-gallon limit may be stored indefinitely at the point of generation unless otherwise specified by state law. Once the 55-gallon limit is exceeded, the generator has three days to transfer the excess waste to a hazardous waste accumulation area, at which time the 90- or 180-day accumulation period begins, depending on the generator's status. For satellite accumulation points at a laboratory, at or near the point of generation generally means within the specific office facility area (e.g., print shop) where the waste is generated. Once waste is moved from that room, it must be directly transferred to a designated hazardous waste accumulation storage area or a permitted or interim status storage area. Typical satellite accumulation points in office complexes include effluents from photographic processing units or maintenance shop processes (e.g., parts cleaning).

Generator Training
Requirements
(40 CFR 262.34(a)(4))

Facility personnel conducting hazardous waste management activities must receive training on emergency response procedures and proper waste handling procedures that meet the personnel training requirements for TSDFs in Section 265.16. Small quantity generators are required to meet less stringent personnel training requirements in Section 262.34(d)(5)(iii). CESQG facility personnel are not required to meet personnel training requirements under RCRA, but it is recommended.

Preparedness and
Prevention
(40 CFR 262.34(a)(4))

EPA facilities generating hazardous waste must be prepared to respond to fire, explosions, and releases of hazardous waste at the facility. Large and small quantity generators must meet the preparedness and prevention requirements for TSDFs in Part 265,

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Subpart C The RCRA Subtitle C chapter of the SHEM Guidelines and the EPA *Facility Safety, Health and Environmental Management Manual* provide additional guidance on design considerations for preparedness and prevention.

Contingency Plans
(40 CFR 262 34(a)(4))

In the event of a fire or explosion, the facility must have a contingency plan designed for immediate response to minimize hazards to human health and the environment Large quantity generators must meet the contingency plan requirements for TSDFs in Part 265, Subpart D RCRA does not require small quantity generators to develop a formal contingency plan, but it is recommended. Facilities that have existing SPCC plans that meet, the requirements of 40 CFR Part 112 may amend the plans to incorporate hazardous waste management provisions in lieu of developing a separate contingency plan

Recordkeeping and Reporting
(40 CFR Part 262, Subpart D)

Sound recordkeeping is a critical component in demonstrating compliance with the RCRA regulations A complete set of records should include waste analysis and testing data used to identify and characterize hazardous waste, a copy of the 8700-12 that was submitted to the state or EPA Region, copies of hazardous waste manifests (both originals and signed copies with a date received by the facility), biennial hazardous waste reports (some states require annual reports), and land disposal restriction notifications and certifications

A biennial report that details hazardous waste management activities at large quantity generator facilities must be submitted to the appropriate state environmental agency or EPA Regional Office This report should include information on the quantity of hazardous waste generated during each even-numbered year and the amount of hazardous waste shipped off-site Information also must be included on waste minimization activities that have been undertaken during the year to reduce the volume and toxicity of hazardous waste generated at the facility Generators should note that many states require this information on an annual basis

HAZARDOUS WASTE MINIMIZATION

As discussed above, large quantity generators must document waste minimization activities conducted at the facility throughout the year in their biennial report. Also, generators must sign each hazardous waste manifest that includes a certification for LQGs that

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they have a waste minimization program in place and a certification for SQGs that they have made a good faith effort to reduce the volume or toxicity of hazardous waste generated at the facility

Waste minimization is defined as any environmentally sound practice that reduces the toxicity or volume of waste that is generated. Additional information on waste minimization is provided in the pollution prevention section of this chapter.

**Table 5
RCRA Generator Summary**

Requirements for Hazardous Waste Generators			
	CESQG	SQG	LQG
Quantity Limits	≤ 100 kg/month ≤ 1 kg acute/month 261 5(a) and (e)	between 100-1000 kg/month <i>Part 262 and 262 34(d)</i>	≥ 1000 kg/month or > 1 > kg or acute hazardous waste/month <i>Part 262 and Section 261 5(3)</i>
EPA ID Number	Not required 261 5	Required 262 12	Required 262 12
On-Site Accumulation Quantity	≤ 1000 kg ≤ 1 kg acute ≤ 100 kg spill reside from acute waste 261 5(f)(2) and (g)(2)	≤ 6000 kg 262 34(d)(1)	No limit
Accumulation Time Limits	None 261 5	≤ 180 days or ≤270 days if shipped over 200 miles 262 34(d) and (3)	≤ 90 days 262 34(a)
Storage Requirements	None 261 5	Basic requirements with most technical standards for tanks or containers 262 34(d)(2) and (3)	Full compliance for management waste in tanks, containers, or containment buildings 262 34(a)
Off-site Management of Waste	Hazardous waste, state approved solid waste, or recycling facility 261 5(f)(3) and (g)(3)	RCRA permitted/interim status facility 262 20(b)	RCRA permitted/interim status facility 262 20(b)
Manifest	Not required 261 5	Required 262 20	Required 262 20
Biennial Report	Not required 261 5	Not required 262 44	Required 262 41
Personnel Training	Not required 261 5	Basic training required 262 34(d)(5)(iii)	Required 262 34(a)(4)
Contingency Plan	Not required 261 5	Basic plan required 262 34(d)(5)(i)	Full plan required 262 34(a)(4)
Emergency Procedures	Not required 261 5	Required 262 34(d)(5)(iv)	Required 262 34(a)(4)
DOT Transport Requirements	Yes (as required by DOT)	Yes 262 30-262 33	Yes 262 30-262 33

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Section 16-09
Toxic Substances Control

INTRODUCTION

The Toxic Substances Control Act (TSCA) is unique among environmental statutes in that it provides regulatory controls throughout the full life cycle of selected toxic substances. Section 6(e) of TSCA provides the authorities for EPA to regulate certain substances, such as polychlorinated biphenyls and asbestos that are defined as posing special risks to human health and the environment. This section of the Office Compliance Issues chapter addresses substances regulated under TSCA authorities.

PCB MANAGEMENT
(40 CFR Part 761)

The PCB management regulations in 40 CFR Part 761 establish standards for PCB use, storage, disposal, spill cleanup, and recordkeeping. Central to understanding these requirements is a working knowledge of PCB regulatory terminology.

DEFINITIONS

The following are definitions for the unique terms used in this section.

PCB Article

Any manufactured article, other than a PCB container, that contains PCBs and whose surface has been in direct contact with PCBs. This term includes capacitors, transformers, electric motors, pumps, and pipes.

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.

PCB Authorizations

Provisions of 40 CFR 761.30 that allow certain uses of PCBs.

PCB Container

Any package, can, bottle, bag, barrel, drum, tank, or other device that contains PCBs or PCB articles and whose surface(s) has been in direct contact with PCBs.

PCB Equipment

Any manufactured item, other than a PCB container or a PCB article container, that contains a PCB article or other PCB equipment. This term includes microwave ovens, electronic equipment, and fluorescent lights ballasts and fixtures.

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PCB Large Capacitor	A device for accumulating and holding a charge of electricity and consisting of conducting surfaces separated by 1.36 kg (3 lb) or more dielectric fluid.
PCB Small Capacitor	A device for accumulating and holding a charge of electricity and consisting of conducting surfaces separated by less than 1.36 kg (3 lb) of dielectric fluid.
PCB Transformer	Any transformer that contains 500 ppm PCBs or greater
<u>GENERAL APPLICABILITY (Subpart A)</u>	Part 761 applies to all persons who manufacture, process, distribute in commerce, use or dispose of PCBs and PCB items
<u>50 ppm Limit</u>	Unless otherwise indicated, the applicability of the PCB regulations addressed in this section pertain only to PCBs or PCB items in concentrations equal to or greater than 50 ppm
<u>Operations</u>	<p>EPA facilities are not involved in manufacturing or processing PCBs. EPA office facilities may use electrical equipment containing PCBs. Examples of TSCA-regulated operations potentially applicable to EPA office facilities include:</p> <p><u>Use</u> - Operating and servicing PCB transformers, capacitors, and other PCB electrical equipment. This also includes performing Green Lights or other preventive maintenance activities that involve the removal of fluorescent light ballasts.</p> <p><u>Disposal</u> - Facilities designating PCB items, PCB liquids or PCB solid waste (soils or rags) for disposal. This includes samples and laboratory waste from PCB analysis that are no longer needed for enforcement purposes and that will not be returned to the sample collector</p>
<u>Dilution</u>	TSCA requirements for marking and disposal become more stringent with an increase in PCB concentration. EPA facilities must be aware that the applicability section of TSCA regulations (761.1(b)) clearly states that "No provision specifying a PCB concentration may be avoided as a result of any dilution, unless otherwise specifically provided "

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EPA office facilities generally should manage all PCB waste according to the original PCB concentration unless otherwise directed through Agency policy statements. To fulfill this requirement, facilities should consider tracking PCB concentrations from the time PCB materials are stored and managed. Labeling waste containers only as "PCBs" does not convey whether the waste is ≥ 50 ppm PCBs or began at such a concentration. Uncertainty could lead to either increased disposal costs as wastes are managed as regulated (conservatively) or improper disposal of regulated wastes that began at PCB concentrations ≥ 50 ppm.

AUTHORIZATIONS
(40 CFR 761.30)

Generally, the TSCA regulations prohibit the use of PCBs and PCB items in any manner other than totally enclosed, however, TSCA PCB regulations authorize the following uses of PCBs and PCB items that are not totally enclosed:

PCB Transformers

Registration - All PCB transformers must be registered with local fire response personnel (761.30(a)(1)(vi)). The registration must provide the

- Location of the transformer (building address and specific room or outdoor location)
- Principal constituent of the dielectric fluid
- Name and telephone number of person to contact at the facility in the event of a fire

Guidance: *PCB transformer registration information should be sent by registered mail to verify compliance with this requirement (the SHEMP Manager should maintain this verification on file at the facility).*

Quarterly Inspection - Facility personnel must conduct a quarterly visual inspection of each transformer in use or stored for reuse. This can take place any time during January-March, April-June, July-September, October-December, as long as there is a minimum of 30 days between inspections (761.30(a)(1)(ix)).

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The following inspection and maintenance information is required to be maintained at a facility for three years after disposing of the transformer (761.30(a)(1)(xii)):

- Location
- Date of inspection
- Person performing inspection
- Location of any leaks
- Amount of fluid released from any leak
- Date of any cleanup or maintenance
- Description of cleanup or maintenance

Policy: Facilities must prepare a log to record the above required inspection information. (See Exhibit 4 on the following page.)

Use Conditions - Facilities are prohibited from using or storing PCB transformers in a manner that poses an exposure risk to food or feed.

Table 6 outlines the requirements for operating a PCB transformer located in or near a commercial building (761.30 (ii-v))

**Table 6
PCB Transformer Requirements**

Requirements for PCB Transformers Located in or Near Commercial Buildings	Prohibited after Oct. 1, 1990	Electrical protection for high current faults by Oct 1, 1990	Electrical protection for low current faults by Oct 1, 1990	Registered with building owners as of Dec 1, 1985
Network with Higher Secondary Voltage	X	N/A	N/A	N/A
Network with Lower Secondary Voltage		X		X
Radial with Higher Secondary Voltage		X	X	X
Radial with Lower Secondary Voltage		X		X

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Exhibit 4
PCB Transformer Inspection Log

Facility Address 		Transformer Location: Building Name _____ Room # _____ Outdoor Subst. _____		
PCB Transformer/Storage Facility Inspection and Maintenance Log				
Date and Inspector's Initials	Inspection or Maintenance	Inspection Results (Provide volume and location or leaks)	Describe Remedial Action	Describe Maintenance Action

PCB Capacitors After October 1, 1988, PCB large capacitors rated at high and low voltages must be used only within a restricted access electrical

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substation or in a contained and restricted access indoor installation that also provides containment (761.30(l)(1)(ii)).

**MARKING
REQUIREMENTS**
(40 CFR 761.40)

Under TSCA, certain structures, PCB equipment, and PCB containers require a PCB mark to be placed on them in a prominent position. The marking requirement identifies PCBs or PCB equipment to protect emergency response personnel. Excessive marking of items, such as laboratory doors, gas chromatographs, or refrigerators is inappropriate and defeats the intent of the marking provisions. Facilities are required to place marks on PCB transformers, PCB large high-voltage capacitors, PCB large low-voltage capacitors when taken out of service, PCB containers, and PCB storage areas as described below.

PCB Transformers

Facilities operating a PCB transformer (dielectric fluid containing ≥ 500 ppm PCBs) are required to place a large PCB mark on the transformer. PCB contaminated transformers (dielectric fluid with 50 to 500 ppm PCBs) do not require the official PCB mark in 40 CFR 761.45.

Means of Access

Vault doors, machinery room doors, fences or other means of accessing PCB transformers must be labeled with a PCB mark.

**PCB Large High- and
Low-Voltage Capacitors**

Facilities are required to label all large PCB capacitors with a large PCB mark. If the capacitor is protected behind a fence, or is installed on a power line pole or other structure, this requirement may be met by marking the fence, structure or pole. The facility must keep a record in this situation to identify the capacitor.

Because of recent Green Lights projects, the requirements for the disposal of fluorescent light ballasts that qualify as small capacitors may apply. Under the PCB regulations, PCB small capacitors, if intact, may be disposed of in a non-TSCA management facility. In the interest of environmental protection, EPA recommends that these types of equipment be managed in a TSCA-approved facility with a preference toward ballast recycling and recovery operations. Detailed guidance on the management of PCB light ballasts can be obtained from the joint AEREB and SHEMD memorandum (June 15, 1995) ballast and HID lamp management.

Storage Areas

Each storage area used to store PCBs and PCB items for disposal

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must be designated with a PCB mark

PCB Containers

All containers holding PCBs in concentrations ≥ 50 ppm, whether in storage for disposal or while being collected in the laboratory, require the large PCB mark

If in any of the above situations a large PCB mark is required, but there is inadequate space to accommodate the mark, a small mark may be used in its place.

PCB DISPOSAL
(761 60)

Exhibit 5 on the next page outlines the PCB disposal options under TSCA, taking into account land disposal restrictions under RCRA

STORAGE FOR
DISPOSAL
(40 CFR 761 65)

PCBs or PCB items designated for disposal must immediately be placed in an appropriate DOT specification container and transferred to proper storage to await disposal. The date on which the PCBs or PCB items were taken out of service must be marked on the PCB article or container. The facility must remove the article or container and properly ensure its disposal within one year from the date it was placed into storage for disposal. For example, a PCB transformer placed into storage for disposal on June 1 would have to be incinerated by June 1 of the following year. Although the PCB regulations provide a total of one year to dispose of PCB wastes, the generator of PCB waste, according to TSCA Compliance Policy 6-PCB-6, must allow the disposal facility 90 days in which to dispose of the waste before the one-year deadline occurs.

Acceptable Containers

While in storage for disposal, or 30-day temporary storage, PCBs and PCB items must be placed in proper containers. DOT-approved containers for the management of PCB wastes are identified in 49 CFR 173.202 and 204. A detailed list of DOT-specification containers that may be used to store PCB wastes prior to disposal is provided in Exhibit 6 on the page following Exhibit 5.

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Exhibit 5
PCB Disposal Options

PCB DISPOSAL OPTIONS FOR EPA OFFICES					
PCB Category with CFR section	TSCA Incinerator (761 70)	High Efficiency Boiler (761 60(a))	Chemical Waste Landfill (761 75)	Alternative method (761 60(e))	Solid Waste Disposal
PCB Transformers -> 500 ppm					
1 Undrained (761 60 (b)(1)(i)(A))	X				
2 Drained & solvent flushed			X		
PCB Contaminated Transformers and other contaminated electrical equip -50-500 ppm					
1 Drained (761 60 (b)(5)(i)(B))					X
PCB Large Capacitors -> 3 lbs dielectnc fluid at >500 ppm (761 60(b)(2)(ii)(A))	X				
PCB Small Capacitors -<3 lbs dielectnc fld (761 60 (b)(2)(ii))					X
Mineral oil dielectnc fluid from PCB contaminated electric equipment -50-500 ppm	X	X	X	X	
Liquids other than mineral oil with 50-500 ppm (761 50(a)(3))					
1 Flash point <60° C (ignitable hazardous waste)	X			X	
2 Flash point >60° C (ignitable hazardous waste)	X			X	
3 Flash point >60° C (Does not meet hazardous waste definition)	X	X	X	X	
Non liquid PCBs - soil, rags or other debns >50 ppm (761 60)					
1 Does not meet definition of hazardous waste	X		X		
2 <1000 ppm PCBs and meets the definition of hazardous waste	X		X		
3 >1000 ppm PCBs and meets the definition of hazardous waste	X				
All other PCBs with > 50 ppm (761.60(a)(1))	X				

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Exhibit 6
Department of Transportation Specification Containers
for PCB Waste Storage

Non-Bulk Packaging for PCB Liquids	Non-Bulk Packaging for PCB Solids
Steel drum: 1A1 or 1A2 Aluminum drum: 1B1 or 1B2 Metal drum other than steel or aluminum: 1N1 or 1N2 Plastic drum: 1H1 or 1H2 Fiber drum: 1G (with liner) Wooden barrel: 2C1 Steel jerrican: 3A1 or 3A2 Plastic jerrican: 3H1 or 3H2 Plastic receptacle in steel, aluminum, fiber or plastic drum: 6HA1, 6HB1, 6HG1 or 6HH Plastic receptacle in steel, aluminum, wooden, plywood or fiberboard box: 6HA2, 6HB2, 6HC, 6HD2 or 6HG2	Steel drum: 1A1 or 1A2 Aluminum drum: 1B1 or 1B2 Plywood drum: 1D Plastic drum: 1H1 or 1H2 Fiber drum: 1G Metal drum other than steel or aluminum: 1N1 or 1N2 Wooden barrel: 2C1 or 2C2 Steel jerrican: 3A1 or 3A2 Plastic jerrican: 3H1 or 3H2 Steel box: 4A1 Steel box with liner: 4A2 Aluminum box: 4B1 Aluminum box with liner: 4B2 Natural wood box: 4C1 Natural wood box, sift proof: 4C2 Plywood box: 4D Reconstituted wood box: 4F Fiberboard box: 4G Expanded plastic box: 4H1 Solid plastic box: 4H2 Plastic receptacle in steel, aluminum, fiber or plastic drum: 6HA1, 6HB1, 6HG1 or 6HH Plastic receptacle in steel, aluminum, wooden, plywood or fiberboard box: 6HA2, 6HB2, 6HC, 6HD2 or 6HG2

Storage Facility

A facility used to store PCBs and PCB items designated for disposal must meet the following requirements

- Adequate roof and walls to prevent rain water from reaching the stored PCBs and PCB items
- Adequate floor with continuous curbing at least six inches high. The containment volume must be equivalent to twice the internal volume of the largest PCB article or container, or 25 percent of the total internal volume of all PCB articles or containers in storage, whichever is greater

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- No drain valves, floor drains, expansion joints or any other openings that would allow liquids to flow from the curbed area
- Floors and curbing constructed of smooth and impervious materials, such as Portland cement
- Be located above the 100-year floodplain (This information can be obtained through local county surveyor offices)

Temporary Storage For Disposal
(40 CFR 761 65(c))

The regulations allow certain PCBs and PCB items to be stored for up to 30 days in a temporary storage area that meets fewer requirements than those for storage for disposal. The following items may be stored temporarily as long as each item is marked with the date it was removed from service

- Non-leaking PCB articles and equipment
- Leaking PCB articles and equipment, provided that the items are placed in a non-leaking container with sufficient absorbent material to absorb any PCB liquid
- PCB containers holding nonliquid PCBs in the form of soils, rags, and so forth
- PCB containers holding liquid PCBs at a concentration from 50 to 500 ppm, provided an SPCC plan has been prepared for the area in accordance with 40 CFR Part 112 if any containers exceed 110 gallons
- Non-leaking PCB large high-voltage capacitors and PCB-contaminated electrical equipment that have not been drained when on pallets next to a proper storage facility. This only is allowed when the unfilled storage space within the facility is equivalent to 10 percent of the total internal volume of all of the equipment stored outside of the facility

RECORDKEEPING
(40 CFR 761 180)

Facilities must prepare and maintain on file a written annual document log covering PCB use, storage, and disposal at the facility during the calendar year (January-December), if during the year they used or stored at one time:

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- A PCB transformer, or
- 50 or more large capacitors, or
- 45 kilograms (99 4 lb) of PCBs in PCB containers

If facilities meet any of the previous criteria for transformers, capacitors, or containers with PCBs, they must develop and maintain records on the disposition of all PCBs and PCB items at the facility. These records are used to compile the annual document log that must be completed by July 1 of the following year. There is no requirement for the submission of an annual document log to any TSCA representative; TSCA requires that facilities maintain the document on file at the facility. The records and documents contributing to the annual document log must be maintained for a period of three years after the facility stops using or storing PCB items in the regulated quantities.

The annual records include

- All signed manifests
- All certificates of disposal

Information required for the annual document log varies depending on what types of PCBs are on-site at the end of the calendar year or were shipped off-site for disposal during the calendar year. Exhibit 13-03 from the TSCA chapter provides a data collection construct that can be used for the PCB Annual Document Log.

Guidance: EPA facility representatives are encouraged to create a central file for all PCB records. Even though certain provisions in the regulations allow facilities to dispose of records after a period of time, SHEMD is recommending that EPA facilities retain these records indefinitely. Besides records for the annual document log, the PCB regulations necessitate the development of the following types of documentation to demonstrate compliance with PCB management standards:

- *Records of quarterly visual inspection and related maintenance information of PCB transformers (refer to 761.30)*
- *Records of PCB transformer registration with local fire response personnel (refer to 761.30)*

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- *Records of monthly visual inspection of the PCB storage for disposal area (refer to 761.65)*
- *Records of weekly visual inspections of the temporary or interim PCB storage for disposal area (refer to 761.65).*

**EPA Identification
Numbers**
(40 CFR 761 202)

Upon receipt of the notification form (refer to 761 205), EPA will assign a unique PCB identification number to each facility. Facilities that already possess a RCRA identification number will receive that number as their PCB identification number.

**Notification of Waste
Activity**
(40 CFR 761 205)

Facilities generating (and storing in long-term storage for disposal areas), transporting, or disposing of PCB waste must notify EPA of these activities using EPA Form 7710-53. Facilities engaged in PCB waste handling prior to February 5, 1990, were required to notify EPA by April 4, 1990. Facilities beginning such PCB handling after February 5, 1990, must notify EPA prior to engaging in PCB waste handling.

