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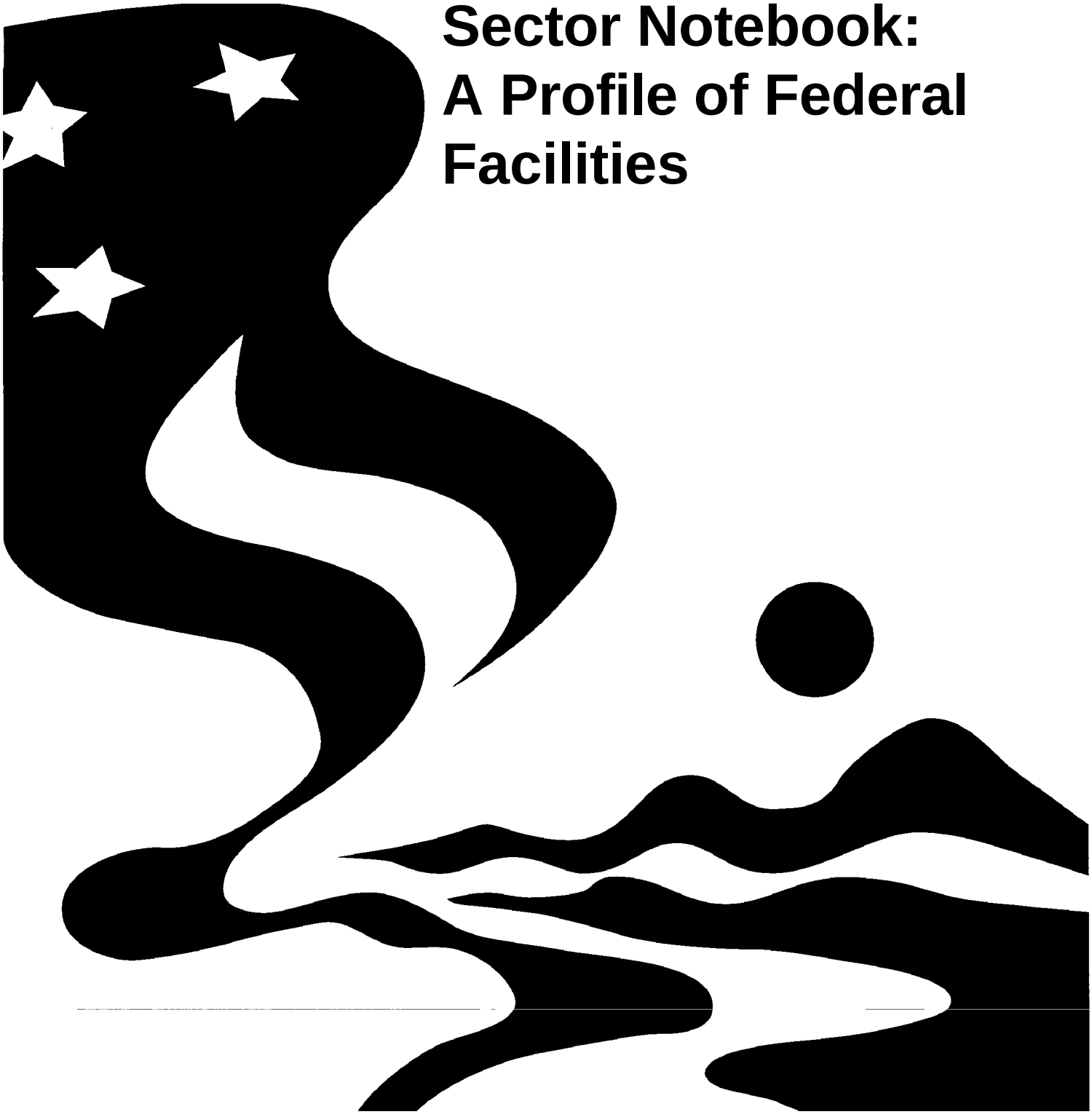
Federal Facilities Sector Notebook: A Profile of Federal Facilities



Federal Facilities Sector Notebook:

A Profile of Federal Facilities

January 1996

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U.S. Environmental Protection Agency
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This document is designed solely to increase general knowledge and understanding about the federal facility sector for the benefit of employees of the United States Environmental Protection Agency (EPA) and state and local governments, tribal representatives, and the public. Descriptions contained herein of any policies and procedures are not intended, and cannot be relied upon, to create any rights, substantive or procedural, enforceable by any party in litigation with the United States. EPA reserves the right to act at variance with these policies and to change them at any time without public notice.

The Federal Facilities Enforcement Office would like to thank those reviewers, both within and outside of EPA, who provided comments on this document. For the most part, those reviewers comments were addressed; unless resource constraints prohibited such revisions.

1.0 GENERAL INTRODUCTION

This sector notebook is one of a series of notebooks published by the U.S. Environmental Protection Agency (EPA) to provide information of general interest about the status of environmental issues faced by specific industrial sectors. In contrast to the private sector, the public-sector federal government spans many industrial sector boundaries and faces unique and complex environmental challenges. EPA prepared this document to provide a profile of the environmental activities performed by the federal government sector, including compliance with regulations and pollution prevention (P2). The profile is limited in scope. With the availability of more funds, the notebook will be expanded.

This chapter describes the sector notebook initiative and explains the purpose, structure, and content of this document.

1.1 SUMMARY OF THE SECTOR NOTEBOOK PROJECT

Environmental policies based upon comprehensive analysis of air, water, and land pollution (such as economic sector and community-based approaches) are becoming an important supplement to traditional single-medium approaches to environmental protection. Environmental regulatory agencies are beginning to embrace comprehensive, multistatute solutions to issues related to permitting of facilities, compliance assurance, education and outreach, research, and regulatory development. The primary concepts that inspire the new policy direction are that releases of pollutants to any environmental medium (air, water, and land) affect other environmental media and that environmental strategies must identify and address those interrelationships actively through policies of the "whole" facility. One way to achieve a focus on the whole facility is to design environmental policies for similar industrial facilities. Under such an effort, environmental concerns that are common to the manufacture of similar products can be addressed in a comprehensive manner. The desire in the EPA Office of Compliance to move forward with this "sector-based" approach led to the creation of the sector notebooks.

Figure 1-1 below lists the 18 industrial sectors profiled in the other EPA sector notebooks.

FIGURE 1-1

INDUSTRIES IN SECTOR NOTEBOOKS

Dry cleaning	Nonferrous metals
Electronics and computers	Non-fuel, non-metal mining
Wood furniture and fixtures	Organic chemicals
Inorganic chemicals	Petroleum refining
Iron and steel	Printing
Lumber and wood products	Pulp and paper
Fabricated metal products	Rubber and plastic
Metal mining	Stone, clay, glass and concrete
Motor vehicle assembly	Transportation equipment cleaning

Appendix G presents a list of the sector notebooks, and the EPA contact.

1.2 CONTENT AND PURPOSE OF DOCUMENT

The purpose of this notebook is to provide a snapshot of the environmental programs, challenges, and accomplishments of the federal facilities sector. The document provides staff of EPA and state agencies with a broad overview of the status of activities at federal facilities nationwide. It does not attempt to catalog all activities and programs. The information in this notebook answers such questions as:

- What is the federal facilities sector?
- Where are the federal facilities located?
- What types of activities are federal facilities engaged in?
- How can federal facilities prevent the generation of pollution in the future?
- What types of environmental challenges do federal facilities face and what types of programs do they conduct?
- How do the environmental problems, compliance rates and environmental expenditures of federal facilities compare with those of the private sector?
- What are some other resources that provide information about the federal facilities sector?

Because the federal facilities sector comprises many agencies that have diverse missions, it is difficult to develop one summary that is applicable to all such agencies. Therefore, this notebook describes activities that occur within three distinct segments of the federal community:

- The Department of Defense (DoD), including the Departments of the Army, Navy, and Air Force and the associated defense agencies
- The Department of Energy (DOE), including national laboratories
- Civilian federal agencies (CFA), (including such agencies as the Departments of the Interior, Commerce, Agriculture, Veterans Affairs, Transportation, and the U.S. Postal Service)

CFAs discussed in this notebook are those as reported in the Federal Facilities Tracking System (FFTS). FFTS is a new computer tracking system. When facility data linking is completed, the system will contain about 12,000 Federally-regulated facilities. Currently, the data includes items such as Formerly Used Defense Sites (FUDS), and double entries of facilities due to misspellings. Based on August 1995 data, the Departments of Transportation, Interior, Commerce, Agriculture, Veterans Affairs, and the U.S. Postal Service make up the majority of CFA facilities. Because there are numerous agencies in each of the departments, this document addresses the environmental activities at CFAs in general, rather than attempting to present a comprehensive profile of all CFAs.

As in the industrial sector notebooks, the key topics addressed in this notebook are:

- General information about the sector
- Compliance history
- Typical industrial processes conducted and applicable P2 opportunities

Information presented in each profile was developed through research of a variety of sources, and usually was condensed from more detailed information about specific topics.

This document is presently in draft form and is not intended to be used as a source of definitive data or assessments of the performance of federal facilities. Representatives of the federal facility sector have not yet commented on its content. Further, the information contained herein is indicative only of the status of the federal facility sector in October 1995. It may not reflect current practices or accomplishments.

1.3 OTHER SOURCES OF INFORMATION ABOUT FEDERAL FACILITIES

In addition to this federal facilities sector manual, several documents that describe the sector are available from EPA. Appendix E presents a list of those documents.

2.0 INTRODUCTION TO FEDERAL FACILITIES

This chapter provides a characterization of the federal facility sector, including the number of such facilities in the United States and their locations.

2.1 CHARACTERIZATION OF THE FEDERAL FACILITY SECTOR

The federal government defines federal facilities as: buildings, installations, structures, land, public works, equipment, aircraft, vessels, and other vehicles and property owned by, or constructed or manufactured and leased to, the federal government. Federal facilities are required to comply with various statutes, regulations, and Executive Orders (EO) administered by EPA. Recognizing the unique nature of the federal facilities sector, EPA created the Federal Facilities Enforcement Office (FFEO) to coordinate federal facility enforcement, compliance assurance, and assistance efforts for those requirements. FFEO also serves as the lead communicator with Congress, other agencies, states, and other stakeholders on these matters. For example:

- The federal government is the owner of one-third of the nation's land area, and is the nation's largest consumer of energy.
- The federal government is one of the nation's largest consumers of paper and paper products.
- The federal government has been mandated by EO to be an environmental leader in such areas as acquisition, recycling, and waste prevention.

According to EPA's FFTS, there are approximately 15,880 federal facilities nationwide, including DoD, DOE and CFA facilities. CFA facilities are diverse; and include organizations such as those listed in Table 2-1 below. Table 2-1 primarily presents the government department level CFAs that are tracked in FFTS. There are numerous other separate departments, bureaus, and independent agencies that are also tracked.

TABLE 2-1

UNIVERSE OF CIVILIAN FEDERAL AGENCIES TRACKED IN FFTS

Department of Agriculture (DOA)	Federal Communications Commission (FCC)
Department of Commerce (DOC)	Federal Emergency Management Agency (FEMA)
Department of Health and Human Services (HHS)	Federal Home Loan Bank Board (FHLB)
Department of the Interior (DOI)	General Services Administration (GSA)
Department of Justice(DOJ)	International Communications Agency (ICA)
Immigration and Naturalization Service (INS)	National Aeronautics and Space Administration (NASA)
Department of Labor (DOL)	National Science Foundation (NSF)
Department of Transportation (DOT)	Tennessee Valley Authority (TVA)
Department of Treasury	Smithsonian Institution (S.I.)
Department of Veterans Affairs (VA)	U.S. Postal Service (USPS)
Community Services Administration (CSA)	
Environmental Protection Agency (EPA)	

Other sector notebooks focus on one standard industrial classification (SIC) code. It is not generally possible to use SIC code information to develop a profile of the federal facility sector because federal facilities are classified under several SIC codes, which may also include establishments that are not federal facilities. For example:

- DoD facilities typically are classified under SIC code 9711, national security.
- CFAs, such as Coast Guard facilities, federal prisons, and VA hospitals, fall under SIC codes such as the following:
  - 96, administrative and economic programs
  - 92, justice, public order, and safety
  - 80, health services
  - 806, hospitals and medical labs
  - 9223, correctional institutions
  - 9621, transportation programs
  - 9641, agricultural marketing and commodites.

When identifying the entire community of federal facilities, it is important to acknowledge that not all federal facilities are owned and operated by the federal government. Federal agencies often have complex relationships with private entities. At numerous federal facilities and on many public lands, a private party or parties are involved at some level in operating the facility or leasing the facility or lands for private use or other purposes. The regulated community of facilities at which the federal government is involved includes government owned and government operated (GOGO) and government owned contractor operated (GOCO), as well as several other types of facilities.

Table 2-2 provides definitions of the various types of facilities and federal leased lands that make up the regulated community of federal facilities. The complex relationships between federal facilities and private entities are not addressed in this notebook.

TABLE 2-2

IDENTIFICATION OF THE REGULATED COMMUNITY OF FACILITIES WITH FEDERAL INVOLVEMENT

Acronym/Term	Definition	Classification for Information System Tracking Purposes:
GOGO	Government owned/government operated facility is the traditional Federal facility where the government owns and operates all regulated activity.	Federal Facility.
GOCO	Government owned/contractor operated facility is owned by a Federal agency but all or portions of it are operated by private contractor(s).	Federal facility (or GOCO in some program information systems).
COCO	Contractor owned/contractor operated facility is a non-government owned, privately operated facility that provides goods and/services to a Federal agency under contract.	Private party.
COCO(E)	Same as COCO, however, contractor may be furnished government equipment to manufacture a product or provide a service.	Private party.
POGO	Privately owned/government operated is a facility where the government leases buildings or space for its operations.	Federal facility where a single agency occupies all or most space in a building.

TABLE 2-2 (continued)

IDENTIFICATION OF THE REGULATED COMMUNITY OF FACILITIES WITH FEDERAL INVOLVEMENT

Acronym/Term	Definition	Classification for Information System Tracking Purposes:
GOPO	Government owned/privately operated is a facility where the government has leased all or part of its facility to a private operator for their operation and profit.	Federal facility.
Leasee	Parties granted use of government land by a rental or real estate agreement or title transfer with a reversionary clause (municipal landfills, oil and gas, mining, grazing, agricultural, industrial operations, parks and marinas).	Federal agency lands.
Grantee	Parties having received a grant for permanent authorization to use government land or given a right of way. Grants usually involve a single payment for the land or transfer of land use rights.	Private Party.
Claimant	Parties having properly located, recorded and maintained mining claims under the 1872 mining law on Federal lands for which a patent has not been issued.	Federal agency lands when available for entry under the 1872 Mining Law.
Patent Holder	A mining claimant who has met the statutory requirements of the 1872 Mining Law and has been issued a permit.	Private Party (when permit has been issued).
Permittee	Parties granted a permit for short-term use of government land.	Federal agency lands.
Withdrawal from Public Use	Permit granted to a Federal agency or instrument of the Federal government to use land of another Federal agency for up to twenty years administratively as long as intended use does not involve destruction of the land (i.e., military uses, dams). Congressionally mandated withdrawals are generally permanent changes of administration of Federal lands to accommodate more destructive uses of such lands.	Federal agency administering the lands.

The federal government owns hundreds of thousands of buildings, located on millions of acres of land. Figure 2-1 shows the national distribution of federal facilities in three categories: DoD, DOE, and CFAs.

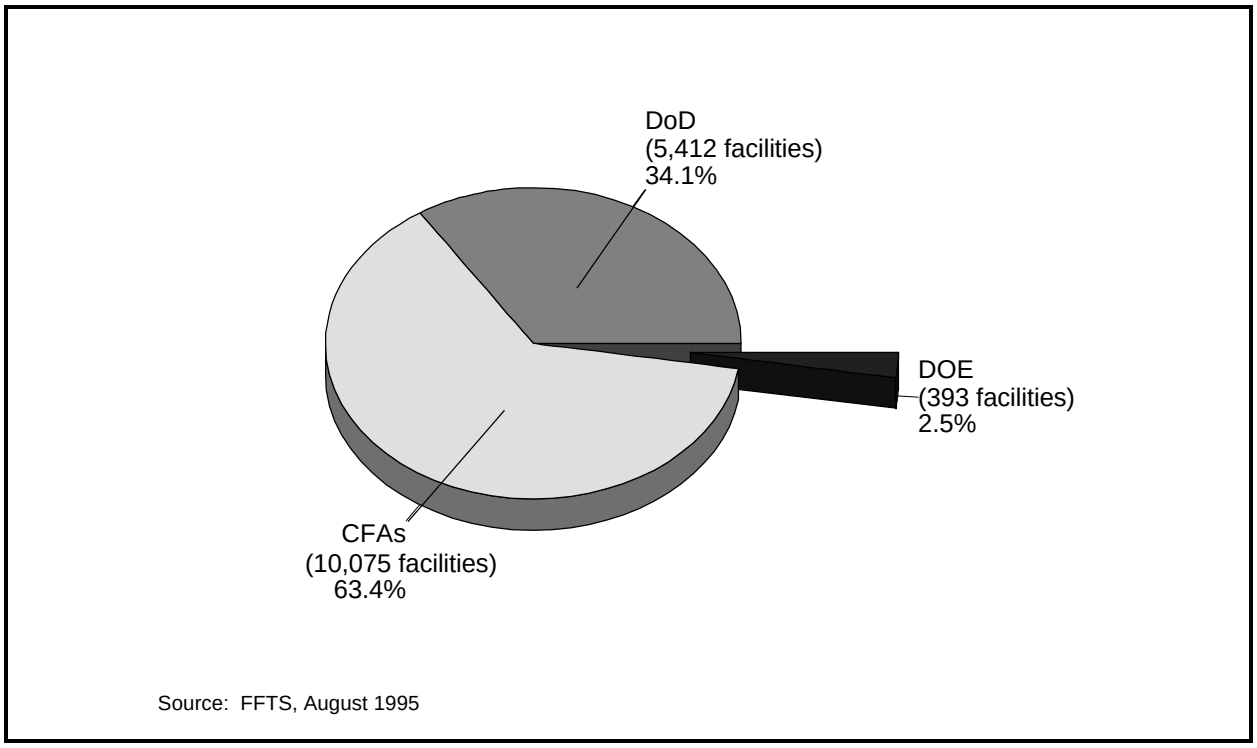

Figure 2-1. National Distribution of Federal Facilities

Federal facilities are dispersed throughout the United States, EPA Regions, and states, as Figures 2-2 and 2-3 show.