Manifests
(40 CFR 761 207)

Facilities that generate and ship PCB waste off-site must complete a uniform hazardous waste manifest for that material using EPA Form 8700-22. Generators should acquire manifests from the state to which the waste is being shipped (consignment state). If this is not possible, they may acquire manifests from their state hazardous waste officials. If manifests are not available from either source, they may obtain copies of the manifests from commercial printers.

Retention of Manifests
(40 CFR 761 209)

Facilities are required to maintain signed manifests for three years from the date the PCB waste was accepted by the initial transporter.

Guidance: SHEMP Managers should consider retaining PCB waste manifests and related Certificates of Disposal (CDs) for longer than the three-year mandatory time period to document compliance with PCB management standards. Additionally, an extended retention period is useful for documenting the quantity and type of PCB wastes that are sent for off-site treatment and disposal in the event that a potentially responsible party search is conducted under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Accordingly, EPA facilities should retain PCB manifests and CDs for five years, at a minimum.

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Exception Reports and
Certificates of Disposal
(40 CFR 761.215 and
218)

As with hazardous waste, generators are required to contact the transporter and/or the disposal facility if a signed manifest is not returned within 35 days. After 45 days, the generator is required to submit an exception report to the EPA Regional Administrator. The report must include a copy of the manifest and a letter indicating efforts taken to secure a signed copy.

For any regulated PCB waste, disposal facilities must return a CD within 30 days of disposal indicating how and when the waste was disposed. For PCBs sent for disposal within nine months of being taken out of service, the CD must be received within 13 months after the PCBs were taken out of service. If the CD is not received within 13 months, or if it indicates that the waste was disposed beyond one year from the date the waste was removed from service, a one-year exception report must be filed. This report must include a copy of the manifest, the date the PCBs were removed from service, the date they were transferred off-site, the identities of all parties handling the PCBs after leaving the facility, and any information as to why disposal did not occur within the allotted time.

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Section 16-10
Pesticides Management

INTRODUCTION

This section provides policy, guidance, information, and procedures to EPA office facilities for complying with federal, state, and local regulations on pesticides management

PESTICIDE
REGISTRATION AND
CLASSIFICATION
PROCEDURES

Pesticide products containing the active ingredients listed in the SHEM Guidelines, Chapter 8, Federal Insecticide, Fungicide, and Rodenticide Act (FIPRA), Exhibit 1, have been classified for restricted use and are limited to use by or under the direct supervision of a certified applicator

Guidance: EPA contract personnel should ensure that all pesticide service contracts specify the appropriate training and certification requirements for the pesticide applicators.

Certified applicators supporting EPA office facilities most likely fall into the category of industrial, institutional, structural, and health related pest control. Training for these applicators includes:

- *Practical knowledge of a wide variety of pests, including their life cycles, types of formulations appropriate for their control and methods of application that avoid contamination of food, damage and contamination of habitat, and exposure of people and pets.*
- *Practical knowledge of specific factors which may lead to a hazardous condition, including continuous exposure in the various situations encountered in this category.*
- *Practical knowledge of the environmental conditions related to this particular activity.*

EPA contract personnel also should require that certified applicators provide a list of all pesticides to be used at the EPA office, the corresponding material safety data sheet (MSDS) for each pesticide, and a current list of references.

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DISPOSAL AND
STORAGE OF
PESTICIDES

This section provides policy, guidance, information, and procedures for complying with federal, state, and local regulations on the proper disposal and storage of pesticides and containers

Procedures Not
Recommended

EPA office facilities should ensure that persons do not dispose of (or receive for disposal or storage) or store pesticides, pesticide containers, or pesticide container residue in a manner which

- Is inconsistent with the manufacturer's product label
- Involves open dumping or open burning on land (unless allowed by state or local regulations)
- Involves discharge POTWs or navigable waters regulated by the CWA, unless the discharge is covered by, and in compliance with, applicable pretreatment standards or a NPDES permit
- Violates any applicable state or federal pollution control standard.

Additional guidance regarding the disposal of pesticides can be obtained by referencing the FIFRA chapter of the SHEM Guidelines

Storage of Pesticides and
Containers
(165 10)

These guidelines are applicable only to those pesticides classified as highly toxic or moderately toxic and whose labels are required to bear the signal words "Danger", "Poison", or "Warning" or the skull and crossbones symbol. Home and garden pesticides, and pesticides classified as slightly toxic, are not covered under these guidelines. EPA should inventory and monitor its storage facilities even if pesticide application is completed by contractor

[165 10 (c)]

Pesticide storage facilities should be designed in accordance with the guidelines in Chapter 8 of the *EPA Facility Safety, Health and Environmental Management Manual*

Operational Procedures
[165 10 (d)]

Storage areas should be operated to ensure that.

- Containers are stored with labels plainly visible

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- Pesticides are segregated by formulation and stored under a sign with the name of the formulation
- Complete inventories with number and identity of containers in storage are maintained
- Containers are inspected regularly for corrosion and leaks, and absorbent spill materials are available.

**CERTIFICATION OF
PESTICIDE
APPLICATORS**
(40 CFR Part 171)

This part outlines the training and certification requirements for commercial applicators of restricted use pesticides

Guidance: EPA contract personnel should ensure that all pesticide service contracts specify the appropriate training and certification requirements for the pesticide applicators. Office facilities should maintain documentation on-site verifying that commercial applicators of pesticides at their facilities are certified by their state, county or municipality.

Exhibit 7 on the next page provides an example of an on-site log used for maintaining records of pesticide applicators

**INTEGRATED PEST
MANAGEMENT**

Integrated pest management (IPM) programs combine chemical, cultural, and biological practices into one program to manage pest populations. IPM stresses non-chemical control forms of pesticide management. IPM incorporates preventive practices (e.g., timely planting, crop rotation, and surveying fields for pest density), remedial practices (e.g., timely and spot spraying of pesticides only when required), and economic thresholds (i.e., the point when pest damage enough crops that growing the crops is uneconomical), thus reducing the amount of chemicals used by applying pesticides only when necessary at the minimum effective rate. EPA should work with its pesticide contractors to ensure that they are employing IPM approaches when servicing EPA office facilities.

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- Practice soil sampling
- Purchase pesticides in containers with design features that prevent spilling and leaking through splashing and dripping
- Buy only the amount of pesticide needed
- Use first-in, first-out procedures for storage to avoid shelf-life issues
- Use less persistent, leachable pesticides (consult EPA's list of leachable pesticides)
- Use contact pesticides that do not need to be incorporated into the soil
- Do not exceed recommended application rates
- Avoid excess mixing of pesticides
- Keep applicator equipment properly calibrated to control pesticide droplet size and deposition
- Add dyes to the pesticides to facilitate uniform application and monitoring rates
- Select an appropriate pesticide mixing/loading area to reduce damage to the environment from spills, avoid high runoff areas
- Practice spot application of pesticides

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Section 16-11
National Environmental Policy Act

INTRODUCTION

The purpose of the National Environmental Policy Act (NEPA) is to ensure that environmental impacts and associated public concerns are systematically considered in making decisions on federal actions. NEPA requires an environmental evaluation by federal agencies prior to the execution of a proposed federal action which could potentially cause environmental impacts. Specific examples of actions that would require a NEPA review include construction-related activities, such as new construction, as well as improvements or modifications to office or administrative facilities that could affect the environment.

NEPA establishes the Council on Environmental Quality (CEQ), which provides guidance to federal agencies on complying with the statute. In executing this task, CEQ promulgated NEPA regulations 40 CFR 1500-1508 to accurately translate the intent of the NEPA statute into practical guidance for federal agencies. EPA's implementing regulations for NEPA are codified in 40 CFR Part 6. AEREB developed the *NEPA Review Procedures for EPA Facilities*, an easy-to-use, comprehensive guide that presents the requirements of 40 CFR Part 6 and EPA implementation procedures.

NEPA REVIEW
PROCESSES

The NEPA regulations identify three basic types of environmental impact reviews.

- Categorical exclusion (CX)
- Environmental assessment (EA)
- Environmental impact statement (EIS)

A CX, which does not require an EA or an EIS, may be applicable to actions that have minimal or no effect on environmental quality and pose no environmentally significant change to existing conditions. If a construction project falls under the CX criteria, it is exempt from further environmental impact reviews. Examples applicable to EPA office facilities include renovations or facility modifications that do not entail any sensitive activities, such as asbestos removal. A CX must be documented and maintained as part of the project file. The *NEPA Review Procedures for EPA*

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Facilities contains a review form, page 1 of which will suffice as CX documentation

Actions that may pose an environmental impact, such as the construction of new facilities or significant renovations to an existing facility, should be evaluated through an EA. The purpose of an EA is to determine whether or not a proposed action may significantly affect the environment. If the results of an EA indicate no significant impact or that significant impacts can be mitigated effectively, EPA shall issue a finding of no significant impact (FNSI), which may address measures to mitigate potential environmental impacts. The *NEPA Review Procedures of EPA Facilities* contains instructions and the review form to assist in preparing an EA and, if appropriate, a FNSI.

If a FNSI is not appropriate, an EIS will need to be performed. An EIS is the most extensive level of NEPA analysis. As a result, EPA facility actions requiring the preparation of EISs are typically limited to larger construction projects that present the greatest likelihood for potentially significant impacts. There are specific documentation and regulatory requirements that must be executed in preparing an EIS. The *NEPA Review Procedures for EPA Facilities* thoroughly explains these requirements and provides a review form to assist in determining whether an EIS is required.

Office Compliance Issues

Section 16-12
Emergency Planning and Community Right-to-Know Act

INTRODUCTION

EPA offices are required to comply with the Emergency Planning and Community Right-to-Know Act (EPCRA) if they store, use, or release certain chemicals. EPCRA compliance requires offices to make its operations public and to improve the ability of local authorities to respond to emergencies.

DEFINITIONS

The following definitions are essential in understanding EPCRA requirements.

State Emergency
Response Commission
(SERC)

The SERC designates emergency planning districts within each state to facilitate the preparation and implementation of emergency plans under Section 303.

Local Emergency
Planning Committee
(LEPC)

The LEPC reviews the information submitted by facilities under EPCRA, regarding specific chemicals used at the offices and develops plan to respond to local chemical releases.

National Response Center
(NRC)

The NRC is the national communication center and is manned continuously for handling activities related to response actions. The NRC is the single federal point of contact for all pollution incident reporting through the Emergency Response Notification System (ERNS) and serves as the National Response Team (NRT) communications center.

REQUIREMENTS

EPA office facilities should ensure that they comply with the provisions of EPCRA Sections 301 through 312, all implementing regulations, and future amendments to these authorities. The following sections of EPCRA may be applicable to the office:

- Sections 302-302 - Emergency Planning and Notification. These sections require notifying the SERC and LEPC if the office has an extremely hazardous substance (EHS) over its threshold planning quantity (TPQ) at anytime. This notification should be in the form of a letter; no standard form is required. In addition, each office required to complete this notification must designate an emergency response coordinator who should

Office Compliance Issues

participate in the local emergency planning process. The coordinator should provide any required information to the LEPC.

- **Section 304 - Emergency Release Notification.** This section requires offices that release an EHS or hazardous substance (as defined in 40 CFR 302.4) in excess of its reportable quantity to notify the SERC, LEPC, or NRC. The oral notification should be followed by a written notification. Relevant exemptions from this reporting include federally permitted releases under CERCLA Section 101(10), releases that result in exposure only to persons within the boundaries of the facility under Section 355 40(2)(i) of EPCRA, releases of pesticide product exempt from CERCLA Section 103(a) reporting under Section 103(e), and any release not meeting the definition of release under Section 101(22) of CERCLA
- **Sections 311-312 - Hazardous Chemical Inventory Reporting.** This section requires offices that maintain MSDSs for a chemical, mixture, or product on-site at a quantity above 10,000 pounds or its TPQ if the chemical is an EHS, to supply the MSDSs or a list of the chemicals and a Tier I inventory form to the SERC, LEPC, an local fire department. Some offices may be requested to file a business plan or Tier II form with additional information.

EXAMPLES OF EPCRA REPORTING

EPA offices should require little EPCRA reporting since most offices will not exceed the established thresholds. Possible examples of chemicals that may exceed the thresholds are listed in Table 7

**Table 7
Examples of EPCRA Chemicals**

EPCRA Section	Example Chemical
Section 302	Chlorine used in water treatment processes
Section 304	Large spill of print shop chemicals
Section 311-312	Fuel contained in USTs is an example of chemicals that may exceed the threshold quantities of 10,000 pounds.

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Section 16-13
Pollution Prevention

INTRODUCTION

As defined in the Pollution Prevention Act of 1990, pollution prevention means "any practice which reduces the amount of a hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal, and any practice which reduces the hazards to the public health and the environment associated with the release of such substances, pollutants or contaminants."

EXECUTIVE ORDER
12856

Executive Order 12856, Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements, requires federal facilities to lead by example in applying pollution prevention to daily operations, purchasing decisions, and policies to facilitate the protection of human health and the environment

Guidance: EPA offices should develop a pollution prevention program designed to reduce releases and off-site transfers of toxic pollutants or hazardous materials to ensure compliance with the requirements of the executive order.

Objectives

The following requirements of the executive order are applicable to EPA's office facilities:

- Voluntary Reduction Goals - The executive order requires each federal agency to reduce its total releases and transfers of toxic chemicals or pollutants by 50% by 1999 EPA offices should contribute to this goal
- Procurement - Each agency should develop a plan and goals to reduce or eliminate its procurement of EHS or toxic chemicals EPA offices should contribute to the overall Agency goal of reducing toxic pollutants
- Planning - Each EPCRA covered facility should develop a pollution prevention plan EPA requires all facilities to develop pollution prevention plans.

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SOURCE REDUCTION

EPA further defines pollution prevention as source reduction and other practices that reduce the amount of pollutants entering a waste stream prior to out-of-process recycling, treatment, or disposal. It includes improvements such as materials substitution, in-process recycling, equipment modification, and housekeeping improvements.

Materials Substitution

EPA employees should attempt to use office products and cleaning supplies that contain the least hazardous or toxic ingredients possible. Examples of substitutions that emphasize the use of low hazard products include:

- Painting office spaces with latex paint and low VOC paint where possible
- Using citrus-based degreasers instead of chlorinated solvents
- Replacing office chillers containing CFCs with chillers containing non or less ozone-depleting substances, such as HFC-134a or HCFC 123
- Purchasing white-out and markers without chlorinated solvents
- Purchasing low VOC glues and adhesives or non-chlorinated glues and adhesives.

Process Modifications

EPA offices should modify processes or implement new processes to minimize the amount of pollutants entering its waste stream. Table 8 on the next page provides suggestions for process changes in standard office operations.

Office Compliance Issues

Table 8
Process Modifications

Office Operation	Process Modification
Graphics/Photo Processing/Printing	<ul style="list-style-type: none"> • Producing high-quality images using electronic methods instead of wet-chemical processing methods • Implementing silver recovery systems on photographic processors • Using soy-based inks in the printing process
Office Practices	<ul style="list-style-type: none"> • Encouraging the use of electronic communication such as e-mail in place of hard-copy memorandum, document distribution, etc. • Encouraging double-sided copying
Transportation	<ul style="list-style-type: none"> • Encouraging the use of telephone- or video conferencing to reduce travel to meetings • Providing preferred parking places for car pools • Providing showers for bicycle riders

ENERGY AND WATER CONSERVATION

Pollution prevention also includes energy and water conservation practices that protect natural resources. EPA offices should implement these conservation practices where possible.

Energy Efficiency

EPA office facilities should encourage conservation practices and ensure that building repairs and modifications use the following energy-efficient practices where possible:

- Replace air conditioning equipment with high-efficiency chillers
- Encourage employees to turn off lights when not in use
- Install upgrade insulation
- Install programmable thermostats
- Install direct digital control for HVAC control
- Design facility additions so that natural lighting and heating and cooling equipment are optimized

Water Conservation

EPA office facilities should encourage conservation practices and ensure that building repairs and modifications use the following water conservation practices and where possible:

Office Compliance Issues

- Encourage employees to turn off faucets after use and report leaking faucets to maintenance
- Install low-flow faucets with repairs and new washroom/kitchen facilities
- Landscape with indigenous plants to decrease the need for watering

**AFFIRMATIVE
PROCUREMENT**

- Executive Order 12856 requires each federal agency to establish a plan and goals for eliminating or reducing the unnecessary acquisition of products containing EHSs or toxic chemicals. EPA offices should reduce their acquisition of these products

**Procuring Recovered
Content Materials**

EPA office facilities should consult EPA's Recovered Material Advisory Notice (RMAN) guidance and Comprehensive Procurement Guideline (CPG) to determine the appropriate recycled content of certain materials including

- Construction products including structural fiberboard, laminated paperboard, carpet, and floor tiles
- Landscaping products including hydraulic mulch and yard trimmings compost
- Nonpaper office products including office recycling containers, office waste receptacles, toner cartridges, binders, and plastic trash bags

EPA office facilities also should consult the environmentally preferable catalogs such as the General Services Administration's Environmental Products Guide. Additional information and guidance regarding the selection of environmentally preferred products can be obtained by consulting the references included in Exhibit 8 of this chapter.

**Environmentally
Preferable Products**

EPA office facilities should incorporate EPA's seven guiding principles (Table 9) for purchasing environmentally preferable products

Office Compliance Issues

EPA office facilities should encourage the procurement of environmentally preferred products such as Energy Star computers, office equipment, and nonhazardous biodegradable cleaners

Table 9
Seven Guiding Principles For Environmentally Preferable Products

Principle	Objective
Pollution Prevention	Consideration of environmental preferability should begin early in the acquisition process and be rooted in the ethic of pollution prevention that strives to eliminate or reduce, up front, potential risks to human health and the environment.
Multiple Attributes	A product or service's environmental preferability is a function of multiple environmental attributes.
Life-cycle Perspective	Environmental preferability should reflect life-cycle considerations of products and services to the extent feasible.
Magnitude of Impact	Environmental preferability should consider the scale (global versus local) and temporal aspects (reversibility) of the impacts.
Local Conditions	Environmental preferability should be tailored to local conditions where appropriate.
Competition	Environmental attributes of products or services should be an important factor or subfactor in competition among vendors, when appropriate.
Product Attribute Claims	Agencies need to examine product attribute claims carefully.

**MATERIAL
RECYCLING**

Executive Order 12873 Federal Acquisition, Recycling, and Waste Prevention, directs EPA to purchase recycled and environmentally preferable products and services

Recycling Practices

EPA offices should implement a comprehensive recycling program. Offices that share buildings should initiate a recycling program for the building or participate in existing programs. Examples of recycling practices that EPA can participate in are:

Office Compliance Issues

- Recycling of aluminum, glass, paper, toner cartridges, floppy disks, cardboard
- Purchasing products that contain less packaging material, allow the reuse of the packaging material, or that the vendor will accept for reuse
- Recycling of used cooking oil from cafeterias
- Composting of yard and cafeteria waste

Exhibit 8 provides additional pollution prevention references, program contacts, and hotlines to supplement the information contained in this section.

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**Exhibit 8
Pollution Prevention Hotlines and Other Resources**

Green Lights Program
1850 K Street, NW Suite 290
Washington, DC 20006

Solid Waste Assistance Program
PO Box 7219
8750 Georgia Avenue
Silver Spring, MD 20907
(800) 677-9424
Fax (301) 585-0297

RCRA/Superfund/UST Hotline
1725 Jefferson Davis Highway
Arlington, VA 22202
(703) 412-9877
(800) 553-0202
(800) 553-7672

National Response Center
US Coast Guard Headquarters
2100 Second Street, SW
Room 2611
Washington, DC 20593

**TSCA Hotline (Design for the Environment
and 33/50)**
(202) 554-1404

Stratospheric Ozone Information Hotline
501 3rd Street
Washington, DC 20001

The 33/50 Program
US Environmental Protection Agency
(Mail Code 7408)
401 M Street, SW
(202) 260-6907
Fax (202) 260-1764

Pollution Prevention Information Clearinghouse
US Environmental Protection Agency
401 M Street, SW
Washington, DC 20460
(202) 260-1023
Fax (202) 260-0178

**Pollution Prevention Information Exchange
System**
7600-A Leesburg Pike
Room 369
Falls Church, VA 22034
(703) 821-4800

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Office Compliance Issues

APPENDIX A

Model Office/Facility Environmental Program

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Attachment 1
Office/Facility CEMP Self-Assessment Matrix
Principle 1: Management Commitment

Level	1.1 Obtain Management Support		1.2 Environmental Stewardship
	Policy Development	System Integration	
Finish 5	Office/facility communicates its policy externally to regulatory authorities, other agencies, and other stakeholders	All office/facility decisions consider environmental criteria when appropriate, program thoroughly integrated <ul style="list-style-type: none"> ◆ Assume leadership through outreach 	All office/facility decisions include appropriate environmental criteria to minimize impact <ul style="list-style-type: none"> ◆ Consider environmental impacts ◆ Participate in hearings and other activities
 4	Office/facility develops final policy and communicates it internally	More than 50% of office/facility decisions consider environmental criteria, program integrated through 75% of office/facility <ul style="list-style-type: none"> ◆ Encourage teaming across divisions 	Office/facility develops procedures to evaluate environmental impacts of future activities <ul style="list-style-type: none"> ◆ Introduce design for environment concepts ◆ Provide outside speakers ◆ Sponsor outside activities ◆ Conduct "open house" for community ◆ Demonstrate commitment
 3	Office/facility develops draft policy and circulates it for review and comment	Environmental criteria are incorporated into employee performance standards as appropriate, program integrated through 50% of office/facility, criteria for environmental decision-making developed <ul style="list-style-type: none"> ◆ Review responsibilities 	Office/facility identifies alternatives to high-impact activities <ul style="list-style-type: none"> ◆ Encourage environmental action plans ◆ Provide "brown bag" speakers ◆ Create promotional items
 2	Office/facility evaluates environmental concerns of key stakeholders <ul style="list-style-type: none"> ◆ Develop goals and priorities ◆ Communicate with stakeholders 	Environmental criteria are incorporated into affected managerial performance standards, program integrated through 25% office/facility, starting with activities most affected <ul style="list-style-type: none"> ◆ Conduct organizational review ◆ Assign management responsibilities ◆ Include performance criteria ◆ Coordinate and review budget 	Office/facility implements awareness programs to inform employees and stakeholders <ul style="list-style-type: none"> ◆ Provide orientation
1 START	Office/facility evaluates its mission in environmental terms <ul style="list-style-type: none"> ◆ Prepare Mission/Vision statements 	Environmental program is communicated throughout office/facility, environmental groups and their missions defined and communicated <ul style="list-style-type: none"> ◆ Identify liabilities and risks ◆ Provide awareness training 	Office/facility evaluates environmental impacts of its activities

Attachment 1 Continued
Office/Facility CEMP Self-Assessment Matrix
Principle 2: Compliance Assurance and Pollution Prevention

Level	2.1 Compliance Assurance	2.2 Emergency Preparedness	2.3 Pollution Prevention and Resource Conservation
Finish ↓ 5	Full office/facility compliance is sustainable, contractors are included within the compliance program ♦ Set "beyond compliance" performance goals ♦ Evaluate contractor performance ♦ Introduce risk assessment	All office/facility are trained in emergency response procedures, full-scale exercises are conducted at least annually	Program maintained throughout the office/facility, reductions in waste generation achieved
↓ 4	Office/facility develops proactive and cooperative relations with regulators, non-compliance situations reduced significantly ♦ Employee reporting encouraged ♦ Regular contact with regulators ♦ Procedures to elevate issues to upper management ♦ Pollution prevention is primary management approach	Office/facility implements medical monitoring for environmental program personnel, as appropriate, and inspects facilities periodically ♦ Conduct in-house medical monitoring, where appropriate	Office/facility encourages reduced use of resources and identifies individuals contributing to the success of the program, process improvements implemented ♦ Affirmative procurement program ♦ Life-cycle analysis ♦ Design for environment ♦ Product stewardship
↓ 3	Office/facility fully implements compliance program, develops a program to track relevant legislation and regulations, and sees improved performance ♦ Track regulatory initiatives ♦ Address non-compliance conditions ♦ Track corrective action progress ♦ Implement environmental record-keeping system ♦ Identify problems and prevent non-compliance incidents ♦ Establish compliance management system that is integrated with EMS	Office/facility emergency response teams are trained and periodic drills are conducted ♦ Establish emergency response team ♦ Train Emergency Response Team and other personnel ♦ Conduct regular exercises ♦ Identify emergency resources	Office/facility develops goals, implements employee suggestion procedures, and identifies alternative to major generators ♦ Toxic materials reductions ♦ Water conservation program ♦ "Repair or Replace" program

Attachment 1 Continued
Office/Facility CEMP Self-Assessment Matrix
Principle 2: Compliance Assurance and Pollution Prevention

Level	2.1 Compliance Assurance	2.2 Emergency Preparedness	2.3 Pollution Prevention and Resource Conservation
1 2	Office/facility communicates with regulatory authorities, develops procedures to address compliance situations, and distributes them throughout the office/facility <ul style="list-style-type: none"> ◆ Introduce compliance group ◆ Develop compliance guidance ◆ Coordinate with regulators ◆ Communicate information on regulations and permits 	Office/facility develops procedures to address emergency response, distributes them throughout the office/facility <ul style="list-style-type: none"> ◆ Response procedures ◆ Disaster preparedness plan ◆ Hazard mitigation measures ◆ Preventative maintenance program ◆ Coordination with authorities ◆ Communication plan 	Office/facility communicates pollution prevention commitment to all personnel and begins recycling programs (paper, aluminum, glass) <ul style="list-style-type: none"> ◆ Energy conservation program ◆ Recycling program ◆ Reuse of materials encouraged
1 1 START	Office/facility compliance group evaluates office/facility activities and compliance history <ul style="list-style-type: none"> ◆ Develop compliance group ◆ Review office/facility activities ◆ Assess compliance baseline 	Office/facility emergency response group evaluates its activities and vulnerability to natural disaster and accidents <ul style="list-style-type: none"> ◆ Identify hazards at office/facility 	Office/facility evaluates its waste generation profile and identifies major points of generation <ul style="list-style-type: none"> ◆ Pollution prevention program emphasizes source reduction

Attachment 1 Continued
Office/Facility CEMP Self-Assessment Matrix
Principle 3: Enabling Systems

Level	3.1 Training	3.2 Structural Supports	3.3 Information Management, Communication, Documentation
Finish 5	100% of office/facility fully trained, refresher training provided, computer-based and distance learning employed when appropriate, training program continually evaluated ♦ Obtain feedback on training ♦ Investigate alternative training methods	Procedures are fully implemented and reviewed periodically ♦ Conduct periodic review of procedures to ensure currency	Office/facility maintains effective communications, applies environmental information to decision-making, and maintains thorough records ♦ Uses EMS data in decision-making
 4	75% of office/facility fully trained, refresher training developed and available, where appropriate, continuing education encouraged ♦ Establish refresher training ♦ Encourage continuing education	Office/facility implements procedures and begins training of all staff, as appropriate ♦ Pursue integration of environmental program throughout office/facility	Office/facility develops procedures for use of information, provides avenues for employee input, and has a well-maintained records center ♦ Use electronic networks ♦ Assure validity of environmental data ♦ Secure data-handling procedures ♦ Establish employee reporting system ♦ Encourage employee input
 3	50% of office/facility fully trained, system to track fulfillment of training requirements developed and implemented ♦ Establish in-house group to track training program	Office/facility disseminates procedures throughout to raise awareness of issues, implementing staff is trained ♦ Encourage input from personnel	Office/facility communicates with regulators and stakeholders and develops information gathering, manipulation, and management procedures ♦ Evaluate new IM projects ♦ Establish Resource Center ♦ Provide regular status updates ♦ Communicate with other organizations ♦ Develop public outreach program ♦ Communicate with stakeholders ♦ Develop distribution network ♦ Establish QA and security procedures

**Attachment 1 Continued
Office/Facility CEMP Self-Assessment Matrix
Principle 3: Enabling Systems**

Level	3.1 Training	3.2 Structural Supports	3.3 Information Management, Communication, Documentation
<p align="center">↓ 2</p>	<p>Office/facility training group identifies available outside training and develops in-house training where necessary, 20% of office/facility fully trained</p> <ul style="list-style-type: none"> ◆ Identify job-specific requirements ◆ Evaluate outside vs in-house training ◆ Train-the-trainers, as necessary 	<p>Office/facility develops or revises procedures to address activities identified as having environmental aspects</p> <ul style="list-style-type: none"> ◆ Eliminate or revise procedures found to be barriers 	<p>Office/facility develops internal communications and information management infrastructure, and document control procedures</p> <ul style="list-style-type: none"> ◆ Ensure compatibility ◆ Develop environmental IM procedures ◆ Identify key records/documents ◆ Develop in-house communication ◆ Enable working relationships ◆ Report completion procedures ◆ Maintain MSDSs, etc
<p align="center">1 ↓ START</p>	<p>Office/facility training group identifies environmental training needs and where training is available</p> <ul style="list-style-type: none"> ◆ Develop "Core Curriculum" 	<p>Office/facility identifies and evaluates existing procedures and activities that have environmental aspects</p> <ul style="list-style-type: none"> ◆ Review office/facility documentation 	<p>Office/facility identifies lines of communication, information needs, documentation procedures</p> <ul style="list-style-type: none"> ◆ Assign managerial responsibility ◆ Create in-house IM group ◆ Review current capabilities ◆ Define lines of communication ◆ Assign environmental POCs ◆ Develop centralized filing system

**Attachment 1 Continued
Office/Facility CEMP Self-Assessment Matrix
Principle 4: Performance and Accountability**

Level	4.1 Responsibility, Authority, Accountability	4.2 Employee Performance Standards
Finish 1 5	Assignment of environmental responsibilities is reviewed periodically in light of performance	Office/facility develops a program to recognize and reward personnel that carry out environmental responsibilities exceptionally well, appropriate disciplinary mechanisms also in place ◆ Prepare program for reward or recognize honorees ◆ Prepare disciplinary mechanisms to address non-conformance with agency-level and office/facility policy or procedures
1 4	Personnel are provided avenues to provide input and employees are held accountable for environmental performance ◆ Develop employee input/concerns program	Personnel are evaluated based on environmental aspects of their performance standards ◆ Develop procedures for evaluating performance
1 3	All employees assigned environmental responsibilities are given appropriate authority and training ◆ Issue clear statements of environmental responsibility ◆ Prepare process to address authority conflict ◆ Develop policy on accountability	Affected employees have environmental responsibilities clearly stated in performance standards
1 2	Managers assigned environmental responsibilities are given training and authority to meet those responsibilities ◆ Issue statements of defining authority	Managers have environmental responsibilities clearly stated in performance standards ◆ Develop employee evaluation standards ◆ Publicize standards and solicit input from agency/office facility
1 1 START	Office/facility identifies personnel with responsibility for environmental performance ◆ Assign authority to ensure environmental compliance	Office/facility identifies personnel with responsibility for environmental performance ◆ Identify organizational performance goals

**Attachment 1 Continued
Office/Facility CEMP Self-Assessment Matrix
Principle 5: Measurement and Improvement**

Level	5.1 Evaluate Performance		5.2 Continuous Improvement
	Gather/Analyze Data	Institute Benchmarking	
Finish 5	Data-gathering is continuous process, gaps in performance are identified and analyses conducted to identify their root cause(s)	Office/facility maintains ongoing "benchmarking cycles," office/facility becomes a target for benchmarking by others ◆ Explore possibility of mentoring other organizations	Office/facility shows significant improvement in addressing substandard performance situations and aggressively seeks to compare its performance to others ◆ Review other management approaches for applicability
 4	Periodic evaluations of operations and data-gathering procedures are conducted to assess performance ◆ Include system measurement in review and improvement process	Office/facility identifies and implements improvements based on evaluation of other organization ◆ Develop methods to apply results of benchmarking and pursue further involvement	Office/facility fully implements periodic reviews of systems and performance and seeks out additional opportunities for improvement ◆ Develop methods to apply results of benchmarking and pursue other further involvement ◆ Conduct review of procedures ◆ Review and report improvements
 3	Data-gathering and processing procedures are implemented throughout the office/facility ◆ Identify independent audit group ◆ Develop procedures to manage and use information from audits	Office/facility evaluates performance of target organization through sharing of information (e.g., site visit) for comparison with its own	Office/facility implements employee-involvement measures, such as newsletters and lessons learned, to solicit input on improving performance ◆ Develop lessons learned program ◆ Encourage employee suggestions ◆ Work to include improvements in next planning cycle
 2	Office/facility develops procedures for gathering appropriate data and communicates them to management ◆ Define assessment parameters ◆ Develop QA objectives	Office/facility identifies other organizations with similar activities and/or exceptional performance and initiates contact with them ◆ Develop program of comparison to other organizations	Office/facility develops procedure to address preventive and corrective action situations and communicates them to management ◆ Develop procedures to identify root causes ◆ Develop program of comparison to other organizations
1 START	Office/facility identifies performance indicators, data needs, and standards of comparison ◆ Develop and report on performance indicators ◆ Develop internal audit program	Office/facility evaluates its activities and sets goals for environmental performance ◆ Evaluate most useful benchmarking areas	Office/facility evaluates performance to identify areas needing improvement

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Office Compliance Issues

APPENDIX B

List of Acronyms

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Office Compliance Issues

Appendix B
List of Acronyms

AEREB	Architecture, Engineering and Real Estate Branch
API	American Petroleum Institute
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
BOD	Biological Oxygen Demand
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CD	Certificate of Disposal
CESQG	Conditionally Exempt Small Quantity Generator
CFC	Chlorofluorocarbon
CPG	Comprehensive Procurement Guideline
CWA	Clean Water Act
CX	Categorical Exclusion
DMR	Discharge Monitoring Reports
DOT	Department of Transportation
EA	Environmental Assessment
EHS	Extremely Hazardous Substance
EIS	Environmental Impact Statement
EP	Extraction Procedure
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ERNS	Emergency Response Notification System
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FNSI	Finding of No Significant Impact
FR	Federal Register
HAP	Hazardous Air Pollutant
HCFC	Hydrochlorofluorocarbon
HID	High-Intensity Discharge
HSWA	Hazardous and Solid Waste Amendments
HVAC	Heating, Ventilation and Air Conditioning
IAQ	Indoor Air Quality
IPM	Integrated Pest Management
LDR	Land Disposal Restriction
LEPC	Local Emergency Planning Committee
LQG	Large Quantity Generator
MACT	Maximum Achievable Control Technology
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goals
MSDS	Material Safety Data Sheet

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NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
NPDWR	National Primary Drinking Water Regulations
NRC	Nuclear Regulatory Commission
NRC	National Response Center
NRT	National Response Team
NSPS	New Source Performance Standards
PCB	Polychlorinated Biphenyl
POTW	Publicly Owned Treatment Works
RCRA	Resource Conservation and Recovery Act
RMAN	Recovered Material Advisory Notice
SDWA	Safe Drinking Water Act
SERC	State Emergency Response Commission
SHEM	Safety, Health and Environmental Management
SHEMD	Safety, Health and Environmental Management Division
SHEMP	Safety, Health and Environmental Management Program
SIP	State Implementation Plan
SIU	Significant Industrial Users
SMCL	Secondary MCL
SNAP	Significant New Alternatives Policy
SPCC	Spill Prevention, Control, and Countermeasure
SQG	Small Quantity Generator
TC	Toxicity Characteristic
TCLP	Toxicity Characteristic Leaching Procedure
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage and Disposal Facility
UST	Underground Storage Tank
VOC	Volatile Organic Compound

**SAFETY, HEALTH, AND
ENVIRONMENTAL MANAGEMENT
PROGRAM GUIDE**

Guide No. 16A

Issued 05/98

Revised _____

OFFICE ENVIRONMENTAL COMPLIANCE ISSUES PROGRAM

SCOPE OF THE PROGRAM

This Program Guide provides an overview of the policy, guidance, information, and procedures EPA office facilities must fulfill to comply with the regulations promulgated pursuant to the Clean Air Act, Clean Water Act, Atomic Energy Act, Resource Conservation and Recovery Act, Comprehensive Environmental Response, Compensation and Liability Act, Toxic Substance Control Act, Federal Insecticide, Fungicide and Rodenticide Act, National Environmental Policy Act, Emergency Planning and Community Right-To-Know Act, and the Pollution Prevention Act. Executive Order 12856 complements these requirements by establishing provisions for promoting federal facilities as leaders in emergency planning and pollution prevention. This chapter presents information and guidance on air pollution control, water pollution control, radioactive materials management, nonhazardous solid waste management, underground storage tank management, hazardous waste management, toxic substance control, pesticides management, environmental review requirements under the National Environmental Policy Act, emergency planning and community right-to-know, and pollution prevention.

REGULATORY REQUIREMENTS

The key or basic elements of the Office Environmental Compliance Issues Program required by law and/or EPA policy are to

- Comply with applicable environmental regulatory and executive order requirements.

- Implement integrated pollution prevention approaches.

AUTHORITIES

The following documents are the sources of legal authority that establish the applicability and requirements for this chapter

- Atomic Energy Act, 10 CFR Parts 19-70
- Clean Air Act, as amended, 40 CFR Parts 50-82
- Comprehensive Environmental Response, Compensation and Liability Act, as amended, 40 CFR Parts 300-302, 373
- Emergency Planning and Community Right-to-Know Act, 40 CFR Parts 355-372
- Federal Insecticide, Fungicide, and Rodenticide Act, as amended; 40 CFR Parts 151-170
- Federal Water Pollution Control Act as amended by the Clean Water Act, 40 CFR Parts 110-136, 403-699
- Lead Contamination Control Act of 1988; Internal Agency Policy April 24, 1989
- National Environmental Policy Act, 40 CFR Parts 6, 1500-1508
- Resource Conservation and Recovery Act, as amended, 40 CFR Parts 240-281
- Safe Drinking Water Act, as amended, 40 CFR Parts 141-143

- Toxic Substances Control Act, as amended, 40 CFR Parts 721-763
- Executive Orders 12088, 12856, 12873, 12902

REFERENCES

The documents listed below can help you implement the Office Compliance Issues program

- 40 CFR Parts 6-1508
 - 53 FR 40562, October 17, 1988
 - 53 FR 47631, November 23, 1988
 - 55 FR 30082, July 24, 1990
- Government Institutes, Inc. Environmental Laws Handbook
- Bureau of National Affairs. Environment Reporter
- EPA, Office of Water, Environmental Regulations and Technology. The National Pretreatment Program
- EPA. EPA CERCLA/Superfund Orientation Manual
- EPA. EPA Facility Safety, Health and Environmental Management Manual
 - EPA. EPA RCRA Orientation Manual
- EPA. Report to Congress on the Discharge of Hazardous Wastes to Publicly Owned Treatment Works
- *GSA Environmental Management Technical Guides pursuant to Instructional Letter PBS IL-92-4*

IMPLEMENTATION ACTIVITIES

The following list gives an overview of the activities that this program will require. To implement and operate this program, you must.

- Maintain a copy of the applicable state and local air pollution control regulations and be aware of the types of emissions, pollutants, and emission increases that may require permits
- Identify and fulfill any permit program requirements triggered by an NSPS
- Investigate emissions of any NESHAP pollutants, determine whether your office facility is subject to any NESHAP subparts, and comply with the applicable general and specific NESHAP requirements
- Where a discharge of industrial effluents to the POTW exists, monitor the discharge to verify compliance with the POTW's pretreatment standards.
- Identify and comply with any additional hazardous waste listings, characteristics, or management standards imposed by state or local regulations
- Ensure that all pesticide service contracts specify the appropriate training and certification requirements for the pesticide applicators
- Establish an awareness in all office facility staff to promote sound environmental compliance and pollution prevention practices

IMPLEMENTATION IMPLICATIONS

The management systems and internal controls required to implement this program include.

- Maintain discharge monitoring records for five years instead of the minimum retention period of three years provided by the recordkeeping provisions in 40 CFR Part 122
- Where the discharge of industrial effluents to the POTW exists, maintain a current copy of the local sewer-use ordinance on-site in addition to the applicable federal pretreatment regulations (40 CFR Parts 400 to 459)

- **Implement a drinking water monitoring program that conducts initial sampling upon the occupancy of a new space or after installing newly plumbed systems. Follow-up monitoring should be performed whenever significant facility modifications or renovations have been undertaken**
- **Implement a recycling program when beverage containers are offered for sale on the facility premises**
- **Verify facilities that have released shipment of nonhazardous solid wastes for disposal to contractor facilities, are in accordance with Subpart B Part 241 200, titled Requirements and Recommended Procedures**
- **Include all relevant hazardous waste codes (listed and characteristic) when performing hazardous waste determinations**
- **Ensure that only federal and state licensed or permitted transporters are used for the transportation of hazardous wastes on public highways.**
- **Maintain a log to quantify CESQG waste generation volumes each month and implement a waste tracking system to ensure the waste is being sent to and received by an approved facility**
- **Create a central file for all PCB records It is recommended that these records be retained indefinitely PCB waste manifests and related Certificates of Disposal (CDs) should be retained longer than the three-year mandatory time period to document compliance with PCB management standards**
- **Develop a pollution prevention program that reduces releases and off-site transfers of toxic pollutants or hazardous materials to ensure compliance with the requirements of Executive Order 12856**

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into one or more of the F002-F005 listings. Additional detailed information on the classification of F-listed organic solvents is presented in the RCRA chapter of the SHEM Guidelines.

K-Listed Wastes
(40 CFR 261 32)

The K-list consists of wastes from specific hazardous waste generating processes and specific types of industries (e g , K009 is distillation bottoms from the production of acetaldehyde from ethylene) Generally, EPA office facilities do not generate K-list wastes

P- and U-Listed Wastes
(40 CFR 261 33)

P- and U-lists include commercial chemical products and manufacturing chemical intermediates that are hazardous wastes when discarded or intended to be discarded This applies only to unused formulations of these chemicals, or situations where chemical products or intermediates are mixed with other solid wastes for the purpose of disposal (as discussed in the definition of hazardous waste, 40 CFR 261 3) U-listed chemicals may include selected hazardous materials that are being disposed of because they have exceeded their shelf life or are no longer needed to support facility operations P-listed chemicals are acutely hazardous wastes when discarded and typically are not generated by EPA office facilities.

Unused chemical formulations in which a P- or U-listed chemical is the sole active ingredient also would be regulated as a P- or U-listed waste when discarded, regardless of concentration

CHARACTERISTIC
HAZARDOUS WASTE
(40 CFR Part 261,
Subpart C)

In addition to the hazardous waste listings, a solid waste is a hazardous waste if it exhibits one or more characteristics of hazardous waste. These characteristics, along with their corresponding regulatory citation and waste code, follow

<u>Regulatory Citation</u>	<u>Characteristic</u>	<u>Waste Code</u>
261 21	Ignitability	D001
261 22	Corrosivity	D002
261 23	Reactivity	D003
261 24	TC Toxicity	D004 - D043

Ignitability
(40 CFR 261 21)

A liquid waste, other than an aqueous solution containing less than 24 percent alcohol by volume, is considered ignitable if it has a flash point less than 60_C (140_F) The ignitability characteristic also

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Petroleum distillates and stoddard solvents often exhibit the characteristics of ignitability

includes a small category of nonliquids which are capable of causing fire through friction, absorption of moisture, or spontaneous chemical change. In addition, compressed gases defined as flammable under DOT standards (e.g., hydrogen, oxygen, acetylene, propane), as well as DOT defined oxidizers (e.g., nitric acid, perchloric acid, chromic acid, hydrogen peroxide), are ignitable hazardous wastes and carry the D001 waste code.

Corrosivity
(40 CFR 261.22)

Excess chemicals such as nitric or sulfuric acid commonly display the corrosivity characteristic

A waste is considered corrosive if it is aqueous and has a pH of less than or equal to 2, or greater than or equal to 12.5, or if it is a liquid and corrodes steel at a rate of more than 6.35 mm (0.25 inches) per year. The regulations only address the concept of corrosivity for liquid or aqueous wastes. Waste sodium hydroxide pellets, for example, are not a hazardous waste. Generators, however, should be warned that some solids may be corrosive when dissolved in a liquid, and thus should be handled cautiously (even though they are not hazardous wastes).