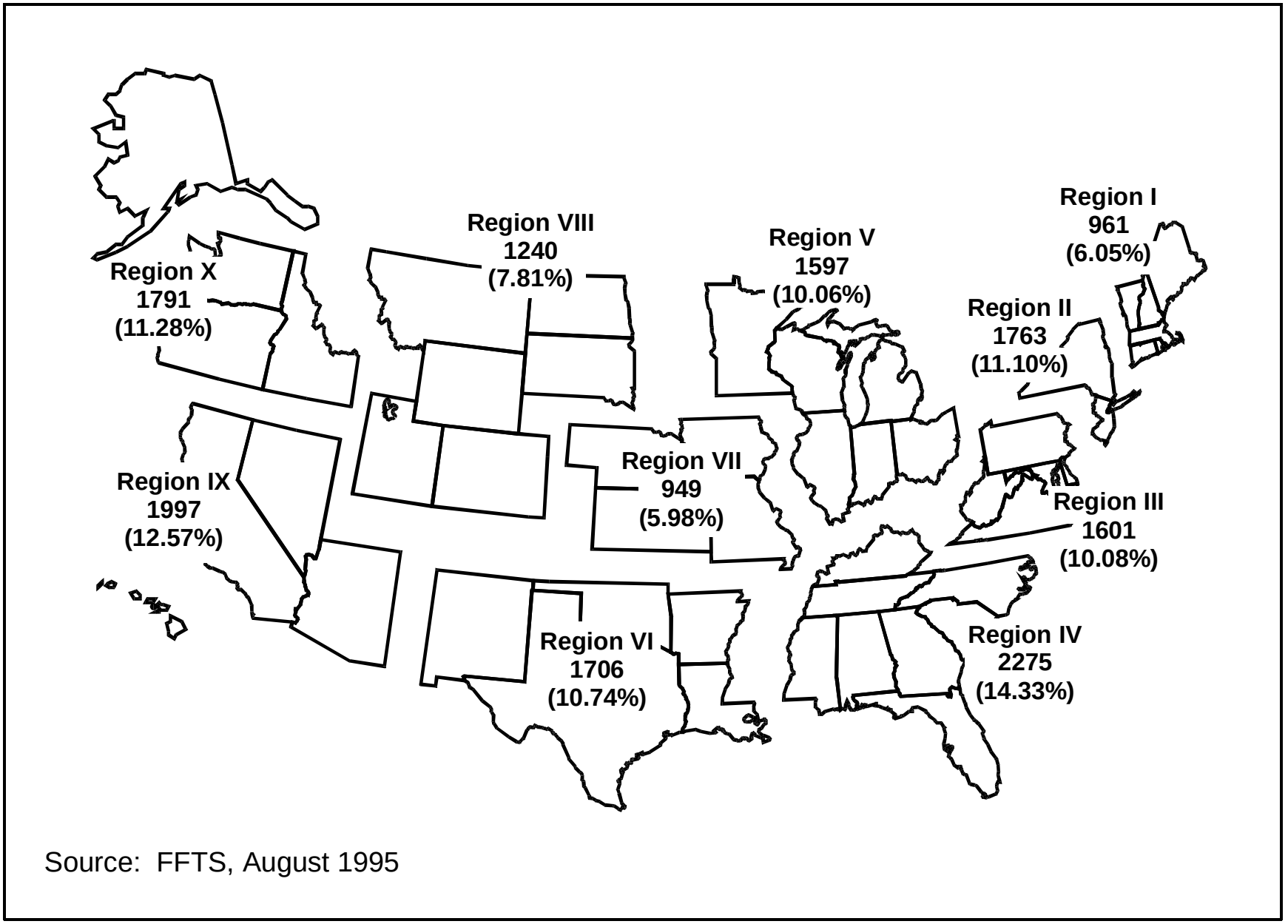

Figure 2-2. Total Number of Federal Facilities Per EPA Region

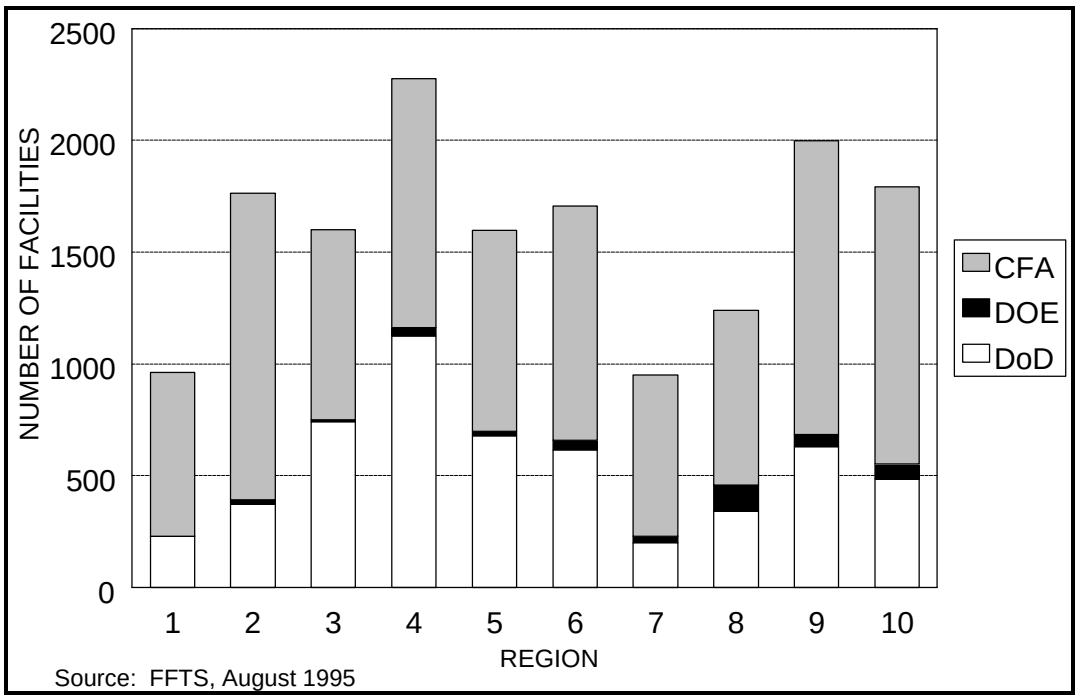

Figure 2-3. Distribution of Federal Facilities by Region (FY 1994)

2.2 MISSIONS OF THE FEDERAL AGENCIES

The following discussion describes the missions of the various federal agencies.

DoD

The Department of Defense is charged with defending the interests of the United States anywhere in the world. As such, DoD maintains thousands of installations across the U.S. to provide the necessary infrastructure to support the armed services to meet this mission. The installations range in size from a few acres to thousands of square miles; their missions range from logistics and training, to manufacturing, and rebuilding aircraft and ships. Many of these installations are the equivalent of small (and sometimes not so small) cities; therefore they will have all the infrastructure (such as hospitals, sewage treatment plants, roads, airports, and other aspects) associated with city environments. Much of the support activity associated with DoD's mission is industrial in nature. Accordingly, DoD installations also may confront environmental issues associated with industrial plants, including problems with air and water pollution and the generation of solid and hazardous waste. DoD's mission has created environmental issues that are microcosms of those faced by cities and industries in America today.

DOE

In the past, the Department of Energy was charged with providing the technical information and the scientific and educational foundation for the technology, policy, and institutional leadership necessary to achieve efficiency in energy use, diversity in energy sources, a more productive and competitive economy, improved environmental quality, and a secure national defense. In recent years, DOE has shifted away from the design and testing of nuclear weapons and toward cleanup and disposal of radioactive and hazardous mixed-waste sites. Most of DOE's 393 installations are dedicated primarily to research. DOE has 9 major multi-program laboratories, 10 single-purpose laboratories, and a wide range of special user facilities crucial to U.S. industry's global competitiveness. The laboratories conduct research in a variety of areas including solar energy, battery development, energy transmission methods, atomic energy, fossil fuel energy, and nuclear weapons. Some of the laboratories are located in large compounds while others are part of university systems. In addition to research, industrial activities are conducted at several DOE locations throughout the United States. DOE's industrial activities include metalworking, tool and die manufacture, manufacture and assembly of circuit boards, and other activities. Like that of DoD, DOE's mission contributes to environmental problems in all media.

CFAs

The majority of federal facilities subject to environmental requirements are those facilities that belong to CFAs. Many of these agencies are highly specialized; however, their activities tend to mirror, on a smaller scale, the activities of DoD and DOE. Although these agencies conduct widely varied operations, albeit on a reduced scale, they require environmental management considerations. These considerations include chemical (including fuel) use and storage, small-scale manufacturing operations, management of fleet vehicles, and laboratory research.

Of the approximately 10,075 CFAs that are tracked in FFTS, the greatest numbers are under the jurisdiction of:

- Department of Transportation (1,464 facilities)
- Department of the Interior (1,200 facilities)
- U.S. Postal Service (1,026 facilities)
- Department of Agriculture (836 facilities)
- General Services Administration (700 facilities)

Figure 2-4 shows the distribution of CFA facilities by agency tracked in FFTS. These counts include some duplicative listings since facility data linking has not been completed.

2.3 ACTIVITIES COMMONLY CONDUCTED AT FEDERAL FACILITIES

Federal facilities serve a variety of missions, such as providing national security; conducting research and development; delivering the nation's mail; and managing federal lands for agriculture, livestock, mining, recreation, and other purposes. Examples of commonly conducted activities at federal facilities include:

- Maintenance of vehicles, vessels and aircraft
  - Painting
  - Parts cleaning
- Fuel storage and refueling
- Electroplating
- Printing and photoprocessing
- Wastewater treatment
- Hospital operations
- Laboratory research
- Office operations
- Explosives manufacturing, storage, and disposal
- Electronics facility maintenance
- Firefighting and firefighting training areas
- Housing
- Drinking water provision
- Ship building
- Land management
- Warehousing

Sections 4 and 5 of this notebook address a select few of these activities in detail. Future versions of this notebook may expand Sections 4 and 5 to address more of these, or other, activities.

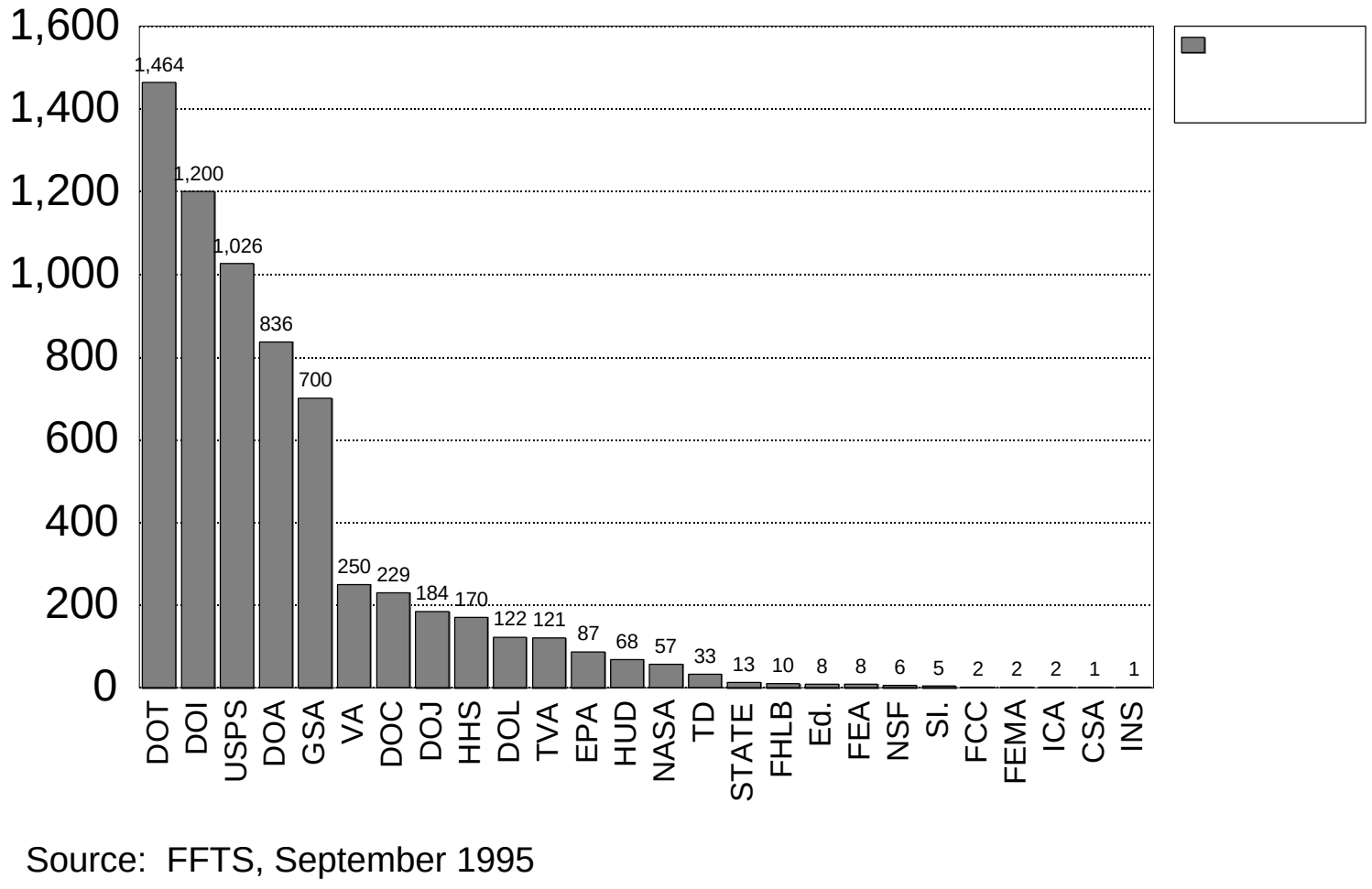

Figure 2-4. Breakdown of CFA Facilities

2.4 ENVIRONMENTAL CHALLENGES FACED BY FEDERAL FACILITIES

Federal facilities face a wide variety of environmental challenges, including:

- Compliance with various environmental statutes and the implementing regulations established under those statutes
- Compliance with federal EOs (e.g., EO 12856, EO 12989, and others) that direct the environmental management approaches taken by federal facilities
- Cleanup of contaminated federal property
- Creating and implementing effective environmental strategies that emphasize compliance, risk management, pollution prevention, and sustainable development
- Acquiring resources for developing and improving environmental management systems (for example, adequate budget, human resources, information management systems, and technology)
- Addressing issues related to environmental justice
- Addressing the need for preservation of land and ecosystems

Those statutes and EOs that affect environmental compliance at federal facilities are:

- Archaeological and Historic Preservation Act
- Clean Air Act (CAA)
- Coastal Barrier Resources Act
- Coastal Zone Management Act (CZMA)
- Community Environmental Response Facilitation Act (CERFA)
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)
- Conservation Programs on Military Installations (the Sikes Act)
- Emergency Planning and Community Right-to-Know Act (EPCRA)
- Endangered Species Act
- Federal Facilities Compliance Act (FFCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
- Federal Land Policy and Management Act
- Federal Water Pollution Control Act (FWPCA)
- Fish and Wildlife Conservation Act
- Hazardous Materials Transportation Act
- Marine Mammal Protection Act
- Migratory Bird Treaty Act
- National Environmental Policy Act (NEPA)
- Oil Pollution Act (OPA)
- P2 Act (PPA)
- Resource Conservation and Recovery Act (RCRA)
- Safe Drinking Water Act (SDWA)
- Toxic Substance Control Act (TSCA)
- Base Realignment and Closure Act (BRAC)

- EO 12580 -- Superfund Implementation
- EO 12856 -- Right-to-Know and P2 Requirements
- EO 12873 -- Acquisition, Recycling, and Waste Prevention
- EO 12902 -- Energy Efficiency and Water Conservation
- EO 12843 -- Ozone-Depleting Substances
- EO 12898 -- Environmental Justice
- EO 12844 -- Alternative-Fuel Vehicles
- EO 12845 -- Energy Efficient Computers
- EO 12989 -- Federal Acquisition/ Community Right to Know Toxic Chemical Release Reporting
- EO 12088 -- Federal Compliance with Pollution Control Standards

It is important to note that it is essential to know the function a particular federal facility serves to determine which of the above-listed environmental requirements apply to it. Further, it is beneficial to understand the modifications of operations that can be made and prevention measures that can be taken to ensure compliance.

The federal government is focusing both on cleanup of past activities and on preventing the occurrence of problems in the future. For example, past problems are often characterized by the ranking of a facility according to the threat it poses to human health or the environment and listing on the CERCLA National Priorities List (NPL).

The NPL is a list of the nation's highest priority abandoned hazardous waste sites that require cleanup other than an emergency or time-critical removal response. Listing of a federal facility on the NPL triggers a requirement for compliance with CERCLA section 120 and its associated deadlines for ensuring a timely cleanup.