Reactivity
(40 CFR 261.23)

EPA office facilities may generate limited quantities of reactive hazardous waste. Generally, this characteristic is defined in subjective terms. For example, if a waste normally is unstable or reacts violently with water, it is considered a reactive hazardous waste. One quantitative criterion for determining reactivity is the generation of cyanide and sulfide gases when exposed to pH conditions between 2 and 12.5. Although the regulations do not specify a regulatory level of gas generation, EPA has published interim threshold levels of 250 mg HCN/kg waste and 500 mg H₂S/kg waste.

The most common examples of reactive wastes at EPA office facilities are spent concentrated sulfuric acid or cyanide-containing photographic bleaches.

Toxicity
(40 CFR 261.24)

In March 1990, EPA promulgated the final Toxicity Characteristic (TC) rule (55 FR 11798). This rule established the Toxicity Characteristic Leaching Procedure (TCLP), which replaced the extraction procedure (EP) toxicity test as the method for determining the characteristic of toxicity. The TCLP more accurately reproduces the leaching conditions of a landfill. Additionally, the technical procedures associated with the TCLP have allowed EPA to add 26 new organic constituents to the contaminant list, which previously included eight metals (D004-

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D011) and six pesticides (D012-D017) The TCLP procedure yields an extract of the waste For each hazardous contaminant, EPA has established a threshold level in this waste extract above which the waste is considered hazardous.

The TC final rule promulgated a number of parameter changes to the originally proposed contaminant list The entire TC constituent list is found in Exhibit 3 on the next page

The most common types of TC wastes potentially generated by EPA offices include lead-containing paint residues (D008), excess paints (D005, D006, D008, D035), high-intensity discharge (HID) lamps (D009), and used oil filters from motor pools (D018) Guidance on the management of HID lamps from Green Lights and routine maintenance operations is contained in the joint AEREB and SHEMD memorandum (June 15, 1995) on waste fluorescent and HID bulb management

MIXTURES
(40 CFR 261.3)

Mixtures of solid wastes and hazardous wastes can, in some cases, be regulated as hazardous wastes

Characteristic Waste and Solid Waste

If a solid waste is mixed with a characteristic hazardous waste through normal operations, and the mixture exhibits any hazardous waste characteristic, the entire volume would be considered a hazardous waste

Listed Waste and Solid Waste

If a solid waste or characteristic hazardous waste is mixed with a listed hazardous waste, the mixture would require management as the listed hazardous waste For example, if an F-listed solvent is mixed with an aqueous-based solvent, the entire mixture would be regulated as a listed hazardous waste

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Exhibit 3
TC Regulatory Levels

Contaminants	CASNO	HWNO *	Regulatory level (mg/l)
Arsenic	7440-38-2	D004	5 0
Barium	7440-39-3	D005	100
Benzene	71-43-2	D018	0 5
Cadmium	7440-43-9	D006	1 0
Carbon tetrachloride	56-23-5	D019	0 5
Chlordane	57-74-9	D020	0 03
Chlorobenzene	108-90-7	D021	100
Chloroform	67-66-3	D022	6 0
Chromium	7440-47-3	D007	5 0
o-Cresol	95-48-7	D023	200
m-Cresol	108-39-4	D024	200
p-Cresol	106-44-5	D025	200
Cresol		D026	200
2,4 D	94-75-7	D016	10 0
1,4 - Dichlorobenzene	106-46-7	D027	7 5
1,2 - Dichloroethane	107-06-2	D028	0 5
1,1 - Dichloroethylene	75-35-4	D029	0 7
2,4 Dinitrotoluene	121-14-2	D030	0 13
Endrin	72-20-8	D012	0 02
Heptachlor (and hydroxide)	76-44-2	D031	0 008
Hexachlorobenzene	118-74-1	D032	0 13
Hexachlorobutadiene	87-68-3	D033	0 5
Hexachlorethane	67-72-1	D034	3 0
Lead	7439-92-1	D008	5 0
Lindane	58-89-9	D013	0 4
Mercury	7439-97-6	D009	0 2
Methoxychlor	72-43-5	D014	10 0
Methyl ethyl ketone	78-93-3	D035	200
Nitrobenzene	96-95-3	D036	2 0
Pentachlorophenol	87-86-5	D037	100
Pyridine	110-86-1	D038	5 0**
Selenium	7782-49-2	D010	1 0
Silver	7440-22-4	D011	5 0
Tetrachloroethylene	127-18-4	D039	0 7
Toxaphene	8001-35-2	D015	0 5
Trichloroethylene	79-01-6	D040	0 5
2,4,5 - Trichlorophenol	95-95-4	D041	400
2,4,6 - Trichlorophenol	88-06-2	D042	2 0
2,4,5 - TP (Silvex)	93-72-1	D017	1 0
Vinyl Chloride	75-01-4	D043	0 2

* Hazardous waste number

** Wastestreams from nutrient analyses should be evaluated against the TC where pyridine is used as a reagent for possible classification as D038

STATE REGULATED
HAZARDOUS WASTE

Although some states adopt the federal standards verbatim, many exercise their right to regulate hazardous waste more stringently by

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applying hazardous wastes controls to additional wastestreams and adopting more restrictive standards

Some of the most common wastestreams subject to regulation at the state level are those protected by RCRA exclusions that states have chosen not to adopt. For example, wastes containing polychlorinated biphenyls (PCBs) are not specifically regulated under the federal RCRA program, and some are even subject to an exclusion from certain characteristics of hazardous waste. The RCRA chapter of the SHEM Guidelines identifies more stringent state requirements.

Guidance: EPA facilities should identify and comply with any additional hazardous waste listings, characteristics, or management standards imposed by state or local regulations.

**GENERATOR
REGULATIONS**
(40 CFR Part 262)

The RCRA regulations found in 40 CFR Part 262 contain the requirements applicable to generators of hazardous waste. The summary table at the end of this section lists the requirements for hazardous waste generators from Part 262.

**HAZARDOUS WASTE
DETERMINATION**
(40 CFR 262.11)

The first step in determining which, if any, generator regulations are applicable to a facility is to determine if solid wastes generated at the facility are hazardous wastes. This determination may be based either on testing of the waste or by applying knowledge of the materials or processes generating the waste. The hazardous waste determination hierarchy in Section 262.11 requires that a generator must first determine if the solid waste is excluded from RCRA regulation under Section 261.4. Second, if the waste is not excluded, the generator must determine if the waste meets one of the F-, K-, P-, or U-listings. Third, for the purposes of compliance with the land disposal restrictions (LDRs), or if the waste is not listed, the generator must identify all relevant hazardous waste characteristics (i.e., ignitability, corrosivity, reactivity, and toxicity) in Subpart C of Part 261. The final determination step ensures that all applicable waste codes, both listed and characteristic, are assigned to afford comprehensive treatment of all hazards associated with a waste as mandated under the Hazardous and Solid Waste Amendments (HSWA) of 1984.

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Guidance: To afford consistent waste classification and enhance the availability of pertinent information for DOT description, as well as employee health and safety, EPA facilities should include all relevant hazardous waste codes (listed and characteristic) when performing hazardous waste determinations.

**GENERATOR
CLASSIFICATION**

EPA facilities must count the quantity of hazardous waste generated each month to determine their generator classification. The regulations stating which hazardous wastes are to be counted in a generator's monthly quantity determination are found in Sections 261.5(c) and (d). While the regulations for counting hazardous waste appear in the section of the regulations applicable to conditionally exempt small quantity generators, all generators must comply with the counting requirements found in Sections 261.5(c) and (d), not just conditionally exempt generators. Table 3 provides a summary of the quantity thresholds for generator classifications and identifies the applicable regulations. The majority of EPA office facilities normally are regulated under the minimal provisions for conditionally exempt small quantity generators (CESQG).

**Table 3
Hazardous Waste Generator Classifications**

Generator	Quantity	Applicable Regulations
Large Quantity Generator (LQG)	≥1000 kg/month hazardous waste (approx. ≥2200 lbs.) >1 kg/month acute waste	40 CFR Part 262
Small Quantity Generator (SQG)	Between 100-1000 kg/month hazardous waste (approx. 220-2200 lbs.)	40 CFR Part 262, Subparts A, B, C (Section 262.34(d) is specific to SQGs), E, and portions of Subpart D as specified in Section 262.44
Conditionally Exempt Small Quantity Generator (CESQG)	≤100 kg/month hazardous waste ≤1 kg acute waste ≤100 kg acute residue	40 CFR 261.5

**CONDITIONALLY
EXEMPT SMALL**

A conditionally exempt small quantity generator may generate up to 100 kg of hazardous waste or up to 1 kg of acutely hazardous waste in a calendar month and be exempt from most RCRA.

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QUANTITY
GENERATORS
(40 CFR 261.5)

generator requirements. There is no on-site accumulation time limit unless imposed by state law. Nonetheless, to remain conditionally exempt, these generators should not accumulate in excess of 1,000 kg of nonacute hazardous waste, 1 kg of acute hazardous waste or 100 kg of spill residue from acute hazardous waste. If the 1,000 kg limit is exceeded, the entire waste volume immediately becomes subject to all requirements for facilities that generate between 100 and 1,000 kg of hazardous waste per month (refer to 40 CFR 262.34). If the 1 kg limit for acute waste is exceeded, that acute waste is subject to large quantity generator standards. As long as generators remain conditionally exempt, they are not required to obtain an EPA identification number unless stipulated by the state hazardous waste agency.

Occasionally, CESQGs may generate in excess of 100 kg of hazardous waste in a single month. If this occurs, all hazardous waste generated that month would be subject to the 100-1000 kg per month generator requirements. Therefore, it would be prudent to manage the waste volumes subject to different regulatory schemes separately.

Guidance: The CESQG bears the burden of proof of demonstrating that the facility is exempt from the regulations. It is therefore essential that a log be maintained to quantify waste generation volumes each month and that a waste tracking system be implemented to ensure the waste is being sent to and received by an approved facility.

Waste Disposal
(40 CFR 261.5(f)
and (g))

To retain exempt status, CESQGs must ensure that their hazardous waste is disposed of at a permitted or interim status RCRA treatment storage or disposal facility (TSDF), a facility that is licensed by a state to manage municipal or industrial solid waste; or a recycling/reclamation facility that legitimately recycles the waste.

Guidance: All EPA facilities, regardless of generator status, must ensure that only federal and state licensed or permitted transporters are used for the transportation of hazardous wastes on public highways.

EPA IDENTIFICATION
NUMBERS
(40 CFR 262.12)

Each generator of hazardous waste, except a CESQG, must obtain an EPA identification number (EPA ID No.). Generators may obtain an EPA ID No. by completing EPA Form 8700-12, which

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can be obtained from the state hazardous waste management agency or the appropriate EPA Regional Office

The EPA ID No is site-specific, if a facility relocates, it will need to apply for a new number. Additionally, if the previously occupied property is taken over by a new owner, the facility should be sure its name is no longer associated with the past EPA ID No This can be accomplished by the new owner of the property filing a subsequent form 8700-12 identifying the change in ownership Because the EPA ID No is site-specific, an EPA facility with multiple noncontiguous generation sites must have a different EPA ID No for each site

Guidance: While not required, it is recommended that all EPA generators obtain an EPA ID No. to safeguard CESQG in case they, on occasion, slip into regulated generator status. Further, most transporters will not accept hazardous waste from a facility that does not have an EPA ID No. To address this problem, some states will issue a temporary EPA ID No. for CESQG waste shipments. In addition, EPA facilities should ensure, where possible, that contractors and landlords who generate hazardous waste have a separate EPA ID.No. and that contracts specify hazardous waste management responsibilities for waste generated by contractors or landlords.

**HAZARDOUS WASTE
MANIFESTS**
(40 CFR 262 20-23)

Manifests are used to track hazardous waste from the point of generation to the point of ultimate disposal. Generators should acquire manifests from the state to which the waste is being shipped (consignment state) If this is not possible, they may acquire manifests from their state hazardous waste officials If manifests are not available from either source, they may obtain copies of the manifests from commercial printers The facility must sign a copy of the original manifest that will accompany the waste to the treatment, storage and disposal facility. The facility must receive a signed copy of the manifest from the TSDF confirming that the waste reached its ultimate destination. If a signed copy of the manifest is not received from the disposal facility within 45 days for large quantity generators or 60 days for small quantity generators, the facility must follow the exception reporting procedures in Section 262.42 Although the manifest is typically completed by the hazardous waste transporter, it is important to review this

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paperwork for accuracy prior to signing the manifest. Common manifest errors include improper waste characterization, inaccurate DOT classification, and missing information

Facilities that generate between 100 and 1,000 kg of hazardous waste a month may be exempt from manifest requirements if the generator recycles the waste pursuant to a contractual agreement with a recycler. The agreement must stipulate the waste types and recycling frequency, and the vehicle used to transport the waste and return the regenerated product is owned by the reclaimer. This is referred to by many as the "Safety Kleen" exemption, and is commonly employed to manage spent solvents.

ACCUMULATION STANDARDS
(40 CFR 262.34)

Accumulation standards for generators include on-site accumulation time limits, training, preparedness and prevention requirements, and contingency planning. The differences in the requirements for LQG and SQG generators of hazardous waste are explained in each subsection. LQGs may accumulate hazardous waste on-site for up to 90 days, while facilities generating 100-1,000 kg per month may accumulate waste on-site for 180 days, or 270 days if the waste must be transported more than 200 miles. The accumulation start date is considered to be the date waste is first placed in the accumulation drum, tank or other container. The time period limitation does not apply while the waste is in a satellite accumulation area. Table 4 provides the accumulation standards for LQGs, SQGs, and CESQGs.

Table 4
Generator Classification Determines Length of Accumulation Time

Generator Category	On-Site Accumulation Time	On-Site Quantity Limit
Large Quantity Generators	≤ 90 days on-site	No Limit
Small Quantity Generators	≤ 180 days on-site or ≤ 270 days if shipped > 200 miles	6,000 kg
Conditionally Exempt Small Quantity Generators	No time limit	1,000 kg nonacute waste 1 kg acute waste 100 kg acute spill residue

Waste Accumulation Units

Hazardous waste containers are the most common waste accumulation units at EPA facilities. Small and large quantity generators accumulating hazardous waste in containers are subject

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to the container management standards for TSDFs in Part 265, Subpart I. Containers and tanks accumulating hazardous waste must be labeled "Hazardous Waste" and marked with the date that waste initially accumulates in the container. These standards are discussed in more detail in the standards for TSDFs section. Two other waste management units may be used by generators for accumulating hazardous waste: (1) tanks that meet the Part 265, Subpart J standards, and (2) containment buildings that meet the Part 265, Subpart DD standards.

Accumulation at the Point
of Generation
(40 CFR 262.34(c)(1))

Generators may accumulate up to 55 gallons of hazardous waste, or up to one quart of acutely hazardous waste, at or near the point of generation provided they comply with marking requirements and container management standards. Accumulations of waste not exceeding the 55-gallon limit may be stored indefinitely at the point of generation unless otherwise specified by state law. Once the 55-gallon limit is exceeded, the generator has three days to transfer the excess waste to a hazardous waste accumulation area, at which time the 90- or 180-day accumulation period begins, depending on the generator's status. For satellite accumulation points at a laboratory, at or near the point of generation generally means within the specific office facility area (e.g., print shop) where the waste is generated. Once waste is moved from that room, it must be directly transferred to a designated hazardous waste accumulation storage area or a permitted or interim status storage area. Typical satellite accumulation points in office complexes include effluents from photographic processing units or maintenance shop processes (e.g., parts cleaning).

Generator Training
Requirements
(40 CFR 262.34(a)(4))

Facility personnel conducting hazardous waste management activities must receive training on emergency response procedures and proper waste handling procedures that meet the personnel training requirements for TSDFs in Section 265.16. Small quantity generators are required to meet less stringent personnel training requirements in Section 262.34(d)(5)(iii). CESQG facility personnel are not required to meet personnel training requirements under RCRA, but it is recommended.

Preparedness and
Prevention
(40 CFR 262.34(a)(4))

EPA facilities generating hazardous waste must be prepared to respond to fire, explosions, and releases of hazardous waste at the facility. Large and small quantity generators must meet the preparedness and prevention requirements for TSDFs in Part 265,

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Subpart C The RCRA Subtitle C chapter of the SHEM Guidelines and the EPA *Facility Safety, Health and Environmental Management Manual* provide additional guidance on design considerations for preparedness and prevention.

Contingency Plans
(40 CFR 262 34(a)(4))

In the event of a fire or explosion, the facility must have a contingency plan designed for immediate response to minimize hazards to human health and the environment Large quantity generators must meet the contingency plan requirements for TSDFs in Part 265, Subpart D. RCRA does not require small quantity generators to develop a formal contingency plan, but it is recommended Facilities that have existing SPCC plans that meet the requirements of 40 CFR Part 112 may amend the plans to incorporate hazardous waste management provisions in lieu of developing a separate contingency plan.

Recordkeeping and Reporting
(40 CFR Part 262, Subpart D)

Sound recordkeeping is a critical component in demonstrating compliance with the RCRA regulations A complete set of records should include waste analysis and testing data used to identify and characterize hazardous waste, a copy of the 8700-12 that was submitted to the state or EPA Region, copies of hazardous waste manifests (both originals and signed copies with a date received by the facility), biennial hazardous waste reports (some states require annual reports), and land disposal restriction notifications and certifications

A biennial report that details hazardous waste management activities at large quantity generator facilities must be submitted to the appropriate state environmental agency or EPA Regional Office This report should include information on the quantity of hazardous waste generated during each even-numbered year and the amount of hazardous waste shipped off-site. Information also must be included on waste minimization activities that have been undertaken during the year to reduce the volume and toxicity of hazardous waste generated at the facility. Generators should note that many states require this information on an annual basis

HAZARDOUS WASTE MINIMIZATION

As discussed above, large quantity generators must document waste minimization activities conducted at the facility throughout the year in their biennial report. Also, generators must sign each hazardous waste manifest that includes a certification for LQGs that

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they have a waste minimization program in place and a certification for SQGs that they have made a good faith effort to reduce the volume or toxicity of hazardous waste generated at the facility

Waste minimization is defined as any environmentally sound practice that reduces the toxicity or volume of waste that is generated. Additional information on waste minimization is provided in the pollution prevention section of this chapter.

**Table 5
RCRA Generator Summary**

Requirements for Hazardous Waste Generators			
	CESQG	SQG	LQG
Quantity Limits	≤ 100 kg/month ≤ 1 kg acute/month 261 5(a) and (e)	between 100-1000 kg/month Part 262 and 262 34(d)	≥ 1000 kg/month or > 1 > kg or acute hazardous waste/month Part 262 and Section 261 5(3)
EPA ID Number	Not required 261 5	Required 262 12	Required 262 12
On-Site Accumulation Quantity	≤ 1000 kg ≤ 1 kg acute ≤ 100 kg spill reside from acute waste 261 5(f)(2) and (g)(2)	≤ 6000 kg 262 34(d)(1)	No limit
Accumulation Time Limits	None 261 5	≤ 180 days or ≤270 days if shipped over 200 miles 262 34(d) and (3)	≤ 90 days 262 34(a)
Storage Requirements	None 261 5	Basic requirements with most technical standards for tanks or containers 262 34(d)(2) and (3)	Full compliance for management waste in tanks, containers, or containment buildings 262 34(a)
Off-site Management of Waste	Hazardous waste, state approved solid waste, or recycling facility 261 5(f)(3) and (g)(3)	RCRA permitted/interm status facility 262 20(b)	RCRA permitted/interm status facility 262 20(b)
Manifest	Not required 261 5	Required 262 20	Required 262 20
Biennial Report	Not required 261 5	Not required 262 44	Required 262 41
Personnel Training	Not required 261 5	Basic training required 262 34(d)(5)(iii)	Required 262 34(a)(4)
Contingency Plan	Not required 261 5	Basic plan required 262 34(d)(5)(i)	Full plan required 262 34(a)(4)
Emergency Procedures	Not required 261 5	Required 262 34(d)(5)(iv)	Required 262.34(a)(4)
DOT Transport Requirements	Yes (as required by DOT)	Yes 262.30-262.33	Yes 262.30-262.33

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Section 16-09
Toxic Substances Control

INTRODUCTION

The Toxic Substances Control Act (TSCA) is unique among environmental statutes in that it provides regulatory controls throughout the full life cycle of selected toxic substances. Section 6(e) of TSCA provides the authorities for EPA to regulate certain substances, such as polychlorinated biphenyls and asbestos that are defined as posing special risks to human health and the environment. This section of the Office Compliance Issues chapter addresses substances regulated under TSCA authorities.

PCB MANAGEMENT
(40 CFR Part 761)

The PCB management regulations in 40 CFR Part 761 establish standards for PCB use, storage, disposal, spill cleanup, and recordkeeping. Central to understanding these requirements is a working knowledge of PCB regulatory terminology.

DEFINITIONS

The following are definitions for the unique terms used in this section.

PCB Article

Any manufactured article, other than a PCB container, that contains PCBs and whose surface has been in direct contact with PCBs. This term includes capacitors, transformers, electric motors, pumps, and pipes.

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.

PCB Authorizations

Provisions of 40 CFR 761.30 that allow certain uses of PCBs.

PCB Container

Any package, can, bottle, bag, barrel, drum, tank, or other device that contains PCBs or PCB articles and whose surface(s) has been in direct contact with PCBs.

PCB Equipment

Any manufactured item, other than a PCB container or a PCB article container, that contains a PCB article or other PCB equipment. This term includes microwave ovens, electronic equipment, and fluorescent lights ballasts and fixtures.

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PCB Large Capacitor	A device for accumulating and holding a charge of electricity and consisting of conducting surfaces separated by 1.36 kg (3 lb) or more dielectric fluid.
PCB Small Capacitor	A device for accumulating and holding a charge of electricity and consisting of conducting surfaces separated by less than 1.36 kg (3 lb) of dielectric fluid.
PCB Transformer	Any transformer that contains 500 ppm PCBs or greater
<u>GENERAL APPLICABILITY</u> (Subpart A)	Part 761 applies to all persons who manufacture, process, distribute in commerce, use or dispose of PCBs and PCB items
<u>50 ppm Limit</u>	Unless otherwise indicated, the applicability of the PCB regulations addressed in this section pertain only to PCBs or PCB items in concentrations equal to or greater than 50 ppm
<u>Operations</u>	<p>EPA facilities are not involved in manufacturing or processing PCBs. EPA office facilities may use electrical equipment containing PCBs. Examples of TSCA-regulated operations potentially applicable to EPA office facilities include:</p> <p><u>Use</u> - Operating and servicing PCB transformers, capacitors, and other PCB electrical equipment. This also includes performing Green Lights or other preventive maintenance activities that involve the removal of fluorescent light ballasts.</p> <p><u>Disposal</u> - Facilities designating PCB items, PCB liquids or PCB solid waste (soils or rags) for disposal. This includes samples and laboratory waste from PCB analysis that are no longer needed for enforcement purposes and that will not be returned to the sample collector.</p>
<u>Dilution</u>	TSCA requirements for marking and disposal become more stringent with an increase in PCB concentration. EPA facilities must be aware that the applicability section of TSCA regulations (761.1(b)) clearly states that "No provision specifying a PCB concentration may be avoided as a result of any dilution, unless otherwise specifically provided."

Office Compliance Issues

EPA office facilities generally should manage all PCB waste according to the original PCB concentration unless otherwise directed through Agency policy statements. To fulfill this requirement, facilities should consider tracking PCB concentrations from the time PCB materials are stored and managed. Labeling waste containers only as "PCBs" does not convey whether the waste is ≥ 50 ppm PCBs or began at such a concentration. Uncertainty could lead to either increased disposal costs as wastes are managed as regulated (conservatively) or improper disposal of regulated wastes that began at PCB concentrations ≥ 50 ppm.

AUTHORIZATIONS
(40 CFR 761.30)

Generally, the TSCA regulations prohibit the use of PCBs and PCB items in any manner other than totally enclosed, however, TSCA PCB regulations authorize the following uses of PCBs and PCB items that are not totally enclosed

PCB Transformers

Registration - All PCB transformers must be registered with local fire response personnel (761.30 (a)(1)(vi)). The registration must provide the

- Location of the transformer (building address and specific room or outdoor location)
- Principal constituent of the dielectric fluid
- Name and telephone number of person to contact at the facility in the event of a fire

Guidance: PCB transformer registration information should be sent by registered mail to verify compliance with this requirement (the SHEMP Manager should maintain this verification on file at the facility).

Quarterly Inspection - Facility personnel must conduct a quarterly visual inspection of each transformer in use or stored for reuse. This can take place any time during January-March, April-June, July-September, October-December, as long as there is a minimum of 30 days between inspections (761.30(a)(1)(ix))

Office Compliance Issues

The following inspection and maintenance information is required to be maintained at a facility for three years after disposing of the transformer (761 30(a)(1)(xii))

- Location
- Date of inspection
- Person performing inspection
- Location of any leaks
- Amount of fluid released from any leak
- Date of any cleanup or maintenance
- Description of cleanup or maintenance.

Policy: Facilities must prepare a log to record the above required inspection information. (See Exhibit 4 on the following page.)

Use Conditions - Facilities are prohibited from using or storing PCB transformers in a manner that poses an exposure risk to food or feed

Table 6 outlines the requirements for operating a PCB transformer located in or near a commercial building (761 30 (ii-v))

**Table 6
PCB Transformer Requirements**

Requirements for PCB Transformers Located in or Near Commercial Buildings	Prohibited after Oct. 1, 1990	Electrical protection for high current faults by Oct. 1, 1990	Electrical protection for low current faults by Oct. 1, 1990	Registered with building owners as of Dec 1, 1985
Network with Higher Secondary Voltage	X	N/A	N/A	N/A
Network with Lower Secondary Voltage		X		X
Radial with Higher Secondary Voltage		X	X	X
Radial with Lower Secondary Voltage		X		X

Office Compliance Issues

Exhibit 4
PCB Transformer Inspection Log

Facility Address			Transformer Location:	
			Building Name _____	
			Room # _____	
			Outdoor Subst. _____	
PCB Transformer/Storage Facility Inspection and Maintenance Log				
Date and Inspector's Initials	Inspection or Maintenance	Inspection Results (Provide volume and location or leaks)	Describe Remedial Action	Describe Maintenance Action

PCB Capacitors After October 1, 1988, PCB large capacitors rated at high and low voltages must be used only within a restricted access electrical

Office Compliance Issues

substation or in a contained and restricted access indoor installation that also provides containment (761 30(l)(1)(ii)).

**MARKING
REQUIREMENTS**
(40 CFR 761 40)

Under TSCA, certain structures, PCB equipment, and PCB containers require a PCB mark to be placed on them in a prominent position. The marking requirement identifies PCBs or PCB equipment to protect emergency response personnel. Excessive marking of items, such as laboratory doors, gas chromatographs, or refrigerators is inappropriate and defeats the intent of the marking provisions. Facilities are required to place marks on PCB transformers, PCB large high-voltage capacitors, PCB large low-voltage capacitors when taken out of service, PCB containers, and PCB storage areas as described below.

PCB Transformers

Facilities operating a PCB transformer (dielectric fluid containing ≥ 500 ppm PCBs) are required to place a large PCB mark on the transformer. PCB contaminated transformers (dielectric fluid with 50 to 500 ppm PCBs) do not require the official PCB mark in 40 CFR 761 45.

Means of Access

Vault doors, machinery room doors, fences or other means of accessing PCB transformers must be labeled with a PCB mark.

**PCB Large High- and
Low-Voltage Capacitors**

Facilities are required to label all large PCB capacitors with a large PCB mark. If the capacitor is protected behind a fence, or is installed on a power line pole or other structure, this requirement may be met by marking the fence, structure or pole. The facility must keep a record in this situation to identify the capacitor.

Because of recent Green Lights projects, the requirements for the disposal of fluorescent light ballasts that qualify as small capacitors may apply. Under the PCB regulations, PCB small capacitors, if intact, may be disposed of in a non-TSCA management facility. In the interest of environmental protection, EPA recommends that these types of equipment be managed in a TSCA-approved facility with a preference toward ballast recycling and recovery operations. Detailed guidance on the management of PCB light ballasts can be obtained from the joint AEREB and SHEMD memorandum (June 15, 1995) ballast and HID lamp management.

Storage Areas

Each storage area used to store PCBs and PCB items for disposal

Office Compliance Issues

must be designated with a PCB mark

PCB Containers

All containers holding PCBs in concentrations ≥ 50 ppm, whether in storage for disposal or while being collected in the laboratory, require the large PCB mark

If in any of the above situations a large PCB mark is required, but there is inadequate space to accommodate the mark, a small mark may be used in its place.

PCB DISPOSAL
(761 60)

Exhibit 5 on the next page outlines the PCB disposal options under TSCA, taking into account land disposal restrictions under RCRA

STORAGE FOR
DISPOSAL
(40 CFR 761.65)

PCBs or PCB items designated for disposal must immediately be placed in an appropriate DOT specification container and transferred to proper storage to await disposal. The date on which the PCBs or PCB items were taken out of service must be marked on the PCB article or container. The facility must remove the article or container and properly ensure its disposal within one year from the date it was placed into storage for disposal. For example, a PCB transformer placed into storage for disposal on June 1 would have to be incinerated by June 1 of the following year. Although the PCB regulations provide a total of one year to dispose of PCB wastes, the generator of PCB waste, according to TSCA Compliance Policy 6-PCB-6, must allow the disposal facility 90 days in which to dispose of the waste before the one-year deadline occurs.

Acceptable Containers

While in storage for disposal, or 30-day temporary storage, PCBs and PCB items must be placed in proper containers. DOT-approved containers for the management of PCB wastes are identified in 49 CFR 173.202 and 204. A detailed list of DOT-specification containers that may be used to store PCB wastes prior to disposal is provided in Exhibit 6 on the page following Exhibit 5.

Office Compliance Issues

Exhibit 5
PCB Disposal Options

PCB DISPOSAL OPTIONS FOR EPA OFFICES					
PCB Category with CFR section	TSCA Incinerator (761 70)	High Efficiency Boiler (761 60(a))	Chemical Waste Landfill (761 75)	Alternative method (761 60(e))	Solid Waste Disposal
PCB Transformers -> 500 ppm					
1 Undrained (761 60 (b)(1)(i)(A))	X				
2 Drained & solvent flushed			X		
PCB Contaminated Transformers and other contaminated electrical equip -50-500 ppm					
1 Drained (761 60 (b)(5)(i)(B))					X
PCB Large Capacitors -> 3 lbs dielectric fluid at >500 ppm (761 60(b)(2)(m)(A))	X				
PCB Small Capacitors -<3 lbs dielectric fld (761 60 (b)(2)(ii))					X
Mineral oil dielectric fluid from PCB contaminated electric equipment -50-500 ppm	X	X	X	X	
Liquids other than mineral oil with 50-500 ppm (761 50(a)(3))					
1 Flash point <60° C (ignitable hazardous waste)	X			X	
2 Flash point >60° C (ignitable hazardous waste)	X			X	
3 Flash point >60° C (Does not meet hazardous waste definition)	X	X	X	X	
Non liquid PCBs - sol, rags or other debris >50 ppm (761 60)					
1 Does not meet definition of hazardous waste	X		X		
2 <1000 ppm PCBs and meets the definition of hazardous waste	X		X		
3 >1000 ppm PCBs and meets the definition of hazardous waste	X				
All other PCBs with > 50 ppm (761 60(a)(1))	X				

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Exhibit 6
Department of Transportation Specification Containers
for PCB Waste Storage

Non-Bulk Packaging for PCB Liquids	Non-Bulk Packaging for PCB Solids
Steel drum: 1A1 or 1A2 Aluminum drum: 1B1 or 1B2 Metal drum other than steel or aluminum: 1N1 or 1N2 Plastic drum: 1H1 or 1H2 Fiber drum: 1G (with liner) Wooden barrel: 2C1 Steel jerrican: 3A1 or 3A2 Plastic jerrican: 3H1 or 3H2 Plastic receptacle in steel, aluminum, fiber or plastic drum: 6HA1, 6HB1, 6HG1 or 6HH Plastic receptacle in steel, aluminum, wooden, plywood or fiberboard box: 6HA2, 6HB2, 6HC, 6HD2 or 6HG2	Steel drum: 1A1 or 1A2 Aluminum drum: 1B1 or 1B2 Plywood drum: 1D Plastic drum: 1H1 or 1H2 Fiber drum: 1G Metal drum other than steel or aluminum: 1N1 or 1N2 Wooden barrel: 2C1 or 2C2 Steel jerrican: 3A1 or 3A2 Plastic jerrican: 3H1 or 3H2 Steel box: 4A1 Steel box with liner: 4A2 Aluminum box: 4B1 Aluminum box with liner: 4B2 Natural wood box: 4C1 Natural wood box, sift proof: 4C2 Plywood box: 4D Reconstituted wood box: 4F Fiberboard box: 4G Expanded plastic box: 4H1 Solid plastic box: 4H2 Plastic receptacle in steel, aluminum, fiber or plastic drum: 6HA1, 6HB1, 6HG1 or 6HH Plastic receptacle in steel, aluminum, — wooden, plywood or fiberboard box: 6HA2, 6HB2, 6HC, 6HD2 or 6HG2

Storage Facility

A facility used to store PCBs and PCB items designated for disposal must meet the following requirements

- Adequate roof and walls to prevent rain water from reaching the stored PCBs and PCB items
- Adequate floor with continuous curbing at least six inches high. The containment volume must be equivalent to twice the internal volume of the largest PCB article or container, or 25 percent of the total internal volume of all PCB articles or containers in storage, whichever is greater

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- No drain valves, floor drains, expansion joints or any other openings that would allow liquids to flow from the curbed area
- Floors and curbing constructed of smooth and impervious materials, such as Portland cement
- Be located above the 100-year floodplain (This information can be obtained through local county surveyor offices)

Temporary Storage For Disposal
(40 CFR 761 65(c))

The regulations allow certain PCBs and PCB items to be stored for up to 30 days in a temporary storage area that meets fewer requirements than those for storage for disposal. The following items may be stored temporarily as long as each item is marked with the date it was removed from service:

- Non-leaking PCB articles and equipment
- Leaking PCB articles and equipment, provided that the items are placed in a non-leaking container with sufficient absorbent material to absorb any PCB liquid
- PCB containers holding nonliquid PCBs in the form of soils, rags, and so forth
- PCB containers holding liquid PCBs at a concentration from 50 to 500 ppm, provided an SPCC plan has been prepared for the area in accordance with 40 CFR Part 112 if any containers exceed 110 gallons
- Non-leaking PCB large high-voltage capacitors and PCB-contaminated electrical equipment that have not been drained when on pallets next to a proper storage facility. This only is allowed when the unfilled storage space within the facility is equivalent to 10 percent of the total internal volume of all of the equipment stored outside of the facility.

RECORDKEEPING
(40 CFR 761 180)

Facilities must prepare and maintain on file a written annual document log covering PCB use, storage, and disposal at the facility during the calendar year (January-December), if during the year they used or stored at one time:

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- A PCB transformer, or
- 50 or more large capacitors, or
- 45 kilograms (99.4 lb) of PCBs in PCB containers

If facilities meet any of the previous criteria for transformers, capacitors, or containers with PCBs, they must develop and maintain records on the disposition of all PCBs and PCB items at the facility. These records are used to compile the annual document log that must be completed by July 1 of the following year. There is no requirement for the submission of an annual document log to any TSCA representative; TSCA requires that facilities maintain the document on file at the facility. The records and documents contributing to the annual document log must be maintained for a period of three years after the facility stops using or storing PCB items in the regulated quantities.

The annual records include

- All signed manifests
- All certificates of disposal

Information required for the annual document log varies depending on what types of PCBs are on-site at the end of the calendar year or were shipped off-site for disposal during the calendar year. Exhibit 13-03 from the TSCA chapter provides a data collection construct that can be used for the PCB Annual Document Log.

Guidance: EPA facility representatives are encouraged to create a central file for all PCB records. Even though certain provisions in the regulations allow facilities to dispose of records after a period of time, SHEMD is recommending that EPA facilities retain these records indefinitely. Besides records for the annual document log, the PCB regulations necessitate the development of the following types of documentation to demonstrate compliance with PCB management standards:

- Records of quarterly visual inspection and related maintenance information of PCB transformers (refer to 761.30)
- Records of PCB transformer registration with local fire response personnel (refer to 761.30)

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- *Records of monthly visual inspection of the PCB storage for disposal area (refer to 761.65)*
- *Records of weekly visual inspections of the temporary or interim PCB storage for disposal area (refer to 761.65).*

**EPA Identification
Numbers**
(40 CFR 761 202)

Upon receipt of the notification form (refer to 761 205), EPA will assign a unique PCB identification number to each facility. Facilities that already possess a RCRA identification number will receive that number as their PCB identification number

**Notification of Waste
Activity**
(40 CFR 761.205)

Facilities generating (and storing in long-term storage for disposal areas), transporting, or disposing of PCB waste must notify EPA of these activities using EPA Form 7710-53 Facilities engaged in PCB waste handling prior to February 5, 1990, were required to notify EPA by April 4, 1990 Facilities beginning such PCB handling after February 5, 1990, must notify EPA prior to engaging in PCB waste handling.

Manifests
(40 CFR 761 207)

Facilities that generate and ship PCB waste off-site must complete a uniform hazardous waste manifest for that material using EPA Form 8700-22 Generators should acquire manifests from the state to which the waste is being shipped (consignment state) If this is not possible, they may acquire manifests from their state hazardous waste officials. If manifests are not available from either source, they may obtain copies of the manifests from commercial printers

Retention of Manifests
(40 CFR 761 209)

Facilities are required to maintain signed manifests for three years from the date the PCB waste was accepted by the initial transporter

Guidance: SHEMP Managers should consider retaining PCB waste manifests and related Certificates of Disposal (CDs) for longer than the three-year mandatory time period to document compliance with PCB management standards . Additionally, an extended retention period is useful for documenting the quantity and type of PCB wastes that are sent for off-site treatment and disposal in the event that a potentially responsible party search is conducted under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Accordingly, EPA facilities should retain PCB manifests and CDs for five years, at a minimum.

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Exception Reports and
Certificates of Disposal
(40 CFR 761.215 and
.218)

As with hazardous waste, generators are required to contact the transporter and/or the disposal facility if a signed manifest is not returned within 35 days. After 45 days, the generator is required to submit an exception report to the EPA Regional Administrator. The report must include a copy of the manifest and a letter indicating efforts taken to secure a signed copy.

For any regulated PCB waste, disposal facilities must return a CD within 30 days of disposal indicating how and when the waste was disposed. For PCBs sent for disposal within nine months of being taken out of service, the CD must be received within 13 months after the PCBs were taken out of service. If the CD is not received within 13 months, or if it indicates that the waste was disposed beyond one year from the date the waste was removed from service, a one-year exception report must be filed. This report must include a copy of the manifest, the date the PCBs were removed from service, the date they were transferred off-site, the identities of all parties handling the PCBs after leaving the facility, and any information as to why disposal did not occur within the allotted time.

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Section 16-10
Pesticides Management

INTRODUCTION

This section provides policy, guidance, information, and procedures to EPA office facilities for complying with federal, state, and local regulations on pesticides management.

PESTICIDE
REGISTRATION AND
CLASSIFICATION
PROCEDURES

Pesticide products containing the active ingredients listed in the SHEM Guidelines, Chapter 8, Federal Insecticide, Fungicide, and Rodenticide Act (FIPRA), Exhibit 1, have been classified for restricted use and are limited to use by or under the direct supervision of a certified applicator

Guidance: EPA contract personnel should ensure that all pesticide service contracts specify the appropriate training and certification requirements for the pesticide applicators.

Certified applicators supporting EPA office facilities most likely fall into the category of industrial, institutional, structural, and health related pest control. Training for these applicators includes:

- *Practical knowledge of a wide variety of pests, including their life cycles, types of formulations appropriate for their control and methods of application that avoid contamination of food, damage and contamination of habitat, and exposure of people and pets.*
- *Practical knowledge of specific factors which may lead to a hazardous condition, including continuous exposure in the various situations encountered in this category.*
- *Practical knowledge of the environmental conditions related to this particular activity.*

EPA contract personnel also should require that certified applicators provide a list of all pesticides to be used at the EPA office, the corresponding material safety data sheet (MSDS) for each pesticide, and a current list of references.

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DISPOSAL AND
STORAGE OF
PESTICIDES

This section provides policy, guidance, information, and procedures for complying with federal, state, and local regulations on the proper disposal and storage of pesticides and containers.

Procedures Not
Recommended

EPA office facilities should ensure that persons do not dispose of (or receive for disposal or storage) or store pesticides, pesticide containers, or pesticide container residue in a manner which

- Is inconsistent with the manufacturer's product label
- Involves open dumping or open burning on land (unless allowed by state or local regulations)
- Involves discharge POTWs or navigable waters regulated by the CWA, unless the discharge is covered by, and in compliance with, applicable pretreatment standards or a NPDES permit
- Violates any applicable state or federal pollution control standard

Additional guidance regarding the disposal of pesticides can be obtained by referencing the FIFRA chapter of the SHEM Guidelines

Storage of Pesticides and
Containers
(165 10)

These guidelines are applicable only to those pesticides classified as highly toxic or moderately toxic and whose labels are required to bear the signal words "Danger", "Poison", or "Warning" or the skull and crossbones symbol. Home and garden pesticides, and pesticides classified as slightly toxic, are not covered under these guidelines. EPA should inventory and monitor its storage facilities even if pesticide application is completed by contractor.

[165 10 (c)]

Pesticide storage facilities should be designed in accordance with the guidelines in Chapter 8 of the *EPA Facility Safety, Health and Environmental Management Manual*

Operational Procedures
[165.10 (d)]

Storage areas should be operated to ensure that

- Containers are stored with labels plainly visible

Office Compliance Issues

- Pesticides are segregated by formulation and stored under a sign with the name of the formulation
- Complete inventories with number and identity of containers in storage are maintained
- Containers are inspected regularly for corrosion and leaks, and absorbent spill materials are available

**CERTIFICATION OF
PESTICIDE
APPLICATORS**
(40 CFR Part 171)

This part outlines the training and certification requirements for commercial applicators of restricted use pesticides

Guidance: EPA contract personnel should ensure that all pesticide service contracts specify the appropriate training and certification requirements for the pesticide applicators. Office facilities should maintain documentation on-site verifying that commercial applicators of pesticides at their facilities are certified by their state, county or municipality.

Exhibit 7 on the next page provides an example of an on-site log used for maintaining records of pesticide applicators.

**INTEGRATED PEST
MANAGEMENT**

Integrated pest management (IPM) programs combine chemical, cultural, and biological practices into one program to manage pest populations. IPM stresses non-chemical control forms of pesticide management. IPM incorporates preventive practices (e.g., timely planting, crop rotation, and surveying fields for pest density), remedial practices (e.g., timely and spot spraying of pesticides only when required), and economic thresholds (i.e., the point when pest damage enough crops that growing the crops is uneconomical), thus reducing the amount of chemicals used by applying pesticides only when necessary at the minimum effective rate. EPA should work with its pesticide contractors to ensure that they are employing IPM approaches when servicing EPA office facilities.

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- Practice soil sampling
- Purchase pesticides in containers with design features that prevent spilling and leaking through splashing and dripping
- Buy only the amount of pesticide needed
- Use first-in, first-out procedures for storage to avoid shelf-life issues
- Use less persistent, leachable pesticides (consult EPA's list of leachable pesticides)
- Use contact pesticides that do not need to be incorporated into the soil
- Do not exceed recommended application rates
- Avoid excess mixing of pesticides
- Keep applicator equipment properly calibrated to control pesticide droplet size and deposition
- Add dyes to the pesticides to facilitate uniform application and monitoring rates
- Select an appropriate pesticide mixing/loading area to reduce damage to the environment from spills, avoid high runoff areas
- Practice spot application of pesticides

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Section 16-11
National Environmental Policy Act

INTRODUCTION

The purpose of the National Environmental Policy Act (NEPA) is to ensure that environmental impacts and associated public concerns are systematically considered in making decisions on federal actions. NEPA requires an environmental evaluation by federal agencies prior to the execution of a proposed federal action which could potentially cause environmental impacts. Specific examples of actions that would require a NEPA review include construction-related activities, such as new construction, as well as improvements or modifications to office or administrative facilities that could affect the environment.