At the end of fiscal year (FY) 1994, 160 federal facilities were listed on the NPL (proposed and final) (see Figure 2-5 below).

The distribution of types of federal facilities on the NPL by federal agency is:

- DoD, 80.6 percent (129)
- DOE, 11.9 percent (19)
- CFA, 7.5 percent (12)

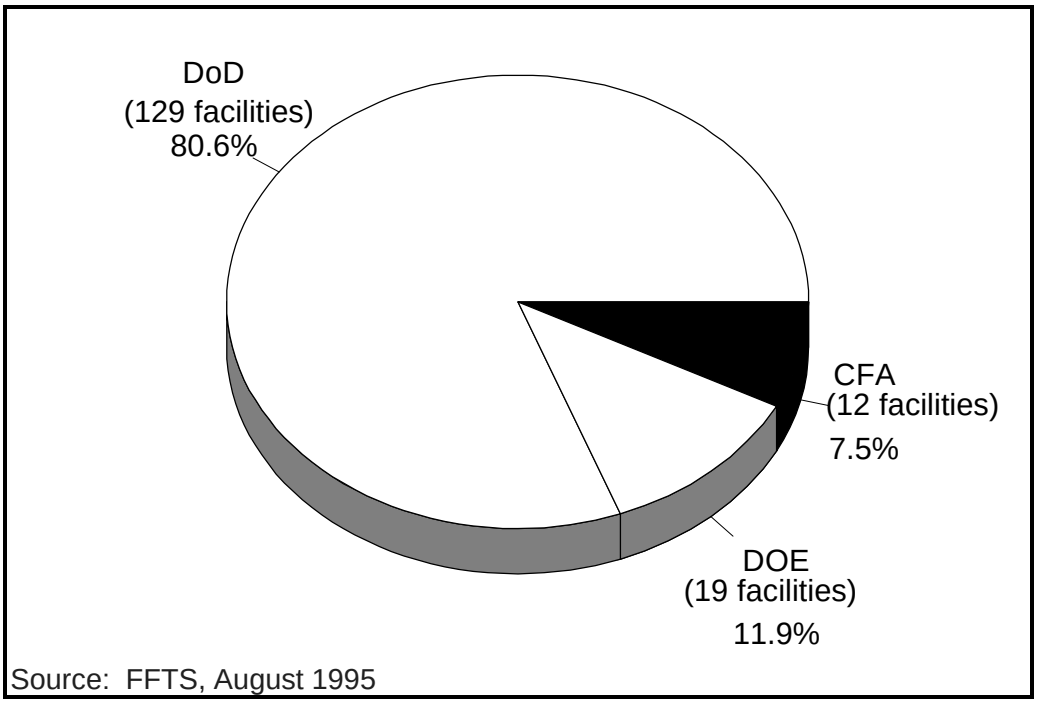

Figure 2-5. Distribution of Federal Facilities on the NPL (FY 1994)

2.4.1 Environmental Expenditures of Federal Facilities

Federal facilities have a growing commitment to environmental excellence. One way in which they manifest that commitment is through expenditures on environmental management and projects. However, budgetary expenditures alone are not a complete indicator of an agency's commitment to environmental excellence. Budgetary expenditures should be examined in combination with pollution reduction initiatives adopted, corrective action measures taken, and cleanups accomplished. As evidence of the government's increasing commitment to environmental protection, the budget for cleanup and compliance at federal facilities rose from $3 billion in FY 1989 to $10 billion in FY 1993.

Table 2-3 shows that funding levels for environmental projects approximately doubled from FY 1991 to FY 1994. Table 2-3 also illustrates how the funding levels are allocated among the various federal agencies.

TABLE 2-3

BUDGET AUTHORITY FOR ENVIRONMENTAL PROJECTS BY AGENCY
(in millions of dollars [$M])*

Agency	FY91 ($M)	FY92 ($M)	FY93 ($M)	FY94 ($M)
DoD	2,168	4,172	4,020	5,246

DOE	3,687	4,434	5,729	6,175
CFAs	158	250	290	201
Total	6,103	8,556	10,038	11,622

* Source: July 1995, Draft "The State of Federal Facilities"

DoD and DOE account for the vast majority of spending on environmental projects, 53.1 percent and 45.1 percent, respectively, of the total budgeted authority in FY 1994. While DoD and DOE devote significant resources to environmental programs, CFAs are much smaller and often lack the infrastructure, budget, and technical expertise to manage environmental problems effectively.

Although spending on environmental issues by all agencies has increased since FY 1991, the rates of increase have slowed. There also are several differences between the CFAs, and DOE and DoD. For example, over the period in question, spending by DOE and DoD increased by 67.5 percent and 140.1 percent, respectively, while spending by CFAs grew by only 27.2 percent until FY 1993 and then declined in FY 1994 to pre-FY 1992 levels.

EPA has a means to track and review the environmental projects of federal facilities funded by the federal agency's environmental budgets. FEDPLAN is a computer tracking system that is updated annually with a list of environmental projects planned by federal facilities and the proposed cost of those projects. The data provided by federal facilities includes both planning and completion milestones. The requirement for federal facilities to provide this data to EPA is found in EO 12088.

2.4.2 Description of Environmental Programs

Federal facilities conduct numerous environmental programs. In addition, federal facilities have formed successful environmental partnerships with EPA. Highlights of some of the key programs and initiatives are presented below. When this notebook is revised, additional environmental programs will be highlighted below.

2.4.2.1 Department of Defense

DoD has an environmental program that is built on the principle that environmental responsibility must be an integral part of the ethic of any large organization that conducts industrial activities. DoD, as the nation's largest such organization, takes its environmental responsibility seriously. Responsibility for ensuring

environmental compliance lies with the Deputy Under Secretary of Defense for Environmental Security [DUSD(ES)]. The responsibility of that office is to ensure satisfactory environmental quality for both DoD and its stakeholders, while promoting military readiness. DUSD(ES), therefore, has established an environmental program that has three broad tiers. The first tier, at the Secretariat level, is responsible for development of policy and guidance. The second tier is at the level of DoD senior staff and commanders of the various DoD components, which are the Army, the Navy, the Marine Corps, the Air Force, and the Defense Logistics Agency. The responsibility at that level is for implementation and oversight of environmental projects. Finally, program management and execution of guidance are carried out by the commander of a base or installation, at the third tier of the program.

DoD environmental activities can be broken into three parts (Air Force, Army, and Navy). Each of those service branches has taken different approaches and applied different emphases to environmental issues. In addition, each service performs different functions that impact the environment differently. However, to meet the intent of this notebook, DoD environmental activities have been combined under one general heading of "DoD." Future versions of this notebook may break DoD environmental activities into the three parts listed above.

Some of the many environmental programs underway at DoD are:

- Fast-Track Cleanup Program for base closures to speed the cleanup process at military bases slated for closure
- Development and adoption of P2 strategies
- Process and operation considerations to determine how all activities affect the environment and where opportunities for P2 exist
- Revision of all material specifications and standards with their environmental effects in mind
- Evaluations of the environmental effects of all major systems being acquired
- Continuous reductions in disposal of hazardous waste
- Environmental Technology Program to coordinate and integrate environmental research and development
- Conduct of Environmental Baseline Surveys (EBS) to meet environmental documentation and notification needs

2.4.2.2 Department of Energy

The mission of DOE's Environmental Quality (EQ) Program is to protect public health and the environment by understanding and reducing the environmental, safety, and health risks and threats posed by DOE facilities and to develop the technologies and institutions required for solving domestic and global environmental problems.

Highlights of DOE environmental programs include:

- Estimating the costs of restoration and waste management
- Using the computerized Progress Tracking System to track program performance for environmental restoration and waste management
- Restructuring restoration and waste management contracts to improve contractor accountability and performance to reduce costs
- Converting defense laboratories to environmental technology (development programs)

2.4.2.3 Civilian Federal Agencies

Like DoD and DOE, CFAs must respond to recent legislative and executive actions to improve their environmental performance. However, most CFAs lag behind other agencies; yet, they may be responsible for significant cleanups and compliance problems.

CFAs often lack the infrastructure, budget, and technical expertise to effectively manage environmental problems. At the heart of the problem is the failure of many smaller federal agencies to embody environmental compliance in systems that seize their employees' attention, such as management commitment, reward systems, or personnel performance evaluation criteria.

A CFA Task Force was formed to develop a strategy to improve the environmental performance of CFAs. The CFA Task Force, led by EPA, includes members representing the following agencies:

Department of Agriculture
Department of Commerce
Department of the Interior
Department of Justice
Department of Transportation
Department of Treasury
Department of Veterans Affairs
Bureau of Prisons
Central Intelligence Agency
Economic Development Administration
Federal Aviation Administration
Food and Drug Administration
General Services Administration
Indian Health Service
National Aeronautics and Space Administration
National Oceanic and Atmospheric Administration
National Security Agency
Tennessee Valley Authority
U.S. Coast Guard
U.S. Postal Service

Some of the CFA environmental performance initiatives are:

- DOT has implemented several P2 initiatives such as affirmative procurement, development and adoption of a P2 strategy, and development of a database to track procurement of recycled materials
- DOT has also initiated an environmental auditing program

2.4.2.4 Government Wide Initiatives

As a result of Executive orders and other factors, such as the reinventing government initiative, federal agencies have introduced significant changes in their daily operations. The changes address goals such as compliance with numerous Executive orders to reduce emissions from fossil fuels, purchase of environmentally preferable products, and implementation of environmental justice strategies. In addition, several federal facilities have entered into partnerships with EPA. A few of the many programs and initiatives underway across the federal facility sector are described below.

Strategic Environmental Research and Development Program

The Strategic Environmental Research and Development Program (SERDP) is a multiagency (DoD, DOE, and EPA) science and technology program established to address the defense-related concerns of both DoD and DOE. SERDP brings together the institutional knowledge and expertise of all participating agencies. More than 35 percent of projects conducted under SERDP involve partnerships with industry to enhance efforts in technology transfer with the private sector.

Western Governors' Association Technology Group

EPA, DoD, DOE, and DOI have agreed to work with the Western Governors' Association (WGA) to use federal sites in the west for developing innovative technologies to address mixed radioactive, military, mining, and munitions waste.

Federal Facility Roundtable

The Federal Agency Environmental Roundtable, on which 50 federal agencies are represented, works to exchange information on policy, strategy, standards, and regulations. Topics of discussion include the hazardous waste docket, proposed EPA strategies for national programs, technical information systems, the NPL, and military base closures.

Federal Facilities Environmental Restoration Dialog Committee

The Federal Facilities Environmental Restoration (FFER) Dialog Committee is an advisory committee under the Federal Advisory Committee Act (FACA). Its purpose is to provide a forum to identify and refine issues related to environmental restoration activities at federal facilities. Its members include:

- Several federal agencies (EPA, DoD, DOE, USDA, DOI, NASA, NOAA, and Agency for Toxic Substances and Disease Registry [ATSDR])
- National and local environmental, citizen, and labor organizations
- Tribal governments and Native American organizations
- State government agencies and state government associations

Environmental Justice

In 1994, President Clinton issued Executive Order 12898 entitled *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.* The concept of environmental justice means that all people have an opportunity to live in a healthy environment. All people should be able to breathe clean air, drink clean water, and consume uncontaminated foods.

The EO directs all federal agencies to develop environmental justice strategies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. The EO also established an Interagency Working Group on Environmental Justice, which EPA chairs. Member agencies of the working group include DOC, DoD, DOE, DOI, DOJ, DOL, DOT, HHS, HUD, USDA, and several civilian agencies, including the Council on Environmental Quality and NASA.

During FY 1995, FFEO undertook an initiative to characterize and map the demographics of communities in the vicinities of federal facilities. However, because federal facilities are distributed widely throughout the United States, it is difficult, if not impossible, to formulate a general statement that describes the demographics of a "typical" area in the vicinity of a federal facility. Facilities are located in various geographic locations for specific purposes. Among others, those purposes include equal distribution of federal facilities nationwide, security for certain military and research initiatives, and fulfillment of the geographic needs of a particular project. Therefore, a single broad statement cannot be made about the status of environmental justice in the federal facilities sector.

Miscellaneous Recycling Initiatives

Under EO 12873, all federal agencies are establishing or strengthening existing recycling programs. Some examples are:

- HUD headquarters in Washington, D.C. has captured an estimated 40 percent of its waste through its paper, aluminum, and glass recycling program.
- Lake City Army Ammunition Plant in Missouri recycles 85 percent of the facility's waste, including everything from used oil to such materials as ballistic blasting sand.

2.4.3 Waste Generated in the Federal Facilities Sector

Some data are available on trends in generation of waste at federal facilities. Federal agencies report waste generation data to the RCRA Biennial Report System (BRS). Data in the BRS are submitted by facilities that have been required to file hazardous waste reports if they met the definition of large-quantity generators during the reporting year or if, during the reporting year, they treated, stored, or disposed of wastes designated under RCRA as hazardous on site in units subject to RCRA permitting requirements.

As Table 2-4 shows, for the 1993 BRS reporting year, the five RCRA wastes reported to be generated in the greatest volume are:

- Benzene
- Corrosive waste
- Chromium
- Spent nonhalogenated solvents
- Wastewater treatment sludges from electroplating processes

In 1993, federal facilities reported a total volume of RCRA waste generated of 20,828,211 tons. As Table 2-4 indicates, benzene and corrosive waste both were reported to constitute more than 30 percent of the wastes generated by federal facilities in 1993. (Since the table outlines the top five RCRA wastes, the volume of waste does not total 100 percent.)

TABLE 2-4

TOP FIVE RCRA WASTES REPORTED IN 1993 TO BRS BY FEDERAL FACILITIES

Chemical	RCRA Waste Code[1]	Percentage of Total Volume of Waste Reported by Federal Facilities in 1993 (%)
Benzene	D018	39
Corrosive waste	D002	31
Chromium	D007	16
Spent non-halogenated solvents	F003	7
Wastewater treatment sludges from electroplating processes	F006	6

[1] Wastes may be mixed with other RCRA wastes.

Table 2-5 shows, for the 1993 BRS reporting year, the top five sources of wastes reported by federal facilities. Most of the wastes reported by federal facilities were generated from wastewater treatment operations, at 46 percent of the total volume. Other processes other than surface preparation accounted for 30 percent of the total volume of waste generated during that year.

TABLE 2-5

TOP FIVE WASTE SOURCES REPORTED IN 1993 TO BRS BY FEDERAL FACILITIES

Waste Source	Volume of Waste (tons)	Percentage of Total Volume of Waste Reported by Federal Facilities in 1993 (%)
Wastewater treatment	9,589,355	46
Other processes other than surface preparation [1]	6,206,969	30
Caustic (alkali) cleaning	1,248,797	6
Electroplating	1,146,528	5
Stabilization	843,834	4

2.4.4 Comparison With The Private Sector

When federal facility expenditures and compliance rates are compared with private sector facilities, the relative significance of environmental problems at federal facilities is apparent.

Comparison of Expenditures

Between 1972 and 1992, pollution abatement expenditures in both the private and the public sectors have increased substantially. Table 2-6 below shows the extent of that increase:

[1]These processes were defined further in a comments field on the BRS reporting form. These comments were unavailable at the time this draft was prepared.

TABLE 2-6

EXPENDITURES FOR POLLUTION ABATEMENT BY ECONOMIC SECTOR (IN BILLIONS OF 1987 DOLLARS)*

Economic Sector Area	1972 $	1992 $
Business	$30.24	$55.99
Personal (personal consumption [e.g., motor vehicle pollution abatement devices])	$3.45	$7.02
Other (government capital for publicly owned electric utilities and public sewer systems)	$5.03	$9.54
State (expenditures by local authorities and federal grants)	$3.69	$10.73
Federal (Federal government)	$0.40	$1.04

* Source: 24th Annual Report of the Council on Environmental Quality (1993)

Although the actual dollars spent have increased significantly, as Figure 2-6 shows, the proportion of expenditures that is attributable to the government sector has remained stable.

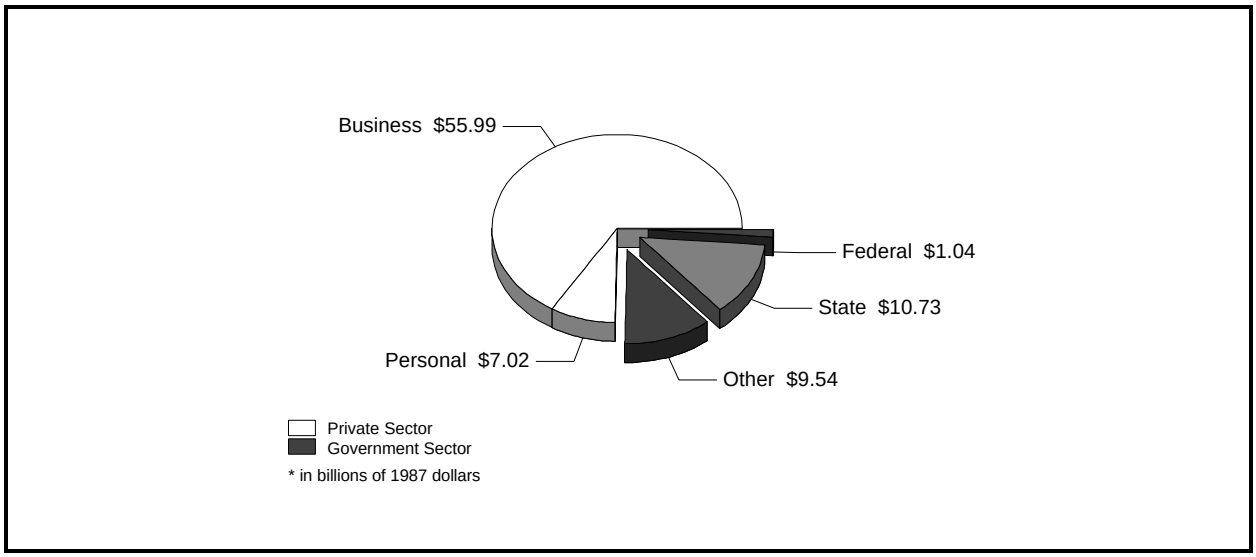

Figure 2-6. Pollution Abatement Expenditures by Economic Sector (1992)

Comparison of Compliance Rates

Below is a comparison of federal facility and private compliance rates where compliance indicates percentage of facilities found to be complying with regulations.