NEPA establishes the Council on Environmental Quality (CEQ), which provides guidance to federal agencies on complying with the statute. In executing this task, CEQ promulgated NEPA regulations 40 CFR 1500-1508 to accurately translate the intent of the NEPA statute into practical guidance for federal agencies. EPA's implementing regulations for NEPA are codified in 40 CFR Part 6. AEREB developed the *NEPA Review Procedures for EPA Facilities*, an easy-to-use, comprehensive guide that presents the requirements of 40 CFR Part 6 and EPA implementation procedures.

NEPA REVIEW
PROCESSES

The NEPA regulations identify three basic types of environmental impact reviews:

- Categorical exclusion (CX)
- Environmental assessment (EA)
- Environmental impact statement (EIS)

A CX, which does not require an EA or an EIS, may be applicable to actions that have minimal or no effect on environmental quality and pose no environmentally significant change to existing conditions. If a construction project falls under the CX criteria, it is exempt from further environmental impact reviews. Examples applicable to EPA office facilities include renovations or facility modifications that do not entail any sensitive activities, such as asbestos removal. A CX must be documented and maintained as part of the project file. The *NEPA Review Procedures for EPA*

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Facilities contains a review form, page 1 of which will suffice as CX documentation

Actions that may pose an environmental impact, such as the construction of new facilities or significant renovations to an existing facility, should be evaluated through an EA. The purpose of an EA is to determine whether or not a proposed action may significantly affect the environment. If the results of an EA indicate no significant impact or that significant impacts can be mitigated effectively, EPA shall issue a finding of no significant impact (FNSI), which may address measures to mitigate potential environmental impacts. The *NEPA Review Procedures of EPA Facilities* contains instructions and the review form to assist in preparing an EA and, if appropriate, a FNSI.

If a FNSI is not appropriate, an EIS will need to be performed. An EIS is the most extensive level of NEPA analysis. As a result, EPA facility actions requiring the preparation of EISs are typically limited to larger construction projects that present the greatest likelihood for potentially significant impacts. There are specific documentation and regulatory requirements that must be executed in preparing an EIS. The *NEPA Review Procedures for EPA Facilities* thoroughly explains these requirements and provides a review form to assist in determining whether an EIS is required.

Office Compliance Issues

Section 16-12
Emergency Planning and Community Right-to-Know Act

INTRODUCTION

EPA offices are required to comply with the Emergency Planning and Community Right-to-Know Act (EPCRA) if they store, use, or release certain chemicals. EPCRA compliance requires offices to make its operations public and to improve the ability of local authorities to respond to emergencies.

DEFINITIONS

The following definitions are essential in understanding EPCRA requirements.

State Emergency
Response Commission
(SERC)

The SERC designates emergency planning districts within each state to facilitate the preparation and implementation of emergency plans under Section 303.

Local Emergency
Planning Committee
(LEPC)

The LEPC reviews the information submitted by facilities under EPCRA, regarding specific chemicals used at the offices and develops plan to respond to local chemical releases.

National Response Center
(NRC)

The NRC is the national communication center and is manned continuously for handling activities related to response actions. The NRC is the single federal point of contact for all pollution incident reporting through the Emergency Response Notification System (ERNS) and serves as the National Response Team (NRT) communications center.

REQUIREMENTS

EPA office facilities should ensure that they comply with the provisions of EPCRA Sections 301 through 312, all implementing regulations, and future amendments to these authorities. The following sections of EPCRA may be applicable to the office.

- Sections 302-302 - Emergency Planning and Notification. These sections require notifying the SERC and LEPC if the office has an extremely hazardous substance (EHS) over its threshold planning quantity (TPQ) at anytime. This notification should be in the form of a letter, no standard form is required. In addition, each office required to complete this notification must designate an emergency response coordinator who should

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participate in the local emergency planning process. The coordinator should provide any required information to the LEPC.

- **Section 304 - Emergency Release Notification** This section requires offices that release an EHS or hazardous substance (as defined in 40 CFR 302.4) in excess of its reportable quantity to notify the SERC, LEPC, or NRC. The oral notification should be followed by a written notification. Relevant exemptions from this reporting include federally permitted releases under CERCLA Section 101(10), releases that result in exposure only to persons within the boundaries of the facility under Section 355.40(2)(i) of EPCRA, releases of pesticide product exempt from CERCLA Section 103(a) reporting under Section 103(e), and any release not meeting the definition of release under Section 101(22) of CERCLA.
- **Sections 311-312 - Hazardous Chemical Inventory Reporting** This section requires offices that maintain MSDSs for a chemical, mixture, or product on-site at a quantity above 10,000 pounds or its TPQ if the chemical is an EHS, to supply the MSDSs or a list of the chemicals and a Tier I inventory form to the SERC, LEPC, an local fire department. Some offices may be requested to file a business plan or Tier II form with additional information.

EXAMPLES OF EPCRA REPORTING

EPA offices should require little EPCRA reporting since most offices will not exceed the established thresholds. Possible examples of chemicals that may exceed the thresholds are listed in Table 7.

**Table 7
Examples of EPCRA Chemicals**

EPCRA Section	Example Chemical
Section 302	Chlorine used in water treatment processes
Section 304	Large spill of print shop chemicals
Section 311-312	Fuel contained in USTs is an example of chemicals that may exceed the threshold quantities of 10,000 pounds.

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**Section 16-13
Pollution Prevention**

INTRODUCTION

As defined in the Pollution Prevention Act of 1990, pollution prevention means "any practice which reduces the amount of a hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal, and any practice which reduces the hazards to the public health and the environment associated with the release of such substances, pollutants or contaminants."

EXECUTIVE ORDER
12856

Executive Order 12856, Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements, requires federal facilities to lead by example in applying pollution prevention to daily operations, purchasing decisions, and policies to facilitate the protection of human health and the environment.

Guidance: EPA offices should develop a pollution prevention program designed to reduce releases and off-site transfers of toxic pollutants or hazardous materials to ensure compliance with the requirements of the executive order.

Objectives

The following requirements of the executive order are applicable to EPA's office facilities

- Voluntary Reduction Goals - The executive order requires each federal agency to reduce its total releases and transfers of toxic chemicals or pollutants by 50% by 1999 EPA offices should contribute to this goal.
- Procurement - Each agency should develop a plan and goals to reduce or eliminate its procurement of EHS or toxic chemicals EPA offices should contribute to the overall Agency goal of reducing toxic pollutants.
- Planning - Each EPCRA covered facility should develop a pollution prevention plan. EPA requires all facilities to develop pollution prevention plans.

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SOURCE REDUCTION

EPA further defines pollution prevention as source reduction and other practices that reduce the amount of pollutants entering a waste stream prior to out-of-process recycling, treatment, or disposal. It includes improvements such as materials substitution, in-process recycling, equipment modification, and housekeeping improvements.

Materials Substitution

EPA employees should attempt to use office products and cleaning supplies that contain the least hazardous or toxic ingredients possible. Examples of substitutions that emphasize the use of low hazard products include:

- Painting office spaces with latex paint and low VOC paint where possible
- Using citrus-based degreasers instead of chlorinated solvents
- Replacing office chillers containing CFCs with chillers containing non or less ozone-depleting substances, such as HFC-134a or HCFC 123
- Purchasing white-out and markers without chlorinated solvents
- Purchasing low VOC glues and adhesives or non-chlorinated glues and adhesives.

Process Modifications

EPA offices should modify processes or implement new processes to minimize the amount of pollutants entering its waste stream. Table 8 on the next page provides suggestions for process changes in standard office operations.

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**Table 8
Process Modifications**

Office Operation	Process Modification
Graphics/Photo Processing/Printing	<ul style="list-style-type: none"> • Producing high-quality images using electronic methods instead of wet-chemical processing methods • Implementing silver recovery systems on photographic processors • Using soy-based inks in the printing process
Office Practices	<ul style="list-style-type: none"> • Encouraging the use of electronic communication such as e-mail in place of hard-copy memorandum, document distribution, etc. • Encouraging double-sided copying
Transportation	<ul style="list-style-type: none"> • Encouraging the use of telephone- or video conferencing to reduce travel to meetings • Providing preferred parking places for car pools • Providing showers for bicycle riders

**ENERGY AND WATER
CONSERVATION**

Pollution prevention also includes energy and water conservation practices that protect natural resources. EPA offices should implement these conservation practices where possible.

Energy Efficiency

EPA office facilities should encourage conservation practices and ensure that building repairs and modifications use the following energy-efficient practices where possible:

- Replace air conditioning equipment with high-efficiency chillers
- Encourage employees to turn off lights when not in use
- Install upgrade insulation
- Install programmable thermostats
- Install direct digital control for HVAC control
- Design facility additions so that natural lighting and heating and cooling equipment are optimized

Water Conservation

EPA office facilities should encourage conservation practices and ensure that building repairs and modifications use the following water conservation practices and where possible.

Office Compliance Issues

- Encourage employees to turn off faucets after use and report leaking faucets to maintenance
- Install low-flow faucets with repairs and new washroom/kitchen facilities
- Landscape with indigenous plants to decrease the need for watering

**AFFIRMATIVE
PROCUREMENT**

Executive Order 12856 requires each federal agency to establish a plan and goals for eliminating or reducing the unnecessary acquisition of products containing EHSs or toxic chemicals. EPA offices should reduce their acquisition of these products.

**Procuring Recovered
Content Materials**

EPA office facilities should consult EPA's Recovered Material Advisory Notice (RMAN) guidance and Comprehensive Procurement Guideline (CPG) to determine the appropriate recycled content of certain materials including:

- Construction products including structural fiberboard, laminated paperboard, carpet, and floor tiles
- Landscaping products including hydraulic mulch and yard trimmings compost
- Nonpaper office products including office recycling containers, office waste receptacles, toner cartridges, binders, and plastic trash bags.

EPA office facilities also should consult the environmentally preferable catalogs such as the General Services Administration's Environmental Products Guide. Additional information and guidance regarding the selection of environmentally preferred products can be obtained by consulting the references included in Exhibit 8 of this chapter.

**Environmentally
Preferable Products**

EPA office facilities should incorporate EPA's seven guiding principles (Table 9) for purchasing environmentally preferable products.

Office Compliance Issues

EPA office facilities should encourage the procurement of environmentally preferred products such as Energy Star computers, office equipment, and nonhazardous biodegradable cleaners

Table 9
Seven Guiding Principles For Environmentally Preferable Products

Principle	Objective
Pollution Prevention	Consideration of environmental preferability should begin early in the acquisition process and be rooted in the ethic of pollution prevention that strives to eliminate or reduce, up front, potential risks to human health and the environment.
Multiple Attributes	A product or service's environmental preferability is a function of multiple environmental attributes
Life-cycle Perspective	Environmental preferability should reflect life-cycle considerations of products and services to the extent feasible
Magnitude of Impact	Environmental preferability should consider the scale (global versus local) and temporal aspects (reversibility) of the impacts.
Local Conditions	Environmental preferability should be tailored to local conditions where appropriate.
Competition	Environmental attributes of products or services should be an important factor or subfactor in competition among vendors, when appropriate.
Product Attribute Claims	Agencies need to examine product attribute claims carefully.

**MATERIAL
RECYCLING**

Executive Order 12873 Federal Acquisition, Recycling, and Waste Prevention, directs EPA to purchase recycled and environmentally preferable products and services

Recycling Practices

EPA offices should implement a comprehensive recycling program Offices that share buildings should initiate a recycling program for the building or participate in existing programs Examples of recycling practices that EPA can participate in are:

Office Compliance Issues

- Recycling of aluminum, glass, paper, toner cartridges, floppy disks, cardboard
- Purchasing products that contain less packaging material, allow the reuse of the packaging material, or that the vendor will accept for reuse
- Recycling of used cooking oil from cafeterias
- Composting of yard and cafeteria waste

Exhibit 8 provides additional pollution prevention references, program contacts, and hotlines to supplement the information contained in this section.

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**Exhibit 8
Pollution Prevention Hotlines and Other Resources**

Green Lights Program
1850 K Street, NW Suite 290
Washington, DC 20006

Stratospheric Ozone Information Hotline
501 3rd Street
Washington, DC 20001

Solid Waste Assistance Program
PO Box 7219
8750 Georgia Avenue
Silver Spring, MD 20907
(800) 677-9424
Fax (301) 585-0297

The 33/50 Program
US Environmental Protection Agency
(Mail Code 7408)
401 M Street, SW
(202) 260-6907
Fax (202) 260-1764

RCRA/Superfund/UST Hotline
1725 Jefferson Davis Highway
Arlington, VA 22202
(703) 412-9877
(800) 553-0202
(800) 553-7672

Pollution Prevention Information Cleannghouse
US Environmental Protection Agency
401 M Street, SW
Washington, DC 20460
(202) 260-1023
Fax (202) 260-0178

National Response Center
US Coast Guard Headquarters
2100 Second Street, SW
Room 2611
Washington, DC 20593

**Pollution Prevention Information Exchange
System**
7600-A Leesburg Pike
Room 369
Falls Church, VA 22034
(703) 821-4800

**TSCA Hotline (Design for the Environment
and 33/50)**
(202) 554-1404

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Office Compliance Issues

APPENDIX A

Model Office/Facility Environmental Program

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**Attachment 1
Office/Facility CEMP Self-Assessment Matrix
Principle 1: Management Commitment**

Level	1.1 Obtain Management Support		1.2 Environmental Stewardship
	Policy Development	System Integration	
Finish 5	Office/facility communicates its policy externally to regulatory authorities, other agencies, and other stakeholders	All office/facility decisions consider environmental criteria when appropriate, program thoroughly integrated ◆ Assume leadership through outreach	All office/facility decisions include appropriate environmental criteria to minimize impact ◆ Consider environmental impacts ◆ Participate in hearings and other activities
 4	Office/facility develops final policy and communicates it internally	More than 50% of office/facility decisions consider environmental criteria, program integrated through 75% of office/facility ◆ Encourage teaming across divisions	Office/facility develops procedures to evaluate environmental impacts of future activities ◆ Introduce design for environment concepts ◆ Provide outside speakers ◆ Sponsor outside activities ◆ Conduct "open house" for community ◆ Demonstrate commitment
 3	Office/facility develops draft policy and circulates it for review and comment	Environmental criteria are incorporated into employee performance standards as appropriate, program integrated through 50% of office/facility, criteria for environmental decision-making developed ◆ Review responsibilities	Office/facility identifies alternatives to high-impact activities ◆ Encourage environmental action plans ◆ Provide "brown bag" speakers ◆ Create promotional items
 2	Office/facility evaluates environmental concerns of key stakeholders ◆ Develop goals and priorities ◆ Communicate with stakeholders	Environmental criteria are incorporated into affected managerial performance standards, program integrated through 25% office/facility, starting with activities most affected ◆ Conduct organizational review ◆ Assign management responsibilities ◆ Include performance criteria ◆ Coordinate and review budget	Office/facility implements awareness programs to inform employees and stakeholders ◆ Provide orientation
1 START	Office/facility evaluates its mission in environmental terms ◆ Prepare Mission/Vision statements	Environmental program is communicated throughout office/facility, environmental groups and their missions defined and communicated ◆ Identify liabilities and risks ◆ Provide awareness training	Office/facility evaluates environmental impacts of its activities

Attachment 1 Continued
Office/Facility CEMP Self-Assessment Matrix
Principle 2: Compliance Assurance and Pollution Prevention

Level	2.1 Compliance Assurance	2.2 Emergency Preparedness	2.3 Pollution Prevention and Resource Conservation
Finish ↓ 5	Full office/facility compliance is sustainable, contractors are included within the compliance program <ul style="list-style-type: none"> ◆ Set "beyond compliance" performance goals ◆ Evaluate contractor performance ◆ Introduce risk assessment 	All office/facility are trained in emergency response procedures, full-scale exercises are conducted at least annually	Program maintained throughout the office/facility, reductions in waste generation achieved
↓ 4	Office/facility develops proactive and cooperative relations with regulators, non-compliance situations reduced significantly <ul style="list-style-type: none"> ◆ Employee reporting encouraged ◆ Regular contact with regulators ◆ Procedures to elevate issues to upper management ◆ Pollution prevention is primary management approach 	Office/facility implements medical monitoring for environmental program personnel, as appropriate, and inspects facilities periodically <ul style="list-style-type: none"> ◆ Conduct in-house medical monitoring, where appropriate 	Office/facility encourages reduced use of resources and identifies individuals contributing to the success of the program, process improvements implemented <ul style="list-style-type: none"> ◆ Affirmative procurement program ◆ Life-cycle analysis ◆ Design for environment ◆ Product stewardship
↓ 3	Office/facility fully implements compliance program, develops a program to track relevant legislation and regulations, and sees improved performance <ul style="list-style-type: none"> ◆ Track regulatory initiatives ◆ Address non-compliance conditions ◆ Track corrective action progress ◆ Implement environmental record-keeping system ◆ Identify problems and prevent non-compliance incidents ◆ Establish compliance management system that is integrated with EMS 	Office/facility emergency response teams are trained and periodic drills are conducted <ul style="list-style-type: none"> ◆ Establish emergency response team ◆ Train Emergency Response Team and other personnel ◆ Conduct regular exercises ◆ Identify emergency resources 	Office/facility develops goals, implements employee suggestion procedures, and identifies alternative to major generators <ul style="list-style-type: none"> ◆ Toxic materials reductions ◆ Water conservation program ◆ "Repair or Replace" program

Attachment 1 Continued
Office/Facility CEMP Self-Assessment Matrix
Principle 2: Compliance Assurance and Pollution Prevention

Level	2.1 Compliance Assurance	2.2 Emergency Preparedness	2.3 Pollution Prevention and Resource Conservation
↓ 2	<p>Office/facility communicates with regulatory authorities, develops procedures to address compliance situations, and distributes them throughout the office/facility</p> <ul style="list-style-type: none"> ◆ Introduce compliance group ◆ Develop compliance guidance ◆ Coordinate with regulators ◆ Communicate information on regulations and permits 	<p>Office/facility develops procedures to address emergency response, distributes them throughout the office/facility</p> <ul style="list-style-type: none"> ◆ Response procedures ◆ Disaster preparedness plan ◆ Hazard mitigation measures ◆ Preventative maintenance program ◆ Coordination with authorities ◆ Communication plan 	<p>Office/facility communicates pollution prevention commitment to all personnel and begins recycling programs (paper, aluminum, glass)</p> <ul style="list-style-type: none"> ◆ Energy conservation program ◆ Recycling program ◆ Reuse of materials encouraged
1 ↓ START	<p>Office/facility compliance group evaluates office/facility activities and compliance history</p> <ul style="list-style-type: none"> ◆ Develop compliance group ◆ Review office/facility activities ◆ Assess compliance baseline 	<p>Office/facility emergency response group evaluates its activities and vulnerability to natural disaster and accidents</p> <ul style="list-style-type: none"> ◆ Identify hazards at office/facility 	<p>Office/facility evaluates its waste generation profile and identifies major points of generation</p> <ul style="list-style-type: none"> ◆ Pollution prevention program emphasizes source reduction

**Attachment 1 Continued
Office/Facility CEMP Self-Assessment Matrix
Principle 3: Enabling Systems**

Level	3.1 Training	3.2 Structural Supports	3.3 Information Management, Communication, Documentation
Finish ↓ 5	100% of office/facility fully trained, refresher training provided, computer-based and distance learning employed when appropriate, training program continually evaluated ♦ Obtain feedback on training ♦ Investigate alternative training methods	Procedures are fully implemented and reviewed periodically ♦ Conduct periodic review of procedures to ensure currency	Office/facility maintains effective communications, applies environmental information to decision-making, and maintains thorough records ♦ Uses EMS data in decision-making
↓ 4	75% of office/facility fully trained, refresher training developed and available, where appropriate, continuing education encouraged ♦ Establish refresher training ♦ Encourage continuing education	Office/facility implements procedures and begins training of all staff, as appropriate ♦ Pursue integration of environmental program throughout office/facility	Office/facility develops procedures for use of information, provides avenues for employee input, and has a well-maintained records center ♦ Use electronic networks ♦ Assure validity of environmental data ♦ Secure data-handling procedures ♦ Establish employee reporting system ♦ Encourage employee input
↓ 3	50% of office/facility fully trained, system to track fulfillment of training requirements developed and implemented ♦ Establish in-house group to track training program	Office/facility disseminates procedures throughout to raise awareness of issues, implementing staff is trained ♦ Encourage input from personnel	Office/facility communicates with regulators and stakeholders and develops information gathering, manipulation, and management procedures ♦ Evaluate new IM projects ♦ Establish Resource Center ♦ Provide regular status updates ♦ Communicate with other organizations ♦ Develop public outreach program ♦ Communicate with stakeholders ♦ Develop distribution network ♦ Establish QA and security procedures

Attachment 1 Continued
Office/Facility CEMP Self-Assessment Matrix
Principle 3: Enabling Systems

Level	3.1 Training	3.2 Structural Supports	3.3 Information Management, Communication, Documentation
1 2	Office/facility training group identifies available outside training and develops in-house training where necessary, 20% of office/facility fully trained <ul style="list-style-type: none"> ◆ Identify job-specific requirements ◆ Evaluate outside vs in-house training ◆ Train-the-trainers, as necessary 	Office/facility develops or revises procedures to address activities identified as having environmental aspects <ul style="list-style-type: none"> ◆ Eliminate or revise procedures found to be barriers 	Office/facility develops internal communications and information management infrastructure, and document control procedures <ul style="list-style-type: none"> ◆ Ensure compatibility ◆ Develop environmental IM procedures ◆ Identify key records/documents ◆ Develop in-house communication ◆ Enable working relationships ◆ Report completion procedures ◆ Maintain MSDSs, etc
1 1 START	Office/facility training group identifies environmental training needs and where training is available <ul style="list-style-type: none"> ◆ Develop "Core Curriculum" 	Office/facility identifies and evaluates existing procedures and activities that have environmental aspects <ul style="list-style-type: none"> ◆ Review office/facility documentation 	Office/facility identifies lines of communication, information needs, documentation procedures <ul style="list-style-type: none"> ◆ Assign managerial responsibility ◆ Create in-house IM group ◆ Review current capabilities ◆ Define lines of communication ◆ Assign environmental POCs ◆ Develop centralized filing system

**Attachment 1 Continued
Office/Facility CEMP Self-Assessment Matrix
Principle 4: Performance and Accountability**

Level	4.1 Responsibility, Authority, Accountability	4.2 Employee Performance Standards
Finish 1 5	Assignment of environmental responsibilities is reviewed periodically in light of performance	Office/facility develops a program to recognize and reward personnel that carry out environmental responsibilities exceptionally well, appropriate disciplinary mechanisms also in place ◆ Prepare program for reward or recognize honorees ◆ Prepare disciplinary mechanisms to address non-conformance with agency-level and office/facility policy or procedures
1 4	Personnel are provided avenues to provide input and employees are held accountable for environmental performance ◆ Develop employee input/concerns program	Personnel are evaluated based on environmental aspects of their performance standards ◆ Develop procedures for evaluating performance
1 3	All employees assigned environmental responsibilities are given appropriate authority and training ◆ Issue clear statements of environmental responsibility ◆ Prepare process to address authority conflict ◆ Develop policy on accountability	Affected employees have environmental responsibilities clearly stated in performance standards
1 2	Managers assigned environmental responsibilities are given training and authority to meet those responsibilities ◆ Issue statements of defining authority	Managers have environmental responsibilities clearly stated in performance standards ◆ Develop employee evaluation standards ◆ Publicize standards and solicit input from agency/office facility
1 1 START	Office/facility identifies personnel with responsibility for environmental performance ◆ Assign authority to ensure environmental compliance	Office/facility identifies personnel with responsibility for environmental performance ◆ Identify organizational performance goals

**Attachment 1 Continued
Office/Facility CEMP Self-Assessment Matrix
Principle 5: Measurement and Improvement**

Level	5.1 Evaluate Performance		5.2 Continuous Improvement
	Gather/Analyze Data	Institute Benchmarking	
Finish 5	Data-gathering is continuous process, gaps in performance are identified and analyses conducted to identify their root cause(s)	Office/facility maintains ongoing "benchmarking cycles," office/facility becomes a target for benchmarking by others ♦ Explore possibility of mentoring other organizations	Office/facility shows significant improvement in addressing substandard performance situations and aggressively seeks to compare its performance to others ♦ Review other management approaches for applicability
 4	Periodic evaluations of operations and data-gathering procedures are conducted to assess performance ♦ Include system measurement in review and improvement process	Office/facility identifies and implements improvements based on evaluation of other organization ♦ Develop methods to apply results of benchmarking and pursue further involvement	Office/facility fully implements periodic reviews of systems and performance and seeks out additional opportunities for improvement ♦ Develop methods to apply results of benchmarking and pursue other further involvement ♦ Conduct review of procedures ♦ Review and report improvements
 3	Data-gathering and processing procedures are implemented throughout the office/facility ♦ Identify independent audit group ♦ Develop procedures to manage and use information from audits	Office/facility evaluates performance of target organization through sharing of information (e.g., site visit) for comparison with its own	Office/facility implements employee-involvement measures, such as newsletters and lessons learned, to solicit input on improving performance ♦ Develop lessons learned program ♦ Encourage employee suggestions ♦ Work to include improvements in next planning cycle
 2	Office/facility develops procedures for gathering appropriate data and communicates them to management ♦ Define assessment parameters ♦ Develop QA objectives	Office/facility identifies other organizations with similar activities and/or exceptional performance and initiates contact with them ♦ Develop program of comparison to other organizations	Office/facility develops procedure to address preventive and corrective action situations and communicates them to management ♦ Develop procedures to identify root causes ♦ Develop program of comparison to other organizations
1 START	Office/facility identifies performance indicators, data needs, and standards of comparison ♦ Develop and report on performance indicators ♦ Develop internal audit program	Office/facility evaluates its activities and sets goals for environmental performance ♦ Evaluate most useful benchmarking areas	Office/facility evaluates performance to identify areas needing improvement

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Office Compliance Issues

APPENDIX B

List of Acronyms

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Office Compliance Issues

Appendix B
List of Acronyms

AEREB	Architecture, Engineering and Real Estate Branch
API	American Petroleum Institute
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
BOD	Biological Oxygen Demand
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CD	Certificate of Disposal
CESQG	Conditionally Exempt Small Quantity Generator
CFC	Chlorofluorocarbon
CPG	Comprehensive Procurement Guideline
CWA	Clean Water Act
CX	Categorical Exclusion
DMR	Discharge Monitoring Reports
DOT	Department of Transportation
EA	Environmental Assessment
EHS	Extremely Hazardous Substance
EIS	Environmental Impact Statement
EP	Extraction Procedure
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ERNS	Emergency Response Notification System
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FNSI	Finding of No Significant Impact
FR	Federal Register
HAP	Hazardous Air Pollutant
HCFC	Hydrochlorofluorocarbon
HID	High-Intensity Discharge
HSWA	Hazardous and Solid Waste Amendments
HVAC	Heating, Ventilation and Air Conditioning
IAQ	Indoor Air Quality
IPM	Integrated Pest Management
LDR	Land Disposal Restriction
LEPC	Local Emergency Planning Committee
LQG	Large Quantity Generator
MACT	Maximum Achievable Control Technology
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goals
MSDS	Material Safety Data Sheet

Office Compliance Issues

NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
NPDWR	National Primary Drinking Water Regulations
NRC	Nuclear Regulatory Commission
NRC	National Response Center
NRT	National Response Team
NSPS	New Source Performance Standards
PCB	Polychlorinated Biphenyl
POTW	Publicly Owned Treatment Works
RCRA	Resource Conservation and Recovery Act
RMAN	Recovered Material Advisory Notice
SDWA	Safe Drinking Water Act
SERC	State Emergency Response Commission
SHEM	Safety, Health and Environmental Management
SHEMD	Safety, Health and Environmental Management Division
SHEMP	Safety, Health and Environmental Management Program
SIP	State Implementation Plan
SIU	Significant Industrial Users
SMCL	Secondary MCL
SNAP	Significant New Alternatives Policy
SPCC	Spill Prevention, Control, and Countermeasure
SQG	Small Quantity Generator
TC	Toxicity Characteristic
TCLP	Toxicity Characteristic Leaching Procedure
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage and Disposal Facility
UST	Underground Storage Tank
VOC	Volatile Organic Compound

**SAFETY, HEALTH, AND
ENVIRONMENTAL MANAGEMENT
PROGRAM GUIDE**

Guide No. 17

Issued 05/98

Revised _____

FIRE PROTECTION AND LIFE SAFETY PROGRAM

SCOPE OF THE PROGRAM

This Program Guide provides policy, guidance, information and procedures for complying with federal, state, and local regulations for fire protection and life safety. Major areas in the program include means of egress, management of hazardous materials and waste, fire protection and life safety systems, mechanical and electrical systems, special operations, compliance-related issues, and administration. All areas must be addressed to ensure an effective and compliant program.

REGULATORY REQUIREMENTS

The key or basic elements of the Fire Protection and Life Safety Program required by law and/or EPA policy are to

- Ensure facility fire protection and life safety operations, such as sprinkler systems, water supply fire pumps, suppression systems, fire extinguishers, fire detection and alarm systems, emergency power and lighting, and standpipe and hose systems, are working in accordance with NFPA standards
- Coordinate and organize occupant actions and responses to emergencies
- Conduct special operations, such as welding, cutting or brazing, conducted in accordance with standard operating procedures or permits.
- Ensure a proper means of egress exists
- Be aware of and familiar with National Fire Protection Association (NFPA) standards

for hazardous materials and hazardous waste management.

AUTHORITIES

The following documents are the sources of legal authority that establish the applicability and requirements for this chapter

Occupational Safety and Health Act (OSHA)

29 CFR Parts 1910 and 1960

Executive Order 12196

REFERENCES

The documents listed below can help you implement the Fire Protection and Life Safety program.

29 CFR Parts 1910 and 1960

OSHA, Field Technical Manual and Interpretations

National Fire Protection Association, *National Fire Codes*

Fire Protection Handbook

EPA, Facility, Safety, Health and Environmental Management Manual

IMPLEMENTATION ACTIVITIES

The following list gives an overview of the activities that this program will require. To implement and operate this program, you must

- Clarify selected aspects of the fire protection and life safety standards applicable to EPA facilities
 - Increase awareness of OSHA requirements to implement effective management systems that minimize fire protection and life safety risks to EPA employees and facilities.
 - Inspect and ensure exit enclosures, exit signs and fire doors are provided and are in proper working order
 - Review chemical inventories to identify whether flammables with vapors lighter than air may be stored. If so, provisions should be made for ventilation across the upper portion of the storage room, as well as across the floor
 - Dispense flammable liquids outdoors or in a properly separated open area with proper bonding and grounding, ventilation and limited potential for other ignition sources
 - If the facility does not own or control water supply piping other than a single pipe feeding the facility, contact the local water utility on a routine basis (every three to five years) to determine the available water supply in the area of the EPA building.
 - Review HVAC system operations to ensure fume hood performance will not be adversely affected
- occupants do not accumulate combustibles near heating units
- Develop and implement a permit process for new or special operations (i.e., welding, cutting, or brazing).
 - Develop an abatement plan for all priority A and B findings identified by SHEMD's review process
 - Ensure records are available at the facility for review by a regulator or other official reviewing the fire protection of the facility

IMPLEMENTATION IMPLICATIONS

The management systems and internal controls required to implement this program include

- Providing a flammable liquids storage cabinet and considering a flammable liquids storage room, where more than 230 liters (60 gallons) of flammable and combustible liquids are stored in one general area.
- Integrating sprinkler systems, fire pumps, suppression systems, fire extinguishers, fire alarms, and emergency lighting into a routine PM testing checklist that can be performed by in-house or contract staff
- Institute an inspection process to ensure

Fire Protection and Life Safety

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Fire Protection and Life Safety

**Section 17-02
Introduction**

PURPOSE

This chapter provides policy, guidance, information and procedures for complying with federal, state, and local regulations regarding fire protection and life safety.

SCOPE

This chapter addresses fire protection and life safety at EPA facilities and covers ongoing requirements to maintain an acceptable level of protection

AUTHORITY

Occupational Safety and Health Act (OSHA), 29 CFR Parts 1910 and 1960, Executive Order 12196

OBJECTIVES

The objectives of this chapter are to:

- Ensure facility operations conform with applicable federal, state, and local regulations with regard to fire protection and life safety
- Increase awareness of OSHA requirements to facilitate the implementation of effective management systems that minimize fire protection and life safety risks to EPA employees and facilities
- Clarify selected aspects of the fire protection and life safety standards applicable to EPA facilities.

**RESPONSIBLE
OFFICERS**

The proper maintenance and use of fire protection and life safety systems at EPA facilities should be monitored by the Safety, Health, and Environmental Management Program (SHEMP) Managers. For fire and life safety concerns where specialized knowledge may be necessary to adequately address a concern, the SHEMP Manager should coordinate with the EPA Headquarters Safety, Health and Environmental Management Division (SHEMD) and the Architecture, Engineering and Real Estate Branch (AEREB).

Fire Protection and Life Safety

REFERENCES

Topics discussed in this chapter were developed from the following sources:

- 29 CFR Parts 1910 and 1960
- OSHA field technical manual and interpretations
- National Fire Codes of the National Fire Protection Association
- Fire Protection Handbook

EPA Facility, Safety, Health and Environmental Management
Manual

Fire Protection and Life Safety

**Section 17-03
Means of Egress**

INTRODUCTION

An effective program for ensuring a proper means of egress requires an understanding of the regulatory basis and accepted practices. The regulatory basis for means of egress provided for the work place is primarily associated with those requirements derived from 29 CFR Part 1910, Subpart E. However, the specific parameters related to certain aspects of a means of egress are not well defined. In an Interpretation issued in 1993, OSHA takes the position that "employers who meet the requirements of NFPA-101 are considered in compliance with 29 CFR 1910, Subpart E. Employer compliance with revised national consensus standards, such as, NFPA-101, which provide equal or greater employee protection to that provided by an earlier version promulgated into OSHA standards, would be acceptable to OSHA." OSHA also accepts local building codes to the extent that those codes are in compliance with OSHA standards. This becomes important in situations such as when more than one exit or means of egress are required by 29 CFR 1910.36(b)(8) which states.

Every building or structure, section, or area thereof of such size, occupancy, and arrangement that the reasonable safety of numbers of occupants may be endangered by the blocking of any single means of egress due to fire or smoke, shall have at least two means of egress remote from each other, so arranged as to minimize any possibility that both may be blocked by any one fire or other emergency conditions.

This regulatory statement does not give guidance on how to determine when "occupants may be endangered by the blocking of any single means of egress." However, NFPA 101 provides specific criteria for various types of occupancies when a single exit is acceptable. NFPA 101 also provides detailed criteria to determine acceptable remoteness of the exits. Based on this problem, it is EPA's intent to use the most recent version of NFPA 101, where feasible, as a way to provide a means of egress that not only meets the general requirements of 29 CFR 1910, Subpart E but also is based on specific criteria developed through a consensus process. The Guidelines presented in this chapter are based on the requirements of the 1994 edition of NFPA 101. It is also EPA's intent to comply with local building, fire prevention or other

Fire Protection and Life Safety

adopted codes that apply to EPA facilities. The code or standard with the more stringent means of egress requirements will be followed.

**MEANS OF EGRESS
REQUIREMENTS**

Any building or structure designed for human occupancy shall be provided with exit facilities adequate to allow occupants to promptly evacuate in case of a fire or other emergency.

Guidance: A means of egress is made up of three distinct parts: the exit access, the exit and the exit discharge. These three segments must be maintained to provide an easily identified continuous route to evacuate the building. See the Facility, Safety, Health and Environmental Management Manual (FSHEMM) for the EPA reference to the following criteria.

Access for the Means of Egress 1910.37(f)(1)

All portions of a means of egress from a building should remain accessible whenever the building or area is occupied.

Guidance: An exit access is any portion of a means of egress which leads to an exit. Inspection of exit enclosures is limited to housekeeping issues. To maintain the accessibility, there should be no accumulation of materials which would obstruct access to the physical path or present a potential fire or other hazard that could result in the exit being blocked.

**Protection of the Means
of Egress** 1910.37(b)
NFPA 101 5-1.3

The protection requirements for various components of a means of egress vary. Corridors serving as an exit access for an area with an occupant load of more than 30 should be separated or enclosed with one hour fire resistive construction. The exit access portion of the means of egress must be maintained free and clear of obstructions as noted above.

Guidance: Inspection of exit enclosures is limited to evaluating the separation of the exit or exit access. The specific hourly rating is not easily determined after the building is complete. The visual inspection of such separations should ensure that there are no penetrations (holes) present which would allow smoke or heat to enter the exit or exit access enclosure. The separation should also be inspected to ensure fire doors are provided and are in proper working order.

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All penetrations should be sealed with materials that are specifically designed to protect openings in fire resistive construction. Openings around electric conduits feeding lighting or sprinkler piping should be sealed with caulk or other material to prevent the passage of smoke or heat into the exit enclosure.

Fire doors should be provided to protect all door openings into an exit or exit access enclosure. The doors should remain in the normally closed position unless special hold open devices are provided which will release in the event of a fire or alarm.

Discharge of the Means of Egress 1910 37(h)(1)

All exits from a building should discharge directly to a street, or to a yard, court or other open space that gives safe access to a public way

Guidance: Section 5-7 of NFPA 101 provides additional information regarding discharge from exits. It is acceptable for exits, such as stairs, to discharge within a building. However, certain criteria must be met. EPA should ensure that any project which may alter or modify a building near where a stair discharges does not alter the conditions which allow the stair to discharge within the building. It is also important that operations within the building do not present a hazard to the area where an exit discharges. EPA facility managers should ensure chemical use or storage will not inadvertently present a risk to an exit discharge.

Marking Means of Egress

The exit route should be readily apparent from all areas of a building. Exits such as stairs, exit doors or protected exit passageways must be provided with exit signs. The direction to reach an exit must either be readily apparent or marked with exit signs. Any exit sign must either be internally illuminated or sufficiently illuminated from external lighting. In areas required to be provided with emergency lighting, the exit signs must also have emergency power or be illuminated by emergency lighting

Guidance: NFPA 101 Section 5-10 provides general requirements for exit signs. In addition, the applicability of Section 5-10 is provided in the specific occupancy chapters of NFPA 101. In general, exit signage should be adequately addressed during the design stage of a new or remodeled building. If a small modification is being performed to a facility without a review

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process, special care should be given to ensure that the means of egress is adequately identified.

All facilities must address the continued maintenance of exit signs. Exit signs should be visually inspected to ensure they are properly lighted and that any emergency power or lighting also is operational.

Lighting of the Means
of Egress

The designated exit access from all areas of a building should be adequately illuminated. The minimum required level of illumination is 1 foot-candle measured at the floor. Emergency lighting also is required for these areas. The minimum required level of initial illumination is an average of 1 foot-candle with a minimum at any one point of 0.1 foot-candle along the path of egress measured at floor level. Emergency lighting is required to provide at least 90 minutes of illumination with the level of illumination at the end of the required duration at least 60 percent of the required levels of initial emergency illumination.

Guidance: NFPA 101 Section 5-8 provides requirements for illumination of the means of egress. Section 5-9 of NFPA 101 provides the requirements for emergency lighting. The applicability of these sections is provided in the specific occupancy chapters of NFPA 101. Lighting should be addressed during the design stage of a new or remodeled building. If a small modification is being performed to a facility without a review process, special care should be given to ensure that the adequate illumination of the means of egress is provided.

Maintenance/
Housekeeping Means
of Egress

All portions of a means of egress from a building should remain accessible whenever the building or area is occupied.

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Section 17-04
Hazardous Materials and Waste

INTRODUCTION

This section addresses the fire safety concerns associated with the storage and handling of hazardous materials and waste. The regulatory requirements for storage and handling of hazardous materials and wastes vary significantly based on the specific use of the facility involved. The following presents general guidelines. The SHEMP Manager responsible for a facility that utilizes hazardous materials should familiarize themselves with at least the following NFPA standards: NFPA 30, 45, and 55. These codes also can serve as a resource for other valuable references.

STORAGE

Fire protection regarding the storage of hazardous materials and wastes is based on the type and characteristic of the hazardous material or waste being stored. The EPA criteria for hazardous material and waste storage facilities can be found in chapter 7 of the FSHEMM.

In general, the most specific fire protection regulations for storage of hazardous materials or wastes are the regulations for storage of flammable and combustible liquids. The specific amount of flammable liquids allowed to reside outside of a special storage enclosure is limited by the use of building or facility.

Guidance: Where flammable and combustible liquids are used on a routine basis in quantities greater than eight liters (two gallons), such as in a laboratory, a flammable liquids storage cabinet should be provided. Where more than 230 liters (60 gallons) are stored in one general area, a flammable liquids storage room should be considered. For specific requirements where flammable liquids storage cabinets and flammable liquids storage rooms are required, see NFPA 30 and NFPA 45. No more than one day's supply of flammable liquid should reside outside of a storage cabinet or room at one time.

Flammable liquids storage rooms must be provided with ventilation. Ventilation of flammable liquids storage cabinets is not required from a fire protection perspective. Section 4-4 of NFPA 30 specifies minimum construction and ventilation rates for flammable liquid storage rooms. However, the ventilation requirements do

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not take into consideration varying aspects of many flammable liquids

Guidance: The ventilation criteria set forth in NFPA 30 are based on flammables with vapors that are heavier than air. The SHEMP Manager should review chemical inventories to identify whether flammables with vapors lighter than air may be stored. If so, provisions should be made to provide ventilation across the upper portion of the storage room as well as across the floor

Storage of compressed gasses is addressed in NFPA 45 and 55. In general, compressed gas cylinders must be properly secured to prevent damage to the cylinder valve stem and storage must be properly segregated.

For storage in laboratories, the primary reference should be NFPA 45, which addresses cylinder use within the laboratory work area.

Guidance: Compressed gas cylinders in laboratories should be limited to the cylinders in use in that work area plus one replacement cylinder.

NFPA 55 is applicable to the general storage of compressed gas cylinders at a facility. The basic requirements include separating compressed gas cylinders from other incompatible compressed gasses, general combustibles and flammable or combustible liquids. Table 2-1.5 of NFPA 55 provides the required separation between various gas cylinders by type of hazard of the gas. Table 2-2.1 provides preferred storage locations for flammable gases based on the total volume stored.

The storage of other hazardous materials that do not pose a direct fire threat also should be considered.

Guidance: Release of radiological or other hazardous materials may not pose a direct fire threat. However, a fire may contribute to the release of such material. This should be considered in the storage practices of radiological or hazardous materials which could threaten public health and safety or the environment if a release occurred.

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HANDLING

The handling of hazardous materials and wastes presents a significant fire risk. As noted above, the most specific requirements are those for flammable liquids. The most critical fire protection concern in handling flammable liquids is the transfer of the flammable liquid between containers. The transfer of flammable liquids between two containers can create a sufficient static charge to result in a discharge with adequate energy to ignite the flammable liquid. The risks associated with dispensing of flammable liquids are significant enough to require additional protective measures beyond those for storage of flammable liquids. These requirements are outlined in NFPA 30, Paragraph 4-4.2.11.

Guidance: Dispensing of flammable liquids should not be performed within flammable liquids storage rooms unless the room has been specifically designed for dispensing operations. To reduce the risks associated with dispensing operations, dispensing should be performed outdoors or in a properly separated open area with proper bonding and grounding, ventilation and limited potential for other ignition sources.

Hazardous material or hazardous waste handling should be performed in such a way that a minor accident will not result in a fire or other incident. Typical fire protection precautions when handling hazardous materials and wastes include using approved safety containers for transporting materials, securing and protecting control valves or valve stems, transporting only compatible chemicals together, and limiting the quantities transported to reduce the hazard and make the transportation more manageable.

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Section 17-05
Fire Protection and Life Safety Systems

INTRODUCTION

This section addresses existing fire protection and life safety systems. The following guidance describes the necessary requirements to maintain and test an operational system.