Analysis of compliance rates under RCRA, CWA and CAA indicates that the federal facility sector has compliance rates that are slightly better than those of the private sector under two of the statutes tracked in FFTS:

- Private sector compliance with regulations under RCRA governing treatment, storage and disposal facilities remained the same between FYs 1993 and 1994; however, compliance rates in the federal facility sector increased 6.2 percent over this period.

- For major sources identified under the CAA, compliance by both the private sector and federal facilities increased slightly between FYs 1993 and 1994. Compliance by the private sector increased 0.5 percent while the compliance rate of the federal facility sector increased 0.9 percent.

Private sector compliance with National Pollutant Discharge Elimination System (NPDES) regulations established under the CWA increased slightly by 1% between in FYs 1993 and 1994; however, compliance by federal facilities decreased by 10 percent over this period. Chapter 3 of this notebook provides more information about the compliance record of federal facilities.

Table 2-7 summarizes some of the environmental programs, activities, and operations of the federal facility sector.

TABLE 2-7

MATRIX OF FEDERAL FACILITY SECTOR PROGRAMS, ACTIVITIES, AND OPERATIONS

3.0 COMPLIANCE AND ENFORCEMENT

This chapter describes compliance and enforcement activities at federal facilities. Compliance with a statute or regulation or with requirements of a program generally indicates that the obligation is being met by the regulated community, as required by applicable laws, regulations, policies, and guidances. EPA monitors compliance through the conduct of inspections. Enforcement comprises those judicial and administrative actions (both civil and criminal) that are taken by the government enforcement authority when a member of the regulated community is not in compliance.

3.1 NUMBERS OF INSPECTIONS

This section provides information from various EPA databases on compliance and enforcement activities at federal facilities. Information for FYs 1992, 1993, and 1994 is presented in Figure 3-1 for the following environmental programs: RCRA, CWA, CAA, TSCA, and SDWA. For a given program, a number of indicators can be used to assess compliance at federal facilities. For example, compliance can be expressed as the percentage of facilities inspected that were cited for violations or the percentage of facilities having violations against which an enforcement action was taken. Compliance indicators that are intended to measure the level of relatively serious noncompliance at major federal facilities are listed below:

Statute	**Compliance Indicator**
RCRA	Percentage of inspected Treatment, Storage and Disposal Facilities (TSDF) found to be in compliance
CWA	Percentage of inspected federal facilities found to be in compliance
CAA	Percentage of inspected federal sources found to be in compliance
TSCA	Percentage of inspected federal facilities found to be in compliance
SDWA	Percentage of federal systems found to be in compliance

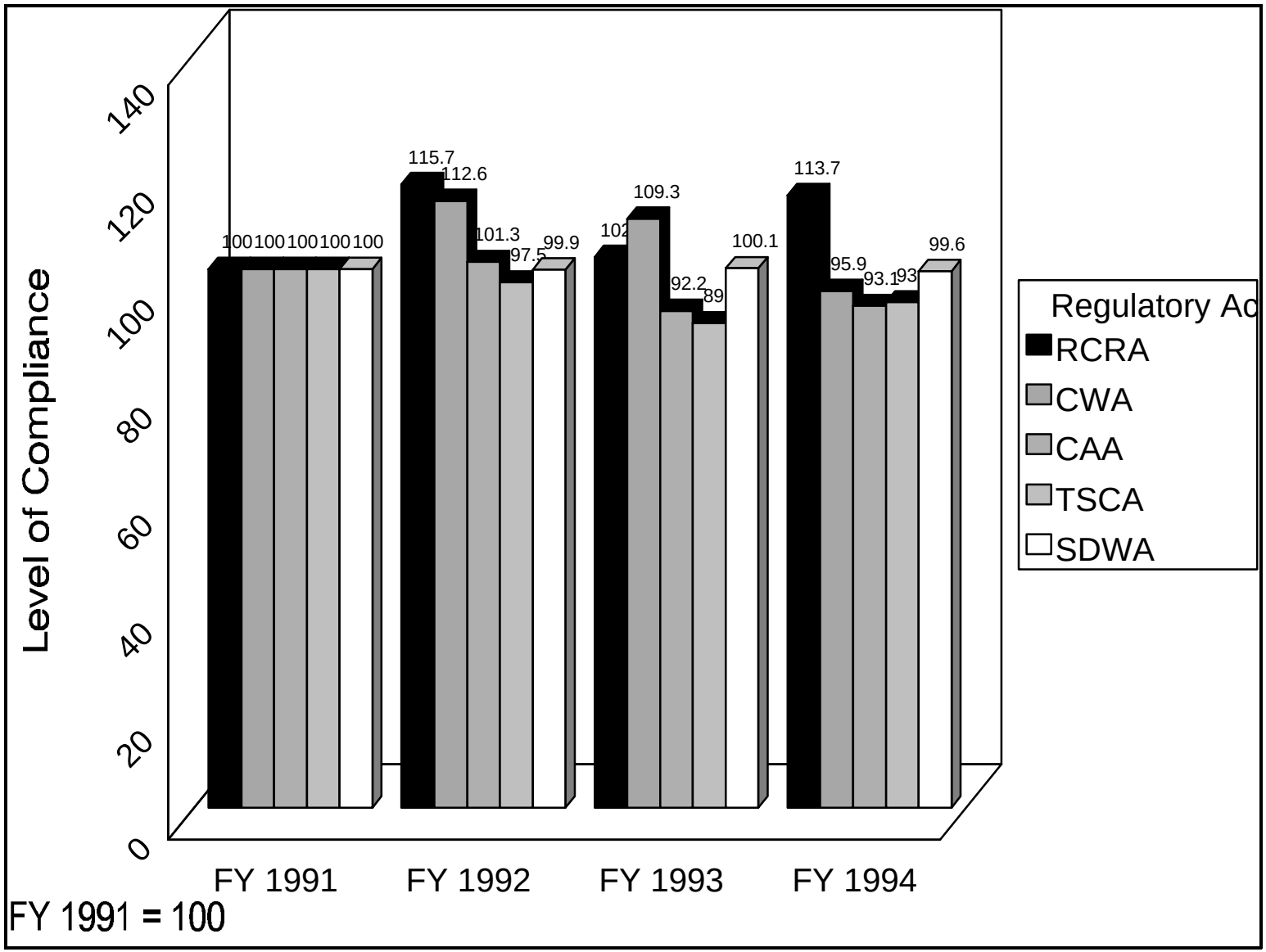

Figure 3-1. Changes in Federal Facility Compliance Indicators

Using FY 1991 as the base year, Figure 3-1 standardizes each of the compliance indicators listed above. Standard indicators measure changes in compliance for the various programs in the same way the consumer price index measures changes in the rate of inflation relative to a given base year. The purpose of standardization is to avoid potentially misleading comparisons of absolute levels of compliance (that is, compliance rates) and to focus instead on measuring changes in compliance over time.

As Figure 3-1 indicates, the level of compliance by federal facilities with most major environmental statutes and programs has declined since FY 1991. The most significant decline occurred in programs conducted under CAA and TSCA, with the percentage of inspected federal facilities in compliance decreasing by almost seven percent, compared with FY 1991. Compliance rates under SDWA and CWA decreased at rates ranging from 2.5 percent to 4.1 percent, compared with FY 1991. It should be noted, however, that the level of compliance with CWA at federal facilities increased sharply during FY 1992 and FY 1993, before declining in FY 1994.

In contrast, the percentage of inspected federal TSDFs not cited for Class I violations under RCRA increased by nearly 14 percent, compared with FY 1991. It is important to note, however, that changes in compliance do not necessarily indicate the absolute levels of compliance.

Figure 3-2 summarizes the number of inspections for FY 1994 conducted on the RCRA TSDF program. As the figure indicates, DoD had the greatest number of inspections under the RCRA TSDF program, a circumstance that is attributable to the large number of RCRA-regulated DoD facilities and the intensity of EPA inspection activities at those facilities.

3.2 REVIEW OF MAJOR ENFORCEMENT ACTIONS

The Federal Facilities Multimedia Enforcement Compliance Program (FMECP) is a national program designed to use multimedia inspections to assess the compliance of federal facilities with environmental laws. Under the program, each of EPA's 10 regional offices conducts a series of coordinated multimedia team inspections, in concert with the appropriate state officials. During FYs 1993 and 1994, FMECP inspections were conducted at a number of high-risk federal facilities throughout the nation.

EPA Regions and states participating in FMECP conducted 41 multimedia compliance inspections during FY 1993. More than 80 percent of the inspections were conducted at DoD facilities. Together, EPA and states issued 75 enforcement actions, ranging from warning letters to formal administrative orders that included

penalties. Inspectors noted violations of nine environmental statutes. Approximately 51 percent of all inspected facilities were found to be in violation of more than one statute. The four statutes violated most frequently were RCRA, TSCA, CAA, and CWA.

Below are brief descriptions of some of the major federal facility enforcement cases and creative tools, such as supplemental environmental projects (SEP), that are being used in settling the cases. The descriptions provided are intended merely as examples and are not comprehensive. A comprehensive list of cases and SEPs can be obtained directly from FFEO.

3.2.1 Review of Major Cases

Since the passage of the FFCA, EPA has initiated approximately 20 enforcement actions against federal facilities. Settlement has been reached in many of those cases. In even more, negotiations are underway. Discussed below are several examples of enforcement cases involving federal facilities.

- EPA has sought a penalty of $346,500 and closure of an open-burning and open-detonation unit at Lackland Air Force Base in Texas.
- At the Naval Construction Battalion Center (NCBC) in Rhode Island, EPA Region I issued a complaint against the Navy, assessing penalties for violations of RCRA. An inspection found a number of violations. The case was settled in June 1994, with the penalty reduced by approximately 50 percent.
- Fort Richardson and Fort Wainwright in Alaska were issued complaints for similar violations. EPA Region 10 issued a complaint and compliance order to each installation for failure to obtain a RCRA permit or follow the requirements of such a permit.
- At Fort Hood in Texas, EPA and the state enforcement agency are seeking substantial administrative penalties and possibly criminal penalties for a variety of violations. The actions by the agencies seek more than $1 million, one of the largest penalties ever proposed against a military facility.

3.2.2 Supplemental Environmental Projects

Although assessment of penalties sends an important and strong deterrent message to the regulated community, penalties are not the only means of enforcing environmental goals. SEPs are environmental projects and other measures for which, once negotiated, EPA can reduce penalties. The reduction is made in exchange for enforceable agreements to complete environmentally beneficial projects that go beyond the

injunctive relief EPA otherwise could order. Through SEPs, federal facilities can demonstrate with actions an improved attitude about environmental issues.

Since the passage of the FFCA, EPA has had time to negotiate only a few SEPs with federal facilities, including those described below:

- At the Iowa Army Ammunition Plant, EPA agreed to a $300,000 SEP that would eliminate completely discharges of treated pink water by recycling the water into the explosive melt-and-pour washdown operations. If the Army performs the SEP pursuant to the settlement, EPA Region 7 will reduce the penalty by an additional $63,218.

- At Shemya Air Force Base in Alaska, EPA issued a complaint at that base because the base stored more than 15 tons of hazardous wastes without obtaining the permit required and because the base violated an earlier agreement to correct deficiencies in its waste management practices. EPA Region 10 has negotiated a SEP, valued at $150,000, for the construction and operation of a RCRA 10-day transfer facility for remote Air Force sites in Alaska. Under the SEP, the Air Force will construct a covered diked area to contain as many as 10 aircraft pallets of hazardous waste.

- A SEP, valued at approximately $17,000, was agreed upon at Ft. McCoy in Wisconsin. Under the SEP, the Army will purchase five parts washers that are expected to reduce production of waste solvent at Ft. McCoy by as much as 80 percent. Specifically, the SEP involves changes in the industrial process to replace five solvents with hot water and mild detergents.

- Under another SEP, agreed upon at DOE's Fernald, Ohio site, DOE will pay a cash penalty of $50,000, spend $2,000,000 implementing a SEP, and meet several other requirements. Implementation of the SEP required under this settlement will reduce significantly discharges of uranium from the Fernald site to the Great Miami River.

- A 1995 multimedia inspection at Air Force Plant No. 6 in Marietta, Georgia found them out of compliance with both RCRA and the CAA. The state of Georgia issued compliance orders for both violations. As an SEP, the total penalty was reduced in exchange for an accelerated compliance schedule.

4.0 PROCESSES TYPICALLY FOUND AT FEDERAL FACILITIES

Because of the breadth of the government's mission, almost any type of industrial activity carried out in the civilian sector likely is conducted somewhere in the federal sector. This chapter describes some of the more common processes conducted by federal facilities in the pursuit of their missions. Such activities include:

- Aircraft, vessel, and vehicle maintenance
- Fuel storage and refueling operations
- Electroplating
- Printing and photoprocessing
- Hospital operations
- Laboratory operations
- Wastewater treatment plant operations
- Office operations

The remainder of this chapter discusses those operations.

4.1 AIRCRAFT, VESSEL, AND VEHICLE MAINTENANCE

Aircraft, vessel, and vehicle maintenance include the simple routine procedures such as changing oil and rotating and balancing tires, as well as the complete reworking of airframes, engines, and avionics. Many DoD installations have motor pools that manage all aspects of truck and automobile maintenance including car washes and paint booths. Other DoD facilities maintain facilities for the reworking of aircraft. The National Park Service and the Forest Service, the U.S Post Office, NOAA, and the Coast Guard and other federal agencies maintain facilities to repair vehicles. Many federal facilities have some type of motorized watercraft on their property.

The remainder of this section discusses specific activities associated with maintenance. Such activities include routine maintenance and cleaning, parts cleaning, and painting. Table 4-1 presents a list of some of the processes and raw materials used in and wastes generated by such operations.

TABLE 4-1

PROCESSES AND RAW MATERIALS USED IN AND WASTES GENERATED FROM AIRCRAFT, VESSEL, AND VEHICLE MAINTENANCE ACTIVITIES

Typical Process	Typical Raw Materials Used	Waste Generated
Removal of oil and grease	Degreasers, carburetor cleaners, engine cleaners, solvents, acids, alkalis	Ignitable wastes, spent solvents, combustible solids, waste acid and alkaline solutions
Cleaning of engines, parts, and equipment	Degreasers, carburetor cleaners, engine cleaners, solvents, acids, alkalis, cleaning fluids	Ignitable wastes, spent solvents, combustible solids, waste acid and alkaline solutions
Cleaning of surfaces	Detergents, solvents, acids, caustics	Wastewater, spent solvents, waste acid and caustic solutions
Repair and replacement of batteries	New batteries, lead casings, acid	Spent lead casings, spent acid
Oil changes	Oil	Spent oil and oil filters
Rust removal	Naval jelly, strong acids, strong caustics	Waste acid and caustic solutions

4.1.1 Routine Maintenance and Cleaning Operations

Routine maintenance can involve several processes, depending on the level of service performed. Routine or periodic maintenance covers a broad range of activities, including fluid changes, tuneups, transmission maintenance, brake service, battery repair or replacement, and front-end alignment. Routine maintenance activities include replacing broken or worn-out parts; performing oil changes; lubricating moving parts; and replacing fluids, such as transmission fluid and engine coolant (antifreeze). Periodic replacement of batteries, tires, and brakes also is necessary. Routine maintenance also requires that parts from aircraft and vehicles be disassembled and cleaned periodically. Parts cleaning is discussed separately below.

Cleaning operations typically are conducted at a washrack or area where vehicles, vessels, or aircraft are washed. Wheeled vehicles often are put through the equivalent of a carwash, while such tracked vehicles as tanks may drive through a pool to remove some of the heavier accumulations of dirt. For aircraft cleaning hand-held spray nozzles, hoses, and brushes are used. Detergents are used to clean the outer surfaces of aircraft and vehicles.

4.1.2 Parts Cleaning

Many industrial operations at federal facilities involve cleaning of various parts. In aircraft, vessel, and vehicle maintenance operations, cleaning of parts also is a significant portion of the operation. Typical cleaning processes used at federal facilities include cleaning of parts (such as cylinder heads and gears) with solvents, acids, or caustics or with detergents or surfactants. Solvent cleaning is used to remove dirt, oil, grease, and paint. The most common types of solvent cleaning are vapor and ultrasonic vapor degreasing and emulsified solvent degreasing. Detergents or surfactants can be used to remove dirt, oil, and grease to prepare a surface for another operation or as part of a periodic maintenance operation. Table 4-2 presents some of the wastes commonly generated in parts cleaning.

TABLE 4-2

PROCESSES AND RAW MATERIAL USED IN AND WASTES GENERATED FROM PARTS CLEANING

Typical Process	Typical Raw Materials Used	Waste Generated
Solvent cleaning	Halogenated and nonhalogenated solvent, thinners	Volatile organic compounds (VOC) (1,1,1-trichloroethane; xylene; mineral spirits), spent solvent, ignitable wastes, solvent wastes, still bottoms
Acid cleaning	Acids (phosphoric, chromic, hydrochloric)	Spent acid (possibly containing metals), corrosive wastes, metal wastes
Caustic cleaning	Alkaline solutions (caustic soda, phosphates)	Spent caustic solutions, corrosive wastes, metal wastes
Detergent cleaning	Surfactants, aqueous cleaners	Wastewater

4.1.3 Painting Operations

Paint shops are among the most common establishments at mid-size and large federal facilities, such as those operated by DoD, DOE, DOI, and DOC. Painting operations generate both solid and hazardous wastes including waste solvent, paint, sandblasting grit, and rags, and can also produce air emissions and discharges to wastewater treatment plants. Painting operations can range from spot painting with a spray can to spray painting large vehicles, aircraft and boats. Paint shops also are responsible for painting buildings, preparing signs, and providing other miscellaneous functions.

There are three basic steps in most paint operations: surface preparation, painting, and equipment cleaning. Table 4-3 presents a list of some of the typical wastes generated and the steps are described separately below.

TABLE 4-3

RAW MATERIAL INPUTS AND WASTES GENERATED FROM PAINTING OPERATIONS

Typical Process	Typical Raw Materials Used	Waste Generated
Surface preparation	Clean blasting grit, solvents, detergents	Blasting grit, paint solids, paint sludge, spent solvents, wastewater
Painting	Paint, lacquer, varnish, primers	Paint solids, waste paint, thinners, VOC emissions
Equipment cleaning	Solvents, thinners, water	Spent solvents, thinners, wastewater, VOC emissions

Surface Preparation

Very few surfaces can be painted without some form of preparation. Proper surface preparation is essential to ensure adequate adhesion, durability, and dependability of the coating. Without a properly cleaned surface, even the most expensive coatings will fail to adhere or prevent corrosion.

Surface preparation involves two steps: removing the old finish and cleaning the surface for the new finish. Processes used to accomplish those results include cleaning the surface with a detergent or solvent and solid-medium or bead blasting. Detergents remove most surface dirt and residue. Solvents can remove oils and greases and can be used to strip paint as well. Vapor degreasing and acid or caustic baths, which can be used to clean surfaces, are discussed in more detail in the previous section. Solid-medium or bead blasting involves removing the surface with hard pellets or beads. The impact of the pellets or beads cause the paint on the surface to flake off.

Painting

The coating material to be applied may be a primer, sealant, or finish coat or another type of material, such as an anti-corrosion coating. The coating material will have different components and properties depending on its intended use. Paint usually will consist of a binder, a pigment, a solvent or thinner, and a drier. Paint may be water-based or solvent-based.

Most paint spray-gun operations take place in a paint booth. A pressurized spray gun applies the paint as a fine mist or aerosol. The spray gun is passed over the surface of the part to be painted until the coating is of the proper thickness. A pressurized spray gun usually will transfer approximately 50 percent of the paint to the surface. The rest of the paint that misses or bounces off the surface is termed overspray. The booth usually has a system that is used to remove paint aerosols and volatiles from the air. In many operations, the exhaust will have a dry filter to collect solids, as well.

Equipment Cleaning

Paint spray guns, brushes, booths, and other equipment must be cleaned after each use so that they can be used again. Water and detergent are used for cleaning equipment that apply water-based coatings, while solvents are used to clean equipment used for applications of solvent-based paint. Paint thinner is used to clean the spray gun and nozzles to prevent clogging.

4.2 FUEL STORAGE AND REFUELING OPERATIONS

Another operation that commonly occurs at federal facilities is that of fuel management (tank farms). These types of operations are found at DoD facilities, where they are managed by the Defense Fuel Supply Center, and at DOE and CFA facilities, where the GSA typically oversees operations. Fuels managed include various jet and other aviation fuels; gasoline; diesel fuel; fuel oil; and, in some cases heavier grades of oils. Fuel management operations include tank and pipeline management, management of runoff and environmental controls, and management of tank filling and refueling operations. These operations are similar at both DoD and CFA facilities; they are discussed below. Table 4-4 lists some of the wastes commonly generated in fueling operations.

TABLE 4-4

PROCESSES AND RAW MATERIALS USED IN AND WASTES GENERATED FROM FUELING OPERATIONS

Typical Process	Typical Raw Materials Used	Wastes Generated
Tank and pipeline operation	Blasting grit, solvents, lubricating oil	Blasting grit, paint solids, paint sludge, spent solvents, tank bottom water
Management of runoff and environmental controls	Solvents, inorganic chemicals	Tank bottom sludges, wastewater treatment sludges, contaminated petroleum, VOC emissions
Fueling and refueling	Petroleum products	Waste petroleum products

4.2.1 Tanks and Pipelines

Typically, both aboveground and underground storage tanks (UST) are found at tank farms. Tanks typically are constructed of steel, concrete (often with steel or other types of linings), or fiberglass-reinforced plastic. Many of the tanks at federal facilities are more than 25 years old. Volumes of such tanks range from a few thousand gallons, the sizes typically found at gasoline stations, to more than 2 million gallons.

Tanks may be concentrated in one area of a facility, or they may be found at several locations. Tanks may be located either above ground or underground:

- Aboveground tanks are constructed of steel and may have either floating or fixed roofs. As the name implies, floating roofs move up and down with the volume of fuel in the tank. Rather than being welded to the tank wall, the roof is fitted with a seal that allows the roof to rest on the top of the product and move up and down with the volume of product. These tanks often are fitted with a cover to prevent rain from falling onto the roof and seeping into the tank itself. Some older tanks may have been constructed with compacted clay bottoms, rather than steel bottoms.

- The construction of underground storage tanks is much more varied than that of aboveground tanks, and they may be constructed of any of the materials listed above.

The term pipeline has two meanings in the context of tank farms. Internal pipelines and manifolds found throughout the tank farm allow the movement of product between tanks and to fueling points. Such pipelines may

extend for several miles throughout the facility to piers to allow ships to fuel or tankers to unload, to airports, or to power plants or other industrial operations. The tank farm also may be served by an external pipeline that provides product to the tank farm or allows the transfer of product from the tank farm to remote locations.

4.2.2 Management of Runoff and Environmental Controls

One of the major concerns at fuel farms is the management of runoff from rainwater and other environmental controls. Care is taken in the design of the tank farms to minimize the potential that runoff from "dirty" areas (those areas where fuel is managed) will make its way to areas where fuel is not managed. Clean runoff is discharged directly to storm-water systems. Runoff from fuel management areas generally is discharged to treatment units, where fuel and other contaminants can be removed before the runoff is discharged to the storm water system. The treatment units may be as simple as gravity-based oil-water separators, or they may be extensive treatment systems designed to salvage the fuel for reuse. Increasingly, environmental controls are being installed to treat other wastes generated from tank farm operations, such as tank bottoms.

4.2.3 Tank Filling and Refueling Operations

Tanks may be filled by a variety of methods, including transfers from ocean-going tankers, railroad tank cars, tanker trucks, and pipelines. Ocean-going tankers may unload at a remote sea buoy or at dockside. Product is pumped from the vessels to onshore manifold systems that control the location at which the product is stored. Transfers from railroad cars or trucks take place at specially engineered locations on the tank farm.

Depending on the volume of fuel, refueling operations may be as simple as gasoline stations or as complex as fuel stands for military tanker aircraft. The tank farm also may be used to transfer fuel to railroad or truck tankers. In such cases, the same locations used for filling the tanks would be used for filling the tankers. The refueling locations may be widely distributed around the facility at which the tank farm is located.

4.3 ELECTROPLATING

A key component of metal finishing operations at federal facilities is electroplating. Operations in which electroplating is used can vary widely from electronic circuit board manufacturing to application of surface finishes to a wide variety of fabricated metal parts from handguns to aircraft engines. Table 4-5 provides a list of some of the more common waste generated in electroplating.

Electroplating is a process in which a thin metal coating is deposited through electrochemical reactions on another surface. Ferrous and non-ferrous metals may be coated with a variety of common metals (copper, nickel, lead, chromium, brass, bronze, zinc, cadmium, or combinations thereof) or precious metal (gold, silver, platinum, or combinations thereof). In electroplating, metals supplied through the dissolution of metals from anodes are attracted and adhere to the surface of the part to be plated, which is the cathode. Depending on the metals involved, electroplating processes use acidic, alkaline, or neutral solutions.

TABLE 4-5

ELECTROPLATING-RAW MATERIAL INPUTS AND WASTES GENERATED

Typical Process	Typical Raw Materials Used	Wastes Generated
Surface preparation	Alkaline cleaners (sodium hydroxide, sodium phosphate), acid cleaners (sulfuric, nitric, and chromic acid), solvents, emulsions, salt baths	VOCs, acid vapors, alkalis, acids, spent solvents containing base metals from parts being cleaned, RCRA D- and F-listed wastes
Common metals electroplating (copper, nickel, chromium, lead, and tin)	Alkaline cyanide, acid sulfate, pyrophosphate, fluoborate, sulfate-chloride-basic acid, cadmium cyanide, fluosilicicate and alkaline stannate	Cyanide and acid vapors, nickel, chromium (total), chromium (hexavalent), zinc, cyanide, fluoride, cadmium, lead, iron, tin, phosphorus, total suspended solids, RCRA D- and F-listed wastes
Precious metals electroplating (gold, silver, platinum)	Alkaline cyanide, neutral cyanide, phosphate or sulfate concentrates, potassium-based silver baths	Cyanide vapors, silver, gold, cyanide, platinum, phosphorus, total suspended solids,

Some of the purposes of electroplating are to provide protection against corrosion, to provide an anti-frictional surface, and to increase wear- or erosion-resistance. Electroplating also is used to manufacture electronic circuit or printed wiring boards. In those processes, conductive metal is deposited on the surface of the piece, either as a blanket coat in which a circuit pattern will be etched or on a piece that has a circuit pattern defined by a nonconductive barrier layer (photoresist). The photoresist prevents the metal to be plated from adhering to areas of the circuit board where the circuit pattern is not desired.

There is much more to electroplating than the simple plating of metal. The typical process can be broken down into three steps:

- Surface preparation, which includes conditioning the base material for plating;
- Actual application of the plate
- Posttreatment steps

A typical electroplating process consists of a series of plating baths and rinse tanks in which one or more coatings are applied. The baths may consist of acids, bases, and salts (for example, cadmium cyanide) depending on the function of the bath. Each bath will plate a different metal onto the part. The part is dipped successively into the baths and rinsed between each bath. Either a perforated barrel or a rack is used to dip parts into the plating baths and rinse tanks.

Hundreds of different electroplating solutions have been adopted commercially, but only two or three types are popular for copper, zinc, brass, cadmium, silver and gold. Non-cyanide alkaline solutions containing pyrophosphate or another agent have been used for zinc and copper. Zinc, copper, tin, and nickel also can be plated with acid sulfate solutions. Cadmium and zinc sometimes are plated from neutral or slightly acidic chloride solutions. In some cases, metal coatings can be applied by electroless plating. Electroless plating is an integral function of a number of industries, such as aircraft, ship-building automotive, and heavy machinery manufacturing operations. It is associated, in general, with industries whose products must withstand unfavorable conditions or significant wear and abrasion. Electroless plating coats a part with a uniform conducting layer on the entire surface of the substrate without outside current sources. Copper and nickel electroless plating for printed circuit boards are the most common operations. In electroless nickel plating, the source of nickel is a salt, and a reducer is used to reduce the nickel to its base state. A complexing agent is used to keep the metal ion in the solution.

4.4 PRINTING AND PHOTOPROCESSING

Many federal facilities have operations that require printing and photographic processing. Federal facilities often are responsible for training military and civilian employees and therefore produce a variety of training manuals and educational materials. Other communications materials also are printed as part of the various missions. The five most common printing processes are:

- Lithography

- Gravure
- Flexography
- Letterpress
- Screen

Lithography is the predominant printing process and is the only one that will be discussed here. Since the basic operations that generate wastes from other types of printing are somewhat similar to lithography, much of this information can be applied to all printing processes. Lithography is categorized by the type of ink and press used in the process. Inks can be either heatset or non-heatset. Presses can be web or sheet-fed.

Modern lithography is a photographic process that uses a printing plate to carry the image to be reproduced. The plate then is attached to a cylinder on the press from which the image is transferred to paper through the application of ink.

Photoprocessing operations are conducted at many DoD facilities and some CFAs, such as hospitals and the DOI. Processing photographic film requires the use of a number of chemicals to develop and produce finished photographic products. Two types of processing are black-and-white and color. In black-and-white processing, the film is first processed in a developer solution, an alkaline solution of organic reducing agents. The developer reduces the exposed silver halide crystals on the film to metallic silver. To prevent the unexposed silver halide from being reduced, the action of the developer is arrested by transferring the film to a stop bath. The stop bath is a weakly acidic solution that neutralizes the alkaline developer carried over on the surface of the film. After the stop bath, the film is immersed in a fixer solution that solubilizes and removes the remaining unreacted silver salts, rendering the image on the film permanent.

The film now contains a negative image of the scene that was recorded by the photographer. A positive print is prepared by exposing film, processing the negative through a similar set of operations (developer, stop bath, fixer, and rinse). Color processing is a more complex process than black-and-white processing. However, the basic steps are similar: developing bath, stop bath, fixer, and rinse. Depending on the type of application, the sequence and number of steps may vary. Table 4-6 provides a list of some of the more common wastes generated in printing and photoprocessing.

TABLE 4-6

RAW MATERIAL INPUTS AND WASTES GENERATED FROM PRINTING AND PHOTOPROCESSING

Typical Process	Typical Raw Materials Used	Wastes Generated
Image processing/ photoprocessing	Lead, silver, sodium hypochlorite, acetic acid, organic compounds	Lead, silver, organic compounds
Printing	Benzene, cadmium compounds, carbon tetrachloride, chromium compounds, cumene, dibutylphthalate, diethanolamine, ethyl benzene, ethylene glycol, formaldehyde, glycol ethers, hexane, hydrochloric acid, isophorone, lead compounds, methanol methyl ethyl ketone, methyl isobutyl ketone methylene chloride, perchloroethylene propylene oxide, toluene, 2,4-toluene disocyanate 1,1,2-trichloroethane, trichloroethylene vinyl chloride, xylenes	Metal wastes, solvents, other organic compounds

4.5 HOSPITAL OPERATIONS

The Department of Veterans Affairs (VA) operates a number of hospitals, as do the military services. Hospitals are unique compared to other industries; they generate a large variety of wastes, but the volumes are small compared with those generated by industrial facilities. Hospitals use hazardous materials and toxic chemicals for numerous diagnostic and treatment purposes. Typical operations performed at hospitals include: laboratory analyses (hematology, clinical chemistry, microbiology, and histopathology); surgery; and patient care, both routine and that provided in specialty and intensive care units. Hospitals also provide emergency and outpatient care services, such as hemodialysis. Hazardous materials and wastes commonly generated by hospitals are provided in Table 4-7.

TABLE 4-7

RAW MATERIAL INPUTS AND WASTES GENERATED FROM HOSPITALS

Typical Process	Typical Raw Materials Used	Wastes Generated
X-ray processing	Lead, silver, sodium hypochlorite, acetic acid, organic compounds	Lead, silver, organic compounds
Clinical and surgical work	Chemotherapy and antineoplastic chemicals, formaldehyde, radionuclides, solvents, mercury	Biomedical wastes, waste anesthetic gases, infectious wastes, waste solvents, waste radionuclides
Laboratory analyses	Radionuclides, solvents, other toxic, corrosive, and miscellaneous chemicals	Radionuclides, solvents, biomedical wastes, other toxic, corrosive, and miscellaneous chemicals

4.6 RESEARCH LABORATORY OPERATIONS

Federally owned laboratories and research institutions include those operated by the USDA, EPA, DoD, DOE and other CFAs. Activities conducted at laboratories include provision of analytical services. These laboratories also conduct bench- and pilot-scale testing. Chemistry laboratories generally generate the most hazardous waste, followed by biology and other types (materials science, chemical engineering, physics, geology, etc.) of laboratories. Until recently, many researchers working in laboratories that generate hazardous wastes did not know the requirements for proper disposal of wastes they handle.

Laboratory wastes differ from those of typical generators of hazardous waste in that laboratories use small amounts of a wide range of chemicals. Industrial generators in contrast may generate large quantities of just a few different waste streams. The volume of waste generated at laboratories ranges from ounces to hundreds of gallons depending on the experiments being undertaken. Because research is difficult to categorize, a list of typical waste streams associated with laboratory operations is provided below instead of the tables provided elsewhere. These wastes include:

- Inorganic acids and bases
- Organic solvents
- Pesticides and fertilizers
- Metals

- Radionuclides
- Unused chemicals
- Reaction products from experiments
- Waste oil

4.7 WASTEWATER TREATMENT PLANT OPERATIONS

Federal facilities generate large quantities of process and sanitary wastewater from many of the operations described above. Aircraft and vehicle maintenance and electroplating operations are just two of the operations that generate large quantities of wastewater.

Industrial process wastewater must be treated to reduce metal, organic, and other contaminants before they are discharged. Federal facilities that have wastewater systems may also treat non-process wastewater -- for example, water system blow down, and sanitary wastewater. Specific unit processes at wastewater treatment plants vary, depending on the contaminant being treated. Wastewater treatment plants at federal facilities include some or all of the following unit processes and wastes listed in Table 4-8.

TABLE 4-8

RAW MATERIAL INPUTS AND WASTES GENERATED FROM WASTEWATER TREATMENT PLANTS

Typical Process	Typical Raw Materials Used	Wastes Generated
• Primary clarifier • Secondary biological treatment unit • Secondary clarifier • Advanced treatment units • Chemical treatment units • Chlorination and dechlorination units • Sludge handling • Polishing ponds or tanks	Lime (coagulants), chlorine (disinfectants), hypochlorite (oxidizers)	Sludge and wastewater

4.8 OFFICE OPERATIONS

Given its mission, the federal government is one of the largest generators of wastes associated with office operations. These wastes are generated as part of the normal functions of any large bureaucracy and their generation is difficult to discuss in terms of process operations because the processes are so varied. Government office operations, like any similar organization, generate such waste as:

- Paper and cardboard
- Photocopier cartridges
- Laser printer cartridges
- Solvents
- Computer disks
- Glass
- Aluminum cans

Many of these wastes are solid rather than hazardous waste and as such are subject to RCRA subtitle D rather than subtitle C requirements.

5.0 P2 OPPORTUNITIES

This chapter provides some examples of P2 opportunities pertinent to each of the operations discussed in Chapter 4. Many federal facilities have already begun implementing these and other P2 measures. The opportunities identified here represent a synthesis of the literature and include recycling and waste minimization in addition to P2. The discussion is not intended to be all-inclusive. For additional information on P2 opportunities, consult the appropriate EPA guides to P2 or EPA sector notebooks.

One P2 technique that can be employed as a first step in any situation is examining P2 opportunities by conducting an audit that evaluates the operation, the users, and the volumes of waste generated. An audit can be conducted on any of the processes discussed in this notebook.

5.1 EXAMPLES OF P2 OPPORTUNITIES IN AIRCRAFT, VESSEL, AND VEHICLE MAINTENANCE

P2 activities for aircraft, vessel, and vehicle maintenance include segregation of wastes, recycling, and application of good management practices. P2 opportunities related to routine maintenance activities include the recycling of used oil and other fluids, such as battery acid and antifreeze; batteries; tires; and other parts, such as tire rims. P2 techniques for surface cleaning are aimed primarily at reducing the amount of wastewater and the amount of pollutants and residues in the wastewater. It is likely that P2 opportunities currently being carried out are inspired by the costs of treatment or disposal of contaminated wastewater and the cost of cleaning solutions. Some of the less costly P2 options include minor modifications of processes, operational changes, and recycling of wastes. Table 5-1 provides a brief list of some of the P2 opportunities in aircraft, vessel, and vehicle maintenance and cleaning.

TABLE 5-1

P2 OPPORTUNITIES FOR AIRCRAFT, VESSEL, AND VEHICLE MAINTENANCE

Used Oil

- Prevent spills through good housekeeping.
- Install special "oil extender" filters in vehicles.

Waste Antifreeze

- Substitute propylene glycol for ethylene glycol.
- Install on-site recycling equipment for waste antifreeze.

Air Conditioning Refrigerants

- Use on-site chlorofluoro carbon (CFC) equipment for recycling.

Old Batteries

- Recycle.
- Maintain batteries according to operating direction.

Miscellaneous Wastes (tires, engine components, brakes, and gasoline)

- Recycle old tires.
- Use reformulated products (rebuilt components such as carburators, and water pumps).
- Filter and reuse waste fluids

Catalytic Convertors

- Recycle to recover precious metals.

Cleaning Operations

- Develop closed-loop systems for wash waters.
- Use wash waters from the final phase of cleaning in the initial phase.

P2 techniques that can be applied to parts cleaning operations can be classified as modifications of equipment or operations, substitution of materials, and application of good management practices. Many proven emission reduction and P2 measures have been incorporated into the national emission standards for hazardous air pollutants (NESHAP) for halogenated cleaners. Although most methods of parts cleaning offer opportunities for P2, only opportunities for P2 in vapor degreasing operations are illustrated in Table 5-2.

TABLE 5-2

P2 OPPORTUNITIES FOR VAPOR DEGREASING

Equipment Modifications

- Add peripheral condensing coils above the condenser coils to increase the thickness of the cold air blanket and prevent emissions from open-top vapor cleaners.
- Replace water in the freeboard condenser coils with a more efficient refrigerant.
- Add a water-cooled tank jacket to prevent convection of solvent vapors up the hot walls of the cleaning unit.
- Add a gravity solvent-water separator or a canister of desiccant to prevent or delay breakdown of the solvent, corrosion of degreasing equipment, and elevated emissions caused by accumulation of moisture.
- Ensure that the cover is manageable and tight-fitting so that it will be used regularly and be effective in preventing emissions.

Process Modifications

- To cause fewer emissions use mechanical or ultrasonic cleaning. The effectiveness of ultrasonic cleaning is improved when solvents are heated to specific appropriate temperatures.

Material Substitutions

- Aqueous cleaners, with or without added saponifiers, surfactants, detergents, agitation, pressure, alkalinity or heat
- Semi-aqueous cleaners (also known as emulsion cleaners) that incorporate hydrocarbon solvents and water into the cleaning and rinsing process
- Aliphatic hydrocarbon solvents, including petroleum fraction hydrocarbons, such as mineral spirits, naphtha, kerosene, and synthetic paraffinic hydrocarbons (especially appropriate in processes when contact with water must be avoided).
- Miscellaneous organic solvents such as alcohols, ketones, and vegetable oils, that are less toxic solvents.
- Catalytic wet oxidizers provide oxidation of organic contaminants in the presence of water.
- Absorbent medium cleaners, such as cleaning wipes composed of specialty fibers designed to remove oil and other contaminants.
- Several solvent substitutes are found in the General Services Administration (GSA) is 1994 Environmental Products Guide or DOE's Hazardous Solvent Substitution Data System.

Operational Modifications

- To reduce emissions caused by drag-out, withdraw parts from the degreaser when they stop dripping; hold parts in the freeboard zone until all parts are completely dry.
- To hold parts, use fixtures that promote better draining.
- Keep an idling degreaser covered.
- Slow the speed at which parts are moved; keep large cross-sections of parts 50 percent smaller than the corresponding degreaser section; and use sliding covers to reduce drafts and turbulence.
- Minimize the use of sprays; when necessary, use high pressure low volume spray heads; keep the spray nozzle below the cooling coils; and use short bursts of spray.
- Consider superheating the vapor to allow parts to dry quickly.
- Extend life of solvents through filtering and settling.

There also are several opportunities for implementing P2 activities to reduce or eliminate waste generated during paint shop operations. Such opportunities include substitution of products and modifications of equipment or operations. Table 5-3 provides some of the currently available P2 options in painting operations.

TABLE 5-3

P2 OPPORTUNITIES FOR PAINTING OPERATIONS

Surface Preparation
- Minimize use of stripper.
- Use spent stripper as a rough pre-stripper on the next item.
- Consider the use of the following methods of stripping paint: dry ice pellets, abrasive media, plastic media bead-blasting, cryogenic, thermal, wheat starch media, and laser or flash lamp.

Operational Modifications
- Train spray gun operators in proper spray techniques to minimize generation of waste coating.
- Pre-inspect parts to ensure it is dry, clean and dust-free, and to prevent painting of obvious rejects.
- Schedule coatings to minimize color changes, or paint with lighter colors before darker colors to minimize the need for equipment cleanouts.
- Mix only as much coating as is needed for a job. Train employees to estimate amounts and mix paints correctly.
- Save off-color paint for other jobs.
- Apply extra coats to use excess paint.
- Avoid the need for re-coating by first inspecting the area to be painted

Waste Segregation
- Segregate nonhazardous paint solids from hazardous paint solvents and thinner.
- Segregate solvent waste streams and avoid dilution with water.
- Separate solvents and foreign substances for recycling and reuse.
- Separate thinners from paint sludges by gravity separation and reuse them.

Material Substitutions
- Use powder coatings to eliminate VOC emissions and obtain high transfer efficiency.
- Use water-based coating to reduce solvent emissions.

Equipment Modifications
- Modify the spray booth to allow recovery and reuse of overspray solids.
- Size the paint cup on spray guns appropriately.
- Automate spray and dip operations when possible.
- Isolate spray booths for solvent-based coatings from spray booths for water-based coatings.
- Keep solvent soak tanks away from heat sources.
- Use high volume low pressure (HVLP) spray apparatus to increase transfer efficiency.

Equipment Cleaning
- Train employees to use only small amounts of solvents for cleaning.
- Flush equipment first with dirty solvent before final cleaning with virgin solvent, or preclean items with rags before cleaning with solvents.
- Use virgin solvents for final equipment cleaning, then reuse it as paint thinner.
- Consolidate solvent cleaning operations and use a multipurpose solvent.
- Reuse cleaning solvents for a resin system by allowing solids to settle out of solution.
- Use pressurized air mixed with a mist of solvent to clean equipment.
- Keep the washoff tank covered when it is not in use.
- Minimize dripping by tilting or rotating parts to drain as much solvent as possible and by allowing sufficient dry time.
- Use rags rather than disposable wipes whenever possible. Launder the rags in-house or locate a commercial laundry in the area that can provide the service.
- If disposable wipes are used, remove as much solvent from them as possible before disposing of them. Keep the used wipes and the spent solvent in separate containers.
- Use low-volume water cleaning systems.
- If possible, return coatings with expired shelf life to the manufacturer, sell them, use them as primer.

5.2 EXAMPLES OF P2 OPPORTUNITIES IN FUEL STORAGE AND REFUELING

Fuel storage facilities present a number of opportunities for P2. These opportunities involve equipment modifications, material substitution, and changes in operational practices. They are presented in Table 5-4 on the next page.

TABLE 5-4

P2 OPPORTUNITIES FOR FUEL STORAGE OPERATIONS

Material Substitutions

- Substitute JP-8 jet fuel for JP-4

Operational Modifications

- Sell fuels no longer useable under military specifications to civilian users
- Maintain covers of above ground storage tanks to minimize infiltration by rainwater
- Use non-lead based paints to paint above-ground storage tanks
- Use high pressure low volume sprays for tank cleanout work

Process Modifications

- Install recycling systems in environmental and runoff controls to remove waste fuel from wastewaters

5.3 EXAMPLES OF P2 OPPORTUNITIES IN ELECTROPLATING

There are several P2 opportunities at each stage of the plating process, including minimizing generation of cleaning solutions and maximizing the lifetime of the plating solution. P2 techniques include substitution of materials, statistical process control, and modification of processes. Table 5-5 on the next page illustrates some common P2 techniques for these processes.

5.4 EXAMPLES OF P2 OPPORTUNITIES IN PRINTING AND PHOTOPROCESSING

Process modification and materials substitution are two P2 methods that can be used in printing and photoprocessing. Table 5-6 provides a list of some of the more common P2 options used in printing and photoprocessing.

TABLE 5-5

P2 OPPORTUNITIES FOR ELECTROPLATING

Material Substitutions

- Use water treated by deionization, distillation, or reverse osmosis instead of tap water.
- Consider hexavalent chromium alternatives and use of nonchelated process chemicals.
- Switch to noncyanide plating solution.

Process Modifications

- Extend the bath life through filtration, replenishment, electrolytic dumping, precipitation, monitoring, housekeeping, reduction of drag-in, purer anodes, and bags and ventilation and exhaust systems.
- Reduce process chemical drag-out by: minimizing concentrations of bath chemicals by maintaining chemistry at the lower end of the operating range; maximizing operating temperature of the baths to reduce viscosity; using setting agents to reduce surface tension of solution; maintaining racking orientations to maximize draining; withdrawing work pieces at slower rates to allow draining before rinsing; using air knives above process tanks; avoiding plating bath contamination of the plating bath; using drain boards between process and rinse tanks to route dripping fluids to process tanks; and using drag-out tanks to recover chemicals for reuse.
- Improve rinse efficiency of the rinse process through use of spray rinses and agitation of the rinse water, increased contact time; and counter-current rinse systems, or flow controls. Reduce drag-in through better rinsing.
- Reuse bath or rinse water from one process in another, if compatible.
- Consider using spent process baths as Ph adjusters.

Equipment Modifications

- Use purer anodes.
- Properly design and maintain racks.
- Install a bath filter to remove impurities.
- Replace cyanide-based plating solutions with cyanide-free solutions.

Metals Recovery Techniques

- Evaporate rinse water by heating it and reuse concentrated solution.
- Use reverse osmosis at high pressure, which allows water to pass through a membrane that retains metals, allowing return of the metal solution and use of the water as rinse water.
- Use ion exchange to recover metal ions in solution.
- Consider electrolytic recovery and electrowinning or electrodialysis.

TABLE 5-6

P2 OPPORTUNITIES FOR PRINTING AND PHOTOPROCESSING OPERATIONS

Plate Making

- Use a countercurrent rinsing process during plate making.
- Reduce drag-in of contaminants and reduce drag-out of solution by adding dripboards and extending drip time.
- Monitor pH, temperature, and the strength of the solution frequently, to extend bath life.
- Use direct-to-plate technologies whenever possible; these allow preparation of plates from computer images without intermediate steps.
- Eliminate metal etching or plating processes by substituting nonhazardous alternatives like presensitized lithographic plates.
- Use floating lids on bleach and developer tanks.
- Use washless processing systems.

Fountain System

- Use waterless or dry printing whenever possible; it eliminates alcohol and fountain solutions altogether.

Ink System

- Prepare and use the precise quantity of ink needed for a press run.
- Cover all ink reservoirs or consider use of special non-drying aerosols that can be sprayed onto the ink system to prevent the ink from drying overnight or during shutdown, thus preventing the ink from becoming unusable.
- Purchase inks in containers that can be returned to the supplier for refilling or order ink in small containers to avoid storage of large, partially-used containers.
- Choose water-based inks, radiation curing, soy-based inks, or inks that contain low levels of toxic metals.
- Use an automatic ink leveler.
- Recycle inks, either on-site or off-site. A common technique is the blending of various leftover color inks to produce black ink.

Cleaning System

- Use a separate container of solvent for cleaning each color unit; collect the solvent and use it again for that color.
- Adopt a standard ink sequence; doing so will eliminate the need to clean out the fountain solutions to change the ink rotation. Schedule light colors first to reduce equipment cleaning frequency.
- Clean the fountain solutions only when changing colors or when the ink may dry out between runs.
- Replace conventional hazardous cleaning solvents with less hazardous alternatives.
- Purchase solvents from a company that will pick up and recycle the spent solvent, whenever possible.
- Reuse press wipes as long as possible. Use a dirty wipe for the first pass and a clean one for the second pass.
- Use rags rather than disposable wipes, whenever possible. Use a commercial rag cleaning business in the area that can provide the service.

Photographic Processing

- Extend lives of photo and film developing baths by adding replenishers and regenerators.
- Reduce the amount of waste containing silver by using films that do not contain silver.
- Reclaim and recycle silver from photochemical wastewater.
- Recycle photographic film and paper.

5.5 EXAMPLES OF P2 OPPORTUNITIES IN HOSPITAL OPERATIONS

P2 opportunities at hospitals are somewhat limited by the practice of using disposables to prevent transmission of diseases and bacteria. However, many hospitals can benefit from the adoption of good management practices aimed at reducing or eliminating generation of waste. In addition to the suggestions illustrated in Table 5-7, there are a number of general P2 practices that hospitals can follow. These include:

- Keep individual waste streams segregated.

- Centralize purchasing and dispensing of drugs and other chemicals.
- Test all new materials in small quantities before making bulk purchases.
- Provide spill cleanup kits and train staff appropriately.
- Inspect and maintain equipment to avoid leaks.
- Neutralize acid waste with basic waste.
- Use mechanical handling aids for drums to reduce spills.
- Use automated metering systems for laundry chemicals.

TABLE 5-7

P2 OPPORTUNITIES FOR HOSPITALS

Chemotherapy
- Optimize drug container sizes when purchasing.
- Centralize chemotherapy compounding in a single location.
- Minimize waste from cleaning of the compounding hood.

Formaldehyde
- Minimize wastes from cleaning of dialysis machines and reverse osmosis (RO) units.
- Use reverse osmosis water treatment to reduce demands for cleaning of dialysis.
- Capture waste formaldehyde and consider its reuse in pathology or autopsy laboratories.

Photographic Chemicals
- Return off-specification developer to the manufacturer.
- Cover developer and fixer tanks to reduce evaporation and oxidation.
- Recover silver, waste film, and paper.
- Use squeegees to reduce bath losses.
- Use countercurrent washing.

Radionuclides
- Use less hazardous isotopes when possible.
- Segregate and label radioactive wastes, and store short-lived wastes on site until decay permits disposal.

Solvents
- Consider solvent substitutes.
- Reduce requirements for analytes.
- Use premixed kits for tests involving solvent fixation.
- Use calibrated solvent dispensers for routine tests.
- Recover or reuse solvents through distillation.

Mercury
- Substitute electronic sensing devices for devices that contain mercury.
- Recycle uncontaminated mercury wastes, using proper controls.

Waste Anesthetic Gases
- Employ low-leakage work practices
- Purchase low-leakage equipment

5.6 EXAMPLES OF P2 OPPORTUNITIES IN RESEARCH LABORATORY OPERATIONS

P2 suggestions for laboratories include better operating and material management practices. P2 practices for laboratories are illustrated in Table 5-8.

TABLE 5-8

P2 OPPORTUNITIES FOR LABORATORIES AND RESEARCH INSTITUTIONS

Material Management

- Establish a centralized purchasing program.
- Order reagent chemicals in conservative but realistic amounts.
- Encourage suppliers of chemicals to become responsible partners (such as by accepting return of outdated supplies).
- Establish an inventory control program that traces chemicals from cradle to grave.
- Rotate chemical stock, using chemicals before expiration of shelf life.
- Develop a running inventory or unused chemicals for use by other departments, if possible.
- Perform routine self-audits.

Improved Laboratory Practices

- Segregate solvents and recycle them.
- When cleaning with solvents, reuse the spent solvent for the initial cleaning and use fresh solvent only for the final rinsing.

- Platinum, palladium, and rhodium contained in catalysts can be recovered through chemical procedures specific to certain metals. Segregation of these waste for off-site recycling may be preferable.
- Investigate whether unused reagent chemicals and their containers can be returned to the manufacturer. The supplier may be able to resell sealed bottles of stable chemicals.
- Designate a facility or area for storage, segregation, and treatment of waste.
- Increase use of segregation of waste streams.
- Ensure that all chemicals and waste are identified clearly on containers.

Other Suggestions

- Design P2 into proposals for research activities, and build in funding for proper waste management.
- Contact other labs before ordering chemicals and supplies to determine local availability, if possible.
- Determine sample quantities needed and alternatives to sample analysis.
- Expand use of microanalytical techniques.
- Educate procurement personnel to identify opportunities for material substitution.
- Explore the possibility of other uses for expired chemicals.

5.7 EXAMPLES OF P2 OPPORTUNITIES IN WASTEWATER TREATMENT PLANT OPERATIONS

Many P2 techniques for wastewater treatment strive to reduce the amount of wastewater being discharged from the source. Techniques related to source reduction were discussed earlier. Improvement of wastewater treatment systems can be an effective P2 opportunity that often does not require significant modifications of processes or equipment. Many wastewater streams can be treated more effectively and economically if they are segregated from other streams that do not require the same degree of treatment. Highly contaminated wastewater streams, oily wastewater streams, and wastewater streams that contain contaminants that require specific treatment (for example, removal of metals) can be segregated to reduce the volumes of wastewater undergoing certain treatment steps. Treatment of wastewater also can be improved by adding stages, such as biological treatment, chemical precipitation, filtration, ion exchange, and sludge dewatering, to improve the effectiveness of the system and reduce treatment costs through reduction in the amount of sludge generated, recovery of metal for resale, and replacement of more costly treatment stages. Table 5-9 lists some P2 options for reducing generation of wastewater.

TABLE 5-9

P2 OPPORTUNITIES FOR WASTEWATER TREATMENT

Process Modifications

- Reuse process water, if possible.
- Prevent process water from leaking into noncontact cooling water or stormwater. Test storm sewer piping for leaks.
- Operate machinery at correct temperature and flow levels. Consider the use of automatic control and lock-out valves.
- Segregate wastewater streams that require different levels of treatment.

Rinse Water Conservation

- Install automatic flow controls or multiple rinse tanks in a counter-current series system (the latter can reduce generation of wastewater by at least 90 percent).
- Use drag-out recovery techniques.
- Use sprays or mist to rinse off excess process solution, and agitate the rinse bath to increase its efficiency.

Cleaning System Modifications

- Schedule the use of similar chemicals together to reduce the need for cleaning.
- Maximize dedication of process equipment.
- Attempt to remove residue remaining in equipment to avoid the need for cleaning.
- Use process fluids to clean equipment, then recycle or blend them into the process stream.
- Use steam to yield a smaller volume of wastewater, and recycle the steam.
- Filter cleaning water to remove particulate and reuse water.
- Use compressed air to clean equipment or parts.

Treatment Alternatives

- Use treatment technologies that do not generate heavy metal sludges.
- Use different precipitating agents that can generate less sludge, such as caustic soda instead of lime.
- Maximize recovery of materials from wastewaters.
- Identify beneficial uses for sludge.

5.8 EXAMPLES OF P2 OPPORTUNITIES IN OFFICE OPERATIONS

The major opportunity for P2 activities in government offices, beyond the familiar recycling of paper and photocopy machine and laser jet cartridges, is the paperless office. The concept of the paperless office involves the use of computers, local area networks, and even the Internet, rather than paper, to transmit information. Typically, officewide memoranda are sent to the e-mail addresses of all office staff. Memoranda and work products also can be shared among individuals or small groups by this method.

APPENDIX A

KEY STATUTES AND EXECUTIVE ORDERS AFFECTING FEDERAL FACILITIES

APPENDIX B

PENDING AND PROPOSED REGULATORY REQUIREMENTS

APPENDIX C

OVERVIEW OF AGENCY STRATEGIES

APPENDIX D

ACTIVITY SPONSORED BY TRADE ASSOCIATIONS AND FEDERAL FACILITIES

APPENDIX E

RELATED EPA DOCUMENTS

APPENDIX F

ACRONYM LIST

APPENDIX G

SECTOR MANUALS

To be added

APPENDIX H

LIST OF REFERENCES

TYPING CONTROL SHEET

Work Assignment No.	:	170-r110040102
Directory Name	:	N:\170\R1100401.02
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Michele Brantley	08/07/95
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FIGURES

TABLE

CONTENTS (continued)

TABLE 2-7

MATRIX OF FEDERAL FACILITY SECTOR PROGRAMS, ACTIVITIES, AND OPERATIONS*

Federal Agency and Its Mission	Operations	Number of Facilities	CERCLA NPL Sites	Key Environmental Laws	FY94 Environmental Budget	P2 Program in Place	EJ Program in Place	Key EPA Sector Manuals that Apply
Department of Defense -- Maintain readiness	Vehicle and aircraft Maintenance Fuel Storage Electroplating Printing and photo-processing Wastewater treatment Hospital operations Laboratory research Office operations	5,412	129	• RCRA (Subtitles C&D) • CERCLA • CAA • CWA • SDWA • NEPA	$5,246,000,000	✓	✓	Electronics, Inorganic Chemicals, Fabricated Metal Products, Motor Vehicle Assembly, Organic Chemicals, Printing, Transportation Equipment Cleaning, Non-ferrous Metals
Department of Energy -- Provide technical information and the scientific and educational foundation necessary to achieve efficiency in energy use, diversity in energy sources, a more productive economy, improved environmental quality and a secure national defense	Vehicle and aircraft Maintenance Fuel Storage Electroplating Printing and photo-processing Wastewater treatment Laboratory research Office operations	393	19	• RCRA (Subtitles C&D) • CERCLA • CAA • CWA • SDWA • NEPA	$6,175,000,000	✓	✓	Electronics, Inorganic Chemicals, Fabricated Metal Products, Organic chemicals, Metal Mining, Stone, Clay, Glass, and Concrete
Civilian Federal Agencies (see next page)	Vehicle and aircraft Maintenance Fuel Storage Printing and photo-processing Wastewater treatment Hospital operations Laboratory research Office operations	10,075	12	• RCRA (Subtitles C&D) • CERCLA • CAA • CWA • SDWA • NEPA	$201,000,000	Varies	Varies	Electronics, Inorganic Chemicals, Fabricated Metal Products, Organic chemicals, Metal Mining, Stone, Clay, Glass, and Concrete

* As tracked by FFTS

TABLE 2-7 (continued)

MATRIX OF FEDERAL FACILITY SECTOR PROGRAMS, ACTIVITIES, AND OPERATIONS*

Federal Agency and Its Mission	Operations	Number of Facilities	CERCLA NPL Sites	Key Environmental Laws	FY94 Environmental Budget	P2 Program in Place	EJ Program in Place	Key EPA Sector Manuals that Apply
Department of Transportation - Execute national transportation policy and ensure the safety and reliability of all forms of transportation	• Laboratory research • Office operations • Vehicle aircraft abd vessel maintenance • Printing and photprocessing • Fuel storage	1,464	TBD	• NEPA • RCRA (Subtitle D) • CAA	TBD	✓	TBD	Printing Transportation Equipment Cleaning
Department of the Interior - Provide administration, conservation, preservation, and management of federal land, resources, and water systems	• Vehicle maintenance • Office operations • Wastewater treatment • Laboratory research	1,200	TBD	• RCRA (Subtitles C&D) • CERCLA • SDWA • CWA • NEPA	TBD	✓	TBD	Printing Transportation Equipment Cleaning
U.S. Postal Service - Provide mail processing and delivery services to individuals and businesses within the U.S.	• Printing • Vehicle maintenance • Painting	1,026	TBD	• RCRA (Subtitle C)	TBD	✓	TBD	Printing Transportation Equipment Cleaning
Department of Agriculture - Address national policy and programs related to: farm income, agricultural markets, poverty, hunger, and malnutrition, and conduct research, and inspections	• Office operations • Vehicle maintenance • Laboratory research • Printing	836	TBD	• RCRA (Subtitles C&D) • CERCLA • CAA • FIFRA • TSCA	TBD	✓	TBD	Inorganic Chemicals Organic Chemicals Transportation Equipment Cleaning
General Services Administration - Address federal procurement, real property management, information resources management, and management of diversified government operations	• Vehicle maintenance • Office operations • Printing	700	TBD	• RCRA (Subtitles C&D)	TBD	✓	TBD	Printing Transportation Equipment Cleaning

TABLE 2-7 (continued)

MATRIX OF FEDERAL FACILITY SECTOR PROGRAMS, ACTIVITIES, AND OPERATIONS*

Federal Agency and Its Mission	Operations	Number of Facilities	CERCLA NPL Sites	Key Environmental Laws	FY94 Environmental Budget	P2 Program in Place	EJ Program in Place	Key EPA Sector Manuals that Apply
Department of Veterans Affairs - Operate programs to benefit veterans and members of their family	• Hospital operations • Office operations • Printing	250	TBD	• RCRA (Subtitles C&D)	TBD	✓	TBD	None
Department of Commerce - Encourage, serve, and promote the nation's international trade, economic growth, and technological advancement	• Aircraft and vehicle maintenance • Fuel storage • Printing and photo-processing • Wastewater treatment • Office operations	229	TBD	• RCRA (Subtitles C&D) • SDWA • CWA • CAA • NEPA	TBD	TBD	TBD	Printing
Department of Justice - Serve as legal counsel for the citizens of the United States	• Vehicle maintenance • Office operations	184	TBD	• RCRA (Subtitle C)	TBD	✓	TBD	None
Department of Health and Human Services - Implement policy on health, welfare, and income security	• Office operations	170	TBD	• RCRA (Subtitles C&D)	TBD	✓	TBD	None
Department of Labor - Implement policy regarding wage earners, their working conditions, and their employment opportunities	• Office operations	122	TBD	• RCRA (Subtitle D)	TBD	TBD	TBD	None
Tennessee Valley Authority - Conduct a unified program of resource development for the advancement of economic growth in the Tennessee Valley region	• Vehicle maintenance • Laboratory research • Office operations	121	TBD	• RCRA (Subtitles C&D) • TSCA • FIFRA • CWA • SDWA	TBD	✓	TBD	Transportation Equipment Cleaning

TABLE 2-7 (continued)

MATRIX OF FEDERAL FACILITY SECTOR PROGRAMS, ACTIVITIES, AND OPERATIONS*

Federal Agency and Its Mission	Operations	Number of Facilities	CERCLA NPL Sites	Key Environmental Laws	FY94 Environmental Budget	P2 Program in Place	EJ Program in Place	Key EPA Sector Manuals that Apply
Environmental Protection Agency - Protect and enhance the environment under laws enacted by Congress	• Laboratory research • Office operations • Vehicle maintenance	87	TBD	• RCRA (Subtitles C&D) • CWA • CAA	TBD	✓	✓	Printing Transportation Equipment Cleaning
Department of Housing and Urban Development - Conduct programs addressing housing needs, fair housing opportunities, and development of communities	• Office operations	68	TBD	• RCRA (Subtitle D)	TBD	TBD	TBD	None
National Aeronautics and Space Administration - Research flight within and outside the earth's atmosphere	• Office operations • Laboratory research • Wastewater treatment • Printing • Vehicle maintenance • Electroplating	57	TBD	• RCRA (Subtitle D) • CWA • SDWA • NEPA	TBD	✓	TBD	Transportation Equipment Cleaning
Treasury Department - Formulate financial policy while serving as the nation's financial agent, enforcing the law, and manufacturing coins and currency	• Vehicle maintenance • Printing and photoprocessing • Office operations	33	TBD	• RCRA (Subtitle D)	TBD	✓	TBD	Printing Transportation Equipment Cleaning
Department of State - Advise the President in the formulation and execution of federal policy	• Office operations	13	TBD	• RCRA (Subtitle D)	TBD	TBD	TBD	None
Federal Home Loan Bank Board	• Office operations	10	TBD	• RCRA (Subtitle D)	TBD	TBD	TBD	TBD
Department of Education - Establish policy for, administer, and coordinate most federal assistance to education	• Office operations	8	TBD	• RCRA (Subtitle D)	TBD	TBD	TBD	TBD

TABLE 2-7 (continued)

MATRIX OF FEDERAL FACILITY SECTOR PROGRAMS, ACTIVITIES, AND OPERATIONS*

Federal Agency and Its Mission	Operations	Number of Facilities	CERCLA NPL Sites	Key Environmental Laws	FY94 Environmental Budget	P2 Program in Place	EJ Program in Place	Key EPA Sector Manuals that Apply
Federal Energy Administration (TBD)	• Office operations	8	TBD	• RCRA (Subtitle D)	TBD	TBD	TBD	TBD
National Science Foundation - Promote the progress of science and engineering	• Office operations	10	TBD	• RCRA (Subtitle D)	TBD	TBD	TBD	TBD
Smithsonian Institution - Provide public education and national service in the arts, sciences, and history	• Laboratory research • Office operations	6	TBD	• RCRA (Subtitles C&D)	TBD	TBD	TBD	TBD
Federal Communications Commission - Regulate interstate and international communication by radio, TV, wire, satellite, and cable	• Office operations	2	TBD	• RCRA (Subtitle D)	TBD	TBD	TBD	TBD
Federal Emergency Management Agency - Work to reduce risks, strengthen support systems and help people and their communities prepare for and cope with disasters	• Office operations • Vehicle maintenance	2	TBD	• RCRA (Subtitle D)	TBD	TBD	TBD	TBD
International Communication Agency	• Office operations	2	TBD	• RCRA (Subtitle D)	TBD	TBD	TBD	TBD
Community Services Administration	• Office operations	1	TBD	• RCRA (Subtitle D)	TBD	TBD	TBD	TBD
Immigration and Naturalization Service - Facilitate entry of legally admissible people, grant benefits to those seeking naturalization, prevent unlawful entry or receipt of benefits, and apprehend illegal aliens	• Office operations • Vehicle maintenance	1	TBD	• RCRA (Subtitle D)	TBD	TBD	TBD	TBD

APPENDIX A: KEY STATUTES AND EXECUTIVE ORDERS THAT AFFECT FEDERAL FACILITIES

SUMMARY OF KEY STATUTES THAT AFFECT FEDERAL FACILITIES

Statute	Description	Relevance to Federal Facilities	Implementing Regulations
Clean Air Act (CAA)	• Title I requires EPA to identify "air pollutants," adopt National Ambient Air Quality Standards (NAAQS), and establish technology-based New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) • Title I also requires states to develop state implementation plans (SIP) • Title II requires establishment of nationally uniform emissions standards for automobiles • Title III authorizes citizen suits against violators and judicial review of EPA actions • Title IV creates a system of marketable allowances for sulfur dioxide emissions • Title V requires permits for all major sources of air pollutants • Title VI contains provisions to phase out the use of ozone-depleting chemicals, such as chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform, as required by the *Montreal Protocol on Substances That Deplete the Ozone Layer*.	Federal facilities have been and will continue to be significantly affected by provisions of the CAA. • The NESHAP program also affects federal facilities • Title III activities can affect federal facilities extensively • Title VI requirements are particularly important because of the need for many ozone-depleting substances in weapons systems. In addition, many of these chemicals are used extensively by federal facilities as refrigerants on ships and airplanes.	Federal facilities are bound to adhere to regulations that implement the CAA. Those regulations are found in the Code of Federal Regulations (CFR) parts 50-99. Some key provisions include: • State-by-state implementation plans are found at 40 CFR part 52 • Standards of performance and NESHAPs are found at 40 CFR part 60 • Penalty assessment requirements are found at 40 CFR part 66 and 67 • Mobile source requirements are found at 40 CFR parts 81 through 89

Statute	Description	Relevance to Federal Facilities	Implementing Regulations
Clean Water Act (CWA)	The CWA, first passed in 1972 and amended in 1977 and 1978, is the most comprehensive source of federal regulatory authority to control water pollution. In relation to federal facilities, it specifically: • Establishes limits on effluents that prohibit discharge of pollutants • Requires states to adopt water quality criteria • Requires EPA to adopt water quality guidelines • Requires source performance standards based on best demonstrated control technology • Requires dischargers of toxic pollutants to meet limits on effluents • Establishes the national pollution discharge elimination system (NPDES) permit program • Requires permits from the U.S. Army Corps of Engineers (USACE) for disposal of dredged material into navigable waters • Authorizes citizen suits	Many federal facilities own and operate permitted wastewater treatment systems that treat industrial and domestic sewage generated at the facilities. Also, some stormwater runoff discharges at federal facilities are subject to permitting under NPDES.	• Regulations under the CWA are found at 40 CFR part 100 through 140. Those regulations set forth instructions for the NPDES program and related wastewater treatment activities • The guidelines for standards of performance for new sources are found at 40 CFR parts 400-699. Those guidelines prescribe minimum standards for treatment of a variety of industrial sources, such as metal finishing and explosives manufacturing operations, and hospitals • Regulations governing dredge-and-fill operations are found at both 40 CFR and 33 CFR

Statute	Description	Relevance to Federal Facilities	Implementing Regulations
The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)	• Provides the basic legal framework for the federal "Superfund" program to clean up old hazardous waste sites. • Title III of the 1986 Superfund Amendments and Reauthorization Act (SARA) (also known as the Emergency Planning and Community Right-to-Know Act [EPCRA]) requires all manufacturing facilities to report annually to the public information about stored toxic substances, as well as about release of such substances, into the environment. The report is known as the Toxic Release Inventory (TRI).	• Provides framework and guidance for federal facilities to conduct installation restoration, environmental restoration, and similar programs. • Executive Order (EO) 12856 made the TRI reporting requirement applicable to all federal facilities. Consequently, federal facilities were required to submit their first set of TRI data to EPA on July 1, 1995.	• The regulations governing Superfund are found in 40 CFR part 300. They are called the National Contingency Plan (NCP). Although they do not set forth any standards, they do establish procedures and practices for cleaning up a contaminated site. • The regulations governing implementation of EPCRA are found at 40 CFR parts 350-399
Toxic Substances Control Act (TSCA)	• Gives the EPA comprehensive authority to regulate any chemical substance whose manufacture, processing, distribution in commerce, use, or disposal may present an unreasonable risk of injury to health or the environment. • Regulates asbestos and radon inside buildings.	• Federal facilities are affected by regulations under TSCA because they address both the handling and disposal of substances regulated under TSCA plus the remediation of asbestos and radon. • Federal facilities handle many substances regulated under TSCA, such as polychlornated biphenyls (PCB). • Asbestos and radon problems are found in many buildings owned by federal agencies.	Regulations implementing TSCA are found at 40 CFR parts, 700-799

SUMMARY OF KEY STATUTES THAT AFFECT FEDERAL FACILITIES

Statute	Description	Relevance to Federal Facilities	Implementing Regulations
Resource Conservation and Recovery Act (RCRA)	• Establishes standards and regulations applicable to generators, transporters, and owners or operators of hazardous waste treatment, storage, and disposal facilities (Subtitle C) and management of solid waste (Subtitle D). • Contains provisions regulating underground storage tanks (UST) that store petroleum and chemical products.	Federal facilities are regulated stringently under RCRA and subject to its corrective action authority: • Almost all federal facilities generate solid waste that requires disposal • Many also generate hazardous waste through maintenance or manufacturing activities • Some also are treatment, storage, or disposal facilities. • Many store petroleum products in USTs	Regulations under the RCRA program, which are found at 40 CFR parts 240-299, govern waste management practices at federal facilities.
Pollution Prevention Act (PPA)	The PPA makes it a national policy of the United States to reduce or eliminate the generation of waste at the source whenever feasible. The EPA is directed to undertake a multimedia program of information collection, technology transfer, and financial assistance to enable the states to implement this policy and to promote the use of source reduction techniques.	Federal facilities are implementing the PPA through changes in policies and procedures that govern acquisition and procurement.	The PPA is not implemented by federal regulations.

SUMMARY OF KEY STATUTES THAT AFFECT FEDERAL FACILITIES

Statute	Description	Relevance to Federal Facilities	Implementing Regulations
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)	FIFRA provides a comprehensive framework for regulating the sale and distribution of pesticides within the United States. Under the statute, EPA registers pesticides for either "general" or "restricted" use. Once a pesticide has been registered, its handling and distribution are addressed. However, once a pesticide is in or on a raw agricultural commodity, the pesticide is regulated under the Federal Food, Drug, and Cosmetic Act.	Federal facilities are affected by FIFRA because pesticide application occurs at those facilities.	The regulations, which are found at 40 CFR parts 152-186, govern federal facilities' use of pesticides and worker protection for their application.
National Environmental Policy Act (NEPA)	NEPA imposes environmental responsibilities on all agencies of the federal government. NEPA makes it the policy of the federal government to use all practicable means to administer federal programs in the most environmentally sound fashion. NEPA requires that decision-making processes of federal agencies take into account environmental factors. The agencies do so through the conduct of an environmental assessment (EA) that often is followed by an environmental impact statement (EIS).	Federal facilities are affected by NEPA every time a decision is made to expend a "significant" amount of federal dollars. Before that money can be spent, an EA or an EIS must be conducted at the facility. Thus, every time they build a road, bridge, or building, federal facilities must assess the environmental effects and make a finding of no significant impact.	The regulations governing NEPA are found at 40 CFR part 1500 *et. seq.*

SUMMARY OF KEY STATUTES THAT AFFECT FEDERAL FACILITIES

Statute	Description	Relevance to Federal Facilities	Implementing Regulations
Federal Facilities Compliance Act (FFCA)	The FFCA was passed in 1992 to enable the EPA and states to bring civil action against federal agencies for violations of certain actions relating to RCRA. Before the FFCA, the doctrine of sovereign immunity prevented civil actions against federal agencies. However, the FFCA states that it is admissible to initiate civil action against a federal agency. Criminal actions always have been possible, under the criminal provisions of individual statues.	Any civil action that may be brought against a federal facility falls under the authority of the FFCA.	The FFCA is not implemented by federal regulations.

EXECUTIVE ORDERS THAT IMPACT FEDERAL FACILITIES

Executive Order	Title	Requirements	Date Signed
12580	Superfund Implementation	Requires all federal agencies to carry out the requirements of the Superfund statutes	January 22, 1987
12856	Right-to-Know and Pollution Prevention Requirements	Requires agencies to develop pollution prevention (P2) strategies and facility-specific plans for eliminating acquisition, manufacturing, and processing or use of toxic chemicals or extremely hazardous substances	August 3, 1993
12873	Acquisition, Recycling, and Waste Prevention	Requires agencies to review and revise specifications, product descriptions, and standards and set goals for waste prevention and acquisition of recycled products	October 20, 1993
12902	Energy Efficiency and Water Conservation	Requires agencies to undertake a prioritization survey of all facilities, leading to a 10-year plan to conduct comprehensive energy and water audits	March 8, 1994
12843, 12844, 12845	Ozone-Depleting Substances, Alternative-Fuel Vehicles, and Energy Efficient Computers	Directs agencies to change procurement policies to reduce the use of ozone-depleting substances; asks each agency to adopt plans to purchase and use alternative-fueled motor vehicles; and requests that agencies agree to buy energy-efficient computers, monitors and printers to the extent practicable.	April 21, 1993
12088	Federal Compliance with Pollution Control Standards	Agencies must take all necessary actions for the prevention, control, and abatement of environmental pollution with respect to their facilities.	October 13, 1978

APPENDIX B: SUMMARY AND STATUS OF PENDING REGULATIONS THAT MAY AFFECT FEDERAL FACILITIES

SUMMARY AND STATUS OF PENDING REGULATIONS
THAT MAY AFFECT FEDERAL FACILITIES

During the rulemaking process, federal facilities, like other members of the regulated community, provide comments to the U.S. Environmental Protection Agency (EPA) on regulations as they are proposed. Occasionally, EPA will invite one or two federal agencies to participate in the rulemaking process. However, for the most part, EPA treats federal facilities in the same manner as other regulated entities. Several forthcoming regulations may have a direct affect on the ability of federal facilities to achieve compliance. Those identified in the Federal Register (FR) at the initial drafting of this notebook (Spring 1995) are outlined in the following pages. This summary may be updated in future versions of this notebook.

SUMMARY AND STATUS OF PENDING REGULATIONS
THAT MAY AFFECT FEDERAL FACILITIES

Regulation Title	CFR Section	Summary of Content	Status[1]
Spent Solvents Listing Determinations	40 CFR 261, 271, and 302	Action will propose to list or not to list as Resource Conservation and Recovery Act (RCRA) hazardous wastes 14 spent solvents and still bottoms, including: limone, phenol, sophorine, acetonitrile, furfurl, epichlorohydrin, methyl chloride, ethylene dibromide, benzyl chloride, p-dichlorobenzene, 2-methoxyethanol, 2-methoxyethanol acetate, 2-ethoxyethanol, acetate, and cyclohexanol.	Proposed Rule expected March 1995. Final Rule expected May 1996.
Military Munitions: Hazardous Waste Rule Identification and Management; Explosives Emergencies; Redefinition of On-Site	40 CFR 260, 261, 262, 263, 264, 265, and 270	Proposed rule identifies when conventional and chemical military munitions become hazardous wastes subject to federal hazardous waste transportation, storage, treatment, and disposal rules. The rule also amends existing regulations regarding emergency responses as well as the definition of "on-site," which applies to generators of hazardous waste.	Proposed Rule November 8, 1995. (60 FR 56467). Final Rule expected July 1996.
Universal Waste Rule (Hazardous Waste Management System; Modification of the Hazardous Waste Recycling Program)	40 CFR 260, 261, 262, 264, 265, 266, 268, 270, and 273	EPA promulgated streamlined hazardous waste management regulations governing the collection and management of certain widely generated wastes (batteries, pesticides, and thermostats) known as universal wastes.	Proposed Rule February 11, 1993 (58 FR 8102). Proposed Rule/Notice of Data Availability June 20, 1994 (59 FR 31568). Final Rule May 11, 1995 (60 FR 25492).

[1] Dates maybe updated for future revisions of this notebook

Regulation Title	CFR Section	Summary of Content	Status[1]
Hazardous Waste Treatment, Storage, and Disposal Facilities and Hazardous Waste Generators; Organic Air Emission Standards for Tanks, Surface Impoundments, and Containers	40 CFR 264 and 265	Investigating the health and environmental impacts of non-combustion source air emissions from hazardous waste treatment, storage, and disposal facilities and to develop standards for monitoring and control as needed. Pollutants to be considered include volatile organic compounds, particulate matter, specific toxic substances, or a combination of these. EPA has adopted a three phase approach: Phase I regulates organic emission from equipment leaks and process vents; Phase II will address tanks, containers, surface impoundments, and miscellaneous units; and Phase III will address residual risk associated with particular hazardous organic constituents.	Phase I: Proposed Rule February 5, 1987 (52 FR 3748); Final Rule June 21, 1990 (55 FR 25454). Phase II: Proposed Rule July 22, 1991 (56 FR 33490); Final Rule December 6, 1994 (59 FR 62896). Notice of postponed effective date, May 19, 1995 (60 FR 26828). Proposed Rule data availability, August 14, 1995 (60 FR 41870).
Federal Facility Compliance With RCRA 3004(i)/42 U.S.C. 6924(i) With Respect to Mixed Waste	N/A	Three years after passage of the Federal Facility Compliance Act, the waiver of sovereign immunity contained in RCRA 6001(a) becomes applicable to agencies of the federal government for violations of RCRA 3004(j) involving the storage of mixed waste that is not subject to an existing agreement, permit, or administrative or judicial order.	Sovereign immunity protection for violations of RCRA 3004(j) with respect to storage of mixed waste expired October 6, 1995.

[1] Dates maybe updated for future revisions of this notebook

SUMMARY AND STATUS OF PENDING REGULATIONS
THAT MAY AFFECT FEDERAL FACILITIES

Regulation Title	CFR Section	Summary of Content	Status[1]
Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards: Metal Products and Machinery	40 CFR 433, 438, and 464	EPA will establish technology-based limits for the discharge of pollutants by existing and new facilities that manufacture, maintain or rebuild finished metal parts, products or machines. The Phase I regulation covers the following industrial sectors: aircraft, aerospace, hardware, ordnance, stationary industrial equipment, mobile industrial equipment, and electronic equipment. The Phase II rule will cover eight industrial sectors: bus and truck, household equipment, instruments, motor vehicle, office machine, precious and nonprecious metals, railroads, and ships and boats.	Phase I: Proposed Rule May 30, 1995 (60 FR 28210); Final Rule expected September 1996. Phase II: Information Needed
Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards; Centralized Waste Treatment Category	40 CFR 437	EPA proposed technology-based, effluent limitations, new source performance standards, pretreatment standards for existing sources, and pretreatment standards for new sources for centralized waste treatment facilities that receive hazardous and non-hazardous industrial waste from offsite for treatment or recovery.	Proposed Rule January 27, 1995 (60 FR 5464). Final Rule expected September 1996.
Effluent Guidelines and Standards for the Industrial Laundries Category	40 CFR 441	EPA will propose effluent limitations guidelines for industrial laundries, which supply laundered and dry-cleaned work uniforms, wiping towels, safety equipment (such as gloves and flame-resistant clothing), dust covers and cloths, and similar items to industrial and commercial users.	Proposed Rule expected December 1996. Final Rule expected December 1998.

[1] Dates maybe updated for future revisions of this notebook

SUMMARY AND STATUS OF PENDING REGULATIONS
THAT MAY AFFECT FEDERAL FACILITIES

Regulation Title	CFR Section	Summary of Content	Status[1]
Effluent Guidelines and Standards for the Transportation Equipment Cleaning Category	40 CFR 442	EPA will propose effluent limitations guidelines for transportation equipment cleaning facilities, which service tank trucks, railroad tank cars, tank barges, and aircraft exteriors (cleaning and de-icing).	Proposed Rule expected December 1996. Final Rule expected December 1998.
Effluent Guidelines and Standards for Pesticide Formulation, Packaging, and Repackaging	40 CFR 455	EPA will propose effluent guidelines and standards for facilities that formulate, package, or repackage registered pesticide products, excluding the active ingredient sodium hypochlorite (bleach).	Proposed Rule April 14, 1994 (59 FR 17850). Final Rule expected September 1995.
Effluent Guidelines and Standards for Landfills and Incinerators	40 CFR 437	EPA will propose effluent guidelines and standards for (1) industrial incinerators and thermal destruction units; and (b) all landfills with leachate collection systems.	Proposed Rule expected March 1997. Final Rule expected March 1999.
Lesser Quantity Emission Rates	40 CFR 63	Regulation would establish lesser quantity emission rates (LQER) (that is, less than 10 tons per year) applicable to specific pollutants, which will be used to define which facilities are major sources subject to national emissions standards for hazardous air pollutants (NESHAP). Facilities emitting pollutants subject to an LQER may be subject to NESHAP requirements when emitting below 10 tons per year of the target pollutant.	Proposed Rule expected February 1996. Final Rule undetermined.
Leaded Gas Prohibition	40 CFR 80	Regulation would prohibit selling, offering for sale, supplying, offering for supply, dispensing, transporting, or introducing into commerce gasoline that contain lead or lead additives for use as fuel in any highway motor vehicle.	Proposed Rule expected April 1995. Final Rule expected December 1995.

[1] Dates maybe updated for future revisions of this notebook

SUMMARY AND STATUS OF PENDING REGULATIONS
THAT MAY AFFECT FEDERAL FACILITIES

Regulation Title	CFR Section	Summary of Content	Status[1]
Standard of Performance for New Stationary Sources: Volatile Organic Compound Emissions From the Synthetic Organic Chemical Manufacturing Industry Wastewater	40 CFR 60	New source performance standards (NSPS) to control air emissions of volatile organic compounds (VOC) from secondary sources (for example, wastewater treatment) at synthetic chemical manufacturing facilities.	Proposed Rule September 12, 1994 (59 FR 46780). Proposed Rule November 28, 1994 (59 FR 60751). Final Rule was expected September 1995.
Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Medical Waste Incinerators	40 CFR 60	NSPSs and Emission Guidelines (EG), applicable to existing sources, applicable to medical waste incinerators. Standards must address particulate matter, sulfur dioxide, hydrogen chloride, oxides of nitrogen, carbon monoxide, lead, cadmium, mercury, and dioxins and dibenzofurans.	Proposed Rule March 15, 1995 (60 FR 13937) Final Rule expected April 1996.
Standards of Performance for New Stationary Sources: Municipal Waste Combustors Emission Guidelines: Municipal Waste Combustors	40 CFR 60	NSPSs and EGs, applicable to existing sources, applicable to municipal waste combustors. Standards must address particulate matter, sulfur dioxide, hydrogen chloride, oxides of nitrogen, carbon monoxide, lead, cadmium, mercury, and dioxins and dibenzofurans.	NSPS: Proposed Rule September 20, 1994 (59 FR 48198); Final Rule was expected September 1995. EG: Proposed Rule September 20, 1994 (59 FR 48228); Final Rule undetermined.
NSPS: Steam Generating Electric Utilities	40 CFR 60	Revision of NSPSs for sulfur dioxide emissions from large electric utility steam generating facilities.	Proposed Rule expected May 1996. Final Rule undetermined.
Standards of Performance for New Stationary Sources: Cold Cleaning Machine Operations	40 CFR 60	NSPSs to control fugitive VOC solvent emissions from cold cleaning operations. Impacts automotive repair shops, gas stations, and miscellaneous industries.	Proposed Rule September 9, 1994 (59 FR 46602). Final Rule was expected August 1995.

[1] Dates maybe updated for future revisions of this notebook

SUMMARY AND STATUS OF PENDING REGULATIONS
THAT MAY AFFECT FEDERAL FACILITIES

Regulation Title	CFR Section	Summary of Content	Status[1]
NESHAP For Source Category: Pulp and Paper Production	40 CFR 63	NESHAPs for pulp and paper mills (integrated with effluent guideline). Areas affected may include: pulping, byproduct recovery, pulp washing, pre-bleaching, bleaching evaporation, liquor recovery, acid plants, and paper making. Emissions from process vents, open process equipment, tanks, furnaces, kilns, spills, and wastewater collection and treatment. Standards being integrated with effluent guidelines being developed under the Clean Water Act (CWA).	Proposed Rule: Non-Combustion Sources (kraft, sulfite, soda, semichemical mills) December 17, 1993 (58 FR 66078) Proposed Rule was Expected: Combustion Sources (kraft, sulfite, soda, semichemical mills) June 1995. Proposed Rule Expected: Other Processes (mechanical pulping, non-wood chemical, purchased pulp, secondary fiber pulp, drinking) November 1996. Final Action: All Sources November 1997.
NESHAP; Proposed Standards for Hazardous Air Pollutant Emissions From Wood Furniture Manufacturing Operations	40 CFR 63	NESHAPs for wood furniture manufacturing. Focus on hazardous air pollutants (HAP) and VOCs.	Proposed Rule December 6, 1994 (59 FR 62652). Final Rule was expected November 1995.
NESHAP; Proposed Standards for Hazardous Air Pollutant Emissions From the Printing and Publishing Industry	40 CFR 63	NESHAPs for the printing and publishing