WATER SUPPLY

Most EPA facilities do not control the water supply to their facilities. In these cases, the requirements for maintaining the water supply are the responsibility of the water utility and the annual sprinkler drain tests will adequately meet the water supply testing requirements. The FSHEMM specifies sources of acceptable water supplies and requirements to follow for alternate supply sources.

Guidance: If EPA facilities do not own or control water supply piping other than a single pipe feeding the facility, EPA staff should contact the local water utility on a routine basis (every three to five years) to determine the available water supply in the area of the EPA building. The available water supply should be documented along with any previous water supply data to identify general water supply trends (improvement or degradation).

If EPA owns a distribution system that feeds water to individual buildings, the required maintenance is increased. As noted above, the available water supply should be documented. However, it becomes the responsibility of EPA to perform flow tests and properly record the data. In addition, routine inspection, testing and maintenance of the water distribution system is the responsibility of EPA, the General Services Administration or the facility owner. Routine inspection and maintenance is required for fire hydrants, valves and the piping. In general, all inspections and maintenance should be performed annually and after each use. Typical inspection and maintenance for a fire hydrant include confirming easy access, lubricating threads and stems, flushing, and checking that no stagnant water remains in the hydrant barrel. Valves require periodic lubrication and exercising to ensure their continued operation. Specific details on required inspection, testing and maintenance are contained in Chapter 4 of NFPA 25.

Guidance: A flow test, where water is flowed from the water supply and measured, is required every five years. However,

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hydrants requiring annual maintenance could also be used to selectively test the water flow available. Facilities should consider more frequent flow tests performed on a selective basis.

SPRINKLERS

Sprinkler systems must be included in a preventative maintenance (PM) program. The program must include a monthly visual inspection of components, a quarterly inspection and test of the water supply and alarm capabilities of the system, and annual inspection and test of piping, sprinklers, valves, fire department connections and other system components. The installation of sprinkler systems must follow the criteria set forth in chapter 5, section 4 of the FSHEMM.

***Guidance:** Each EPA facility should integrate the sprinkler system into their PM program. The monthly visual inspections can be implemented through the use of existing personnel (either staff or contract). Any personnel who perform the visual inspections should be trained and provided with a facility specific list of items to be checked. This checklist can then be maintained as documentation of the inspection program. The quarterly requirements can either be met by existing personnel or through contract to a professional sprinkler contractor. If existing personnel are used, additional training must be provided to ensure that the operation of the system is being performed properly. Local jurisdictions may also require certification to perform the quarterly servicing. If this is the case, it may be better to contract out this function. The annual (and less frequent) servicing should be contracted to a licensed sprinkler contractor. This is important for two reasons: to meet potential licensing requirements and to ensure that the system is reviewed by experienced personnel on at least an annual basis.*

There also are longer term testing and maintenance requirements that must be met on 5, 20 and 50 year intervals. These include items such as testing of gauges and sprinkler heads and maintenance of valves. When fast response sprinklers are more than 20 years old or any sprinklers are more than 50 years old, the required testing becomes more frequent. These requirements would normally be brought to the attention of the facility by a trained contractor performing the quarterly or annual sprinkler system servicing.

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FIRE PUMPS

Fire pumps require inspection on a weekly basis. As with inspections for other systems, the inspection of the fire pump is limited to a visual verification that the pump appears to be operational. Along with this visual inspection the fire pump should also be tested on a weekly basis. This test simply involves starting the pump through automatic means and running it for at least 10 minutes with no water flowing. More extensive testing is required on an annual basis. The annual testing includes a complete flow test. The documentation of the annual testing must be maintained to compare the performance of the pump over its operational life. The annual testing usually is performed in conjunction with annual maintenance. The required maintenance depends on the type of fire pump. However, all fire pumps require maintenance on an annual basis.

Guidance: Not all facilities are equipped with fire pumps. When provided, the weekly inspections and test are easily performed as a routine PM checklist items. However, the annual test and maintenance should be performed by a licensed contractor familiar with fire pump operations, testing and maintenance.

OTHER SUPPRESSION
SYSTEMS

Other suppression system (e.g. dry chemical, carbon dioxide and clean agent gases) also require routine inspection, testing and maintenance. The requirements for installation of these systems are found in chapter 5 of the FSHEMM.

Guidance: The specific inspection, testing, and maintenance requirements for various suppression systems vary. Each EPA facility should identify all such systems and develop a specific PM schedule for each system. The required inspection, testing, and maintenance for non-water-based extinguishing systems are included in the specific NFPA standard for that system. If the system is water-based, the criteria are included in the corresponding chapter of NFPA 25. Some of these other extinguishing systems and where the inspection, testing, and maintenance requirements can be found include:

*Carbon dioxide systems - NFPA 12
Foam-water systems - NFPA 25, Chapter 8
Water spray systems - NFPA 25, Chapter 7
Dry chemical systems - NFPA 17
Wet chemical systems - NFPA 17A*

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Clean Agent system - NFPA 2001

FIRE EXTINGUISHERS

Fire extinguishers require routine inspection and maintenance. The inspection of fire extinguishers is limited to a quick visual check to ensure the fire extinguishers are available and operable. The inspection includes confirming the fire extinguishers are in their proper location, the pressure gauge (if provided) shows adequate operating pressure and there is no obvious physical damage or obstruction that would prevent their use. These inspections can easily be implemented by EPA staff. Documentation of the inspections must either be attached to the fire extinguishers or maintained in an electronic system that provides a permanent record.

Fire extinguisher maintenance is required on an annual basis. The specific maintenance varies by the type of fire extinguisher. The annual maintenance is best performed by a person knowledgeable in the basic functionality of fire extinguishers. They must be familiar with the mechanical parts, extinguishing agent and means of expelling the agent. Based on the need for this expertise, it is best to have the annual maintenance contracted to a fire extinguisher contractor. The annual maintenance documentation is required to be via a tag or label securely attached to each fire extinguisher. This is normally included by the maintenance contractor with no need for further documentation by the facility. Additional maintenance and testing is required for certain types of extinguishers. This includes hydrostatic testing and emptying and re-loading of the extinguisher. These requirements also should be performed by a qualified individual. If a contractor is used for annual maintenance, the need for the additional maintenance and testing is usually identified, brought to the attention of the facility and performed in a timely manner.

Guidance: The inspection of fire extinguishers is best performed in conjunction with sprinkler system or other PM programs. The annual maintenance and other testing are best conducted through a contractor.

**FIRE DETECTION AND
ALARM SYSTEMS**

Most fire alarm components require testing on either a quarterly, semi-annual or annual basis. Monthly testing also is required for some batteries and off-premises equipment. However, these would

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not be expected at most EPA facilities. It is important to note, based on the above testing frequencies, that all devices must be tested at least once every year. If a revolving cycle is implemented where selected devices are tested each month, the facility must ensure that the devices are being tested at the required frequencies. In most installations, testing one device each month will not meet the testing requirements for the fire alarm system. Chapter 6, section 11 of the FSHEMM provides the requirements for fire alarm system operation which should be met at the time the system is installed.

Guidance: Each facility should integrate fire alarm inspection and testing into the facility PM program. The specific test methods which are required for various fire alarm system components are outlined in Table 7-2.2 of NFPA 72. Any testing performed on the fire alarm system at a minimum must comply with the test methods outlined in this table. Table 7-3.2 outlines the frequency which the testing must be performed. Visual inspection frequencies are outlined in Table 7-3.1. All inspection and testing of fire alarm systems should meet these requirements. Samples of inspection and testing forms are included as Figure 7-5.1 of NFPA 72. The records maintained at the facility should contain the information requested in this sample.

**EMERGENCY POWER
AND LIGHTING**

Emergency lighting systems must be installed in accordance with chapter 6 of the FSHEMM. Emergency lighting systems must undergo a functional test on 30-day intervals for a minimum of 30 seconds. Emergency lighting units that have self-testing and self-diagnosing capabilities do not require the functional test but must be visually inspected on 30-day intervals. An annual test of the emergency lighting must also be performed. This test must be 90 minutes in duration with adequate illumination maintained throughout the test. These requirements apply to each rechargeable battery unit used for emergency lighting purposes.

When the emergency lighting is part of a larger emergency power system, additional testing and maintenance must be performed. However, these systems usually will not require testing of individual lights. The additional requirements are contained in NFPA 110 for emergency generators and NFPA 111 for stored electrical energy systems (i.e., battery systems).

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Generators must be inspected weekly and exercised with a test of the transfer switch on a monthly basis. Stored Electrical Energy Systems must also be inspected on a weekly basis with a functional test performed quarterly.

Guidance: The testing of emergency lighting also is easily integrated into a routine PM checklist item which can be performed by in-house or contract staff. However, the more rigorous testing and maintenance of emergency power generator sets and stored electrical energy systems should be contracted to licensed contractors familiar with such systems.

**STANDPIPE AND
HOSE SYSTEMS**

Hoses should not be installed on connections within EPA-occupied or -controlled spaces. If a hose is provided to meet local codes, it must be tested and maintained in accordance with NFPA 25 and 1962. Standpipe systems must be maintained in accordance with NFPA 25. In addition, signs must be posted at the hose which states "For Fire Department Use Only."

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Section 17-06
Mechanical and Electrical Systems

INTRODUCTION

This section addresses the fire safety concerns associated with selected mechanical and electrical systems

HVAC SYSTEMS

The fire protection concern associated with HVAC systems is the spread of smoke through a facility during a fire incident. The design criteria is presented in the FSHEMM, chapter 5, section 8 HVAC systems, if not properly designed, can contribute to the spread of smoke through a facility. To prevent this from occurring, the HVAC system should be integrated with the fire alarm system or, at a minimum, provided with duct smoke detectors to shut down the fan units upon detection of smoke. If the duct smoke detector is not connected to the fire alarm system, it must sound a local alarm when smoke is detected. Testing of this portion of an HVAC system should be integrated as part of the fire alarm testing requirements.

Guidance: In laboratories where one-pass air is provided, the provision of duct smoke detectors should be limited to the supply fans. The purpose of the duct detectors is to prevent the introduction of smoke into the building if there is a malfunction in the fan unit, such as a slipping fan belt. Each facility should review the operation of their HVAC system to ensure fume hood operations will not be adversely affected. If the automatic shut down of a fan unit would expose a fume hood operator, means should be provided to give ample warning of a potentially hazardous condition.

EXHAUST SYSTEMS

The design of exhaust systems, including fume hood systems, should address the fire protection concerns associated with these systems. The requirements for such systems are presented in chapter 5, section 9 and 12. From an operational standpoint the systems should not require maintenance to ensure proper fire protection unless the potential for accumulation exists in the exhaust system (e.g., a sawdust removal system or cooking equipment ventilation system). When there is the potential for the system to require routine cleaning, the maintenance should be in accordance with NFPA 91.

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Modification of these systems can have a significant effect on the fire separations between laboratory areas. Therefore, facility staff should take care when modifying such systems to ensure that fire separations are not compromised by changes to exhaust or fume hood systems.

Guidance: Any modifications of exhaust or fume hood systems should be reviewed by an engineer to ensure that proper fire separations are not compromised by the installation.

HEATING EQUIPMENT

Heating equipment should be installed in accordance with chapter 5, section 10 of the FSHEMM. Stationary heating equipment, such as boilers and furnaces, should be maintained in accordance with the applicable codes and manufacturers' recommendations. The level of maintenance and testing required depends on the heating system's size and type of fuel.

Portable heating devices should not be used in EPA facilities except under special circumstances. Where permission has been granted for their use, a permitting system should be implemented as discussed in Section 7 of this document. The use of portable heating devices should be treated as a special operation and undergo strict review.

Guidance: Any use of portable heating units should be limited to those with Underwriters Laboratories listings. The devices should be provided with safety switches that activate if the unit is tipped. The permitting of the units should be used to control the type of units used and to easily identify and remove from service any units found to be either faulty or that create unacceptable risks. Along with the permitting process, there should be an inspection process initiated to ensure that occupants do not accumulate combustibles near the heating units.

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**Section 17-07
Special Operations**

INTRODUCTION

Special operations in the context of these guidelines are considered those that are not routinely encountered in the everyday use of a facility. It should be noted that special operations may include a pilot operation that may, in time, become a routine operation with standard operating procedures (SOPs). Until such SOPs are developed, the criteria outlined in this section should be applied. For example, welding, cutting, and brazing should not be a routine operation in an EPA facility. Therefore, this is included in this section.

PERMITTING

There is a regulatory basis for issuing a permit for welding, cutting, and brazing as noted below. However, for other operations, permits are considered good work practice.

Guidance: EPA facilities should develop and implement a permit process for new or special operations. This is especially true for new operations that are following untested SOPs performed outside of equipment designed for operations, such as fume hoods. Another appropriate use of a permitting procedure would be construction or other renovations in an area where the work may impact or be exposed to ongoing laboratory operations. The permit should serve as notification for appropriate safety staff of a new or special operation that is being conducted. This will allow the safety staff to research the operation to determine what safety precautions should apply to such an operation. The permit should also serve to solicit safety staff input in developing the SOPs for a new or special operation. The permitting process can ultimately serve to demonstrate that measures have been taken to assure a reasonable level of safety before initiating new processes.

Examples of when a permit should be implemented include distillation processes outside of a fume hood, spray painting operations, and use of volatile chemicals in an office environment. Examples of when a permit would not be necessary are distillation processes conducted within an operable fume hood, a special operation that has been performed in the past with an accepted SOP, and minor spray painting using a single, pre-packaged spray can.

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WELDING, CUTTING,
AND BRAZING

As noted above, there is a regulatory requirement for permitting of welding, cutting, and brazing operations

Guidance: A sample permit can be found in the appendix to NFPA 51B.

A permit must be issued before any welding, cutting, or brazing is conducted. The area where the operations are to take place must be inspected prior to issuing the permit and at least once per day while the permit is in effect. The inspection is meant to ensure the area is fire safe. Any hazards noted must be documented on the permit with appropriate precautionary measures also noted. If the area has combustible materials, including building contents or the building's construction material, special measures must be taken. These include removing the combustible materials, wetting them, or otherwise protecting them against ignition. Specific measures to be taken can be found in chapter 3 of NFPA 51B.

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Section 17-08
Equivalency Analysis

INTRODUCTION

The concept of equivalency historically has been applied to existing facilities that do not meet the prescriptive requirements of regulatory documents. However, there has been a recent emphasis on performance-based standards. The proper procedure and documentation of either an equivalency or performance-based method of meeting a regulatory requirement is important to avoid regulatory conflicts and citations. The responsibilities for accepting equivalencies or performance-based approaches are outlined in chapter 1, section 8 of the FSHEMM. These responsibilities are held jointly by SHEMD and AEREB.

Equivalencies only are appropriate when a regulatory requirement cannot be implemented in an existing building and the requirement was not in force at the time of construction. Equivalencies are not appropriate for new construction and should not be used to realize marginal cost benefits.

RESPONSIBILITIES

The responsibility for providing an equivalent level of protection or meeting a performance-based compliance methodology lies with the entity which could be inspected against the regulatory requirement. This responsibility usually resides with the facility.

DOCUMENTATION

The documentation of an equivalency begins when the issue of potential noncompliance is first raised. This section assumes that an equivalency or performance-based methodology will only be implemented if strict compliance is not easily implemented. The documentation necessary when an equivalency is pursued includes identification of the regulatory basis, an abatement plan, evaluation of the regulatory citation to determine the intent of the regulation, development of the equivalency methodology, and implementation of the equivalency. This documentation must be maintained for the time that the regulatory citation is not met as required by chapter 1, section 8 of the FSHEMM. Situations where documentation of equivalency is no longer required include (1) renovations that achieve compliance, or (2) changes in the regulations or referenced codes that result in the existing condition complying with the new regulation.

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The initial documentation of the regulatory basis likely will result from an audit or review. The audit or review may be internal or external, and also could be a regulatory or programmatic review. If there is a comprehensive fire and life safety program in place, most if not all of the initial identification of compliance issues should be from a programmatic audit or review. The proper documentation of these issues becomes more important to illustrate to a regulator that the program is functioning and resulting in corrective measures.

Early in the development of a corrective measure, the documentation will be limited to identification of the regulatory citation. If a regulatory citation creates an unsafe or unhealthful condition and a corrective measure cannot be implemented within 30 calendar days, an abatement plan must be developed. The abatement plan must explain the conditions that are delaying the abatement, have a proposed timetable for abatement, and a summary of interim steps taken to protect employees.

Guidance: An abatement plan should be developed for all priority A and B findings identified by SHEMD's review process. While not all of these issues would be considered to create an unsafe or unhealthful condition, the development of an abatement plan serves as an indicator that a comprehensive program is in place. This policy is reflected in the Facility Safety, Health and Environmental Management Manual.

RECORDS

There are no specific regulatory requirements for the records that must be maintained. However, the regulation does outline steps that must be taken when abatement of a violation cannot be accomplished within a timely manner. The following guidance for records is derived from the regulatory requirements for the abatement of unsafe or unhealthful working conditions.

Guidance: The records described below should be retained as part of the equivalency or performance-based compliance methodology implemented:

- *Original identification of the hazard, including regulatory citation*
- *Original and updated abatement plans*

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- *Correspondence and transmittals with regard to the abatement between safety and health committees, employee representatives, other agency resources that are needed to abate the condition, and the lessor agency*
- *A report or analysis of the equivalency or performance-based approach to abate the citation. This should include a regulatory review for the basis of the recommended actions to be taken*
- *Proper documents that demonstrates the equivalency or performance-based approach has been implemented. This may include construction documents or purchase request forms.*

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Section 17-09
Program Elements

INTRODUCTION

This section addresses the basic program elements of administrative actions that must be implemented to assure a comprehensive fire and life safety program. This is presented in program elements including records required to be maintained, inspection, testing and maintenance of fire and life safety systems, review of fire and life safety installations or modifications, interim compensatory measures, and general emergency planning. Each element is discussed below and includes guidance for the SHEMP manager.

RECORDS

Records of inspections, tests, and maintenance of systems and their components should be retained by EPA. If the facility is leased, the owner is required to maintain such documentation.

Guidance: EPA should have records readily available at the facility for review by a regulator or other official reviewing the fire protection of the facility. While it is not a requirement that EPA have the documentation, it should be part of a comprehensive package to illustrate the facility's commitment to the fire protection and life safety part of the overall Safety, Health and Environmental Management Program.

INSPECTION,
TESTING, AND
MAINTENANCE

Inspection (Visual)

Inspection requirements for various fire and life safety systems are simple visual confirmation that a system or component is ready for service. Examples of inspections include confirmation of the fire extinguisher's proper location and pressure or confirmation that a sprinkler valve is open. No physical testing of a system or its components is performed during inspections. Inspections are more frequent than testing or maintenance as discussed below.

Guidance: The inspection requirements for various fire and life safety systems should be integrated into a comprehensive inspection program which could include other periodic inspection requirements, such as RCRA weekly inspections.

Testing

Testing of a system or its components is most comprehensive during initial acceptance of a new system or re-acceptance of a system after major modifications. Additional testing is required.

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throughout the life cycle of a fire or life safety system. Required tests usually are performed on a monthly, quarterly, semiannual, or annual basis. The specific tests required and the frequency of testing can be found in the appropriate NFPA standard that applies to the fire or life safety system.

Maintenance

Maintenance is often performed on an "as needed" basis as determined by either inspections or testing. This type of maintenance usually involves correcting a malfunction or break down of the system. There also are some fire and life safety system components that require maintenance at prescribed intervals. This type of maintenance is prescribed for components that either have a limited expected life or limited usable life without additional maintenance. Examples of components that require routine maintenance include batteries, sprinkler heads, and smoke detectors.

Guidance: Records that should be maintained include valve inspections, flow, drain and pump tests, trip tests of dry pipe, deluge and preaction systems, smoke detector operation and other fire alarm component testing. Inspection documentation may also be coordinated at a centralized location to facilitate management of the inspection program.

REVIEW PROCESS

The design plans and construction drawings for new and modified facilities, including modifications to existing fire and life safety systems, should be reviewed at significant design and construction points as prescribed in chapter 1, section 9 of the FSHEMM. The review will be coordinated between SHEMD and AEREB to ensure proper selection and installation of the system or modifications to an existing system. If the system to be installed or modified is deemed critical, such as a sprinkler system or fire alarm, the installation or modification must be inspected by a representative acceptable to SHEMD. Such a system must also undergo a comprehensive acceptance test as required by the design and construction specifications, as well as the applicable NFPA standard.

Guidance: To ensure that fire and life safety systems are properly selected, installed, maintained and modified, the facility SHEMP Manager should request specialized expertise. All reviews and installation or modification inspections should be performed by a

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trained professional knowledgeable in fire protection or life safety systems design and implementation.

**INTERIM
COMPENSATORY
MEASURES**

All planned impairments of water-based fire protection systems must be performed with the appropriate measures taken as outlined in NFPA 25, Chapter 10. Under emergency impairments, appropriate emergency actions will be taken to minimize potential injury and damage. The steps outlined for preplanned impairments must be implemented as soon as feasibly possible. The steps that must be taken are:

- Determine the extent and expected duration of the impairment
- Inspect the areas or building involved to determine the increased risk
- Submit recommendations to management or the building owner/manager
- Notify the fire department
- Notify other authorities as appropriate (such as alarm companies)
- Notify the supervisors in the affected areas
- Implement a tag impairment system, as described by NFPA 25
- Assemble all necessary tools and materials on the impairment site.

***Guidance:** Impairments of all fire protection and life safety systems, including fire alarm and emergency lighting or power systems, should follow similar procedures when impairments occur.*

**EMERGENCY
PLANNING**

Fire and life safety emergency planning is concentrated in the occupant emergency plan. In small facilities, this plan may be a one page, abbreviated plan as approved by GSA. In larger, more complex facilities, this may be a large document. The plan must be updated annually. This update should include revision of the personnel assigned responsibilities under the plan and integration of

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new areas or processes that have been introduced into the facility since the plan was last updated. Periodic drills also are required.

Guidance: The occupant emergency plan must be coordinated with other emergency plans, such as a chemical hygiene plan or emergency and disaster preparedness plan. Consistency between personnel assigned to tasks and periodic drills, as detailed in the various documents, is important. Where appropriate the facility may wish to develop a comprehensive document that meets the criteria for the various required documents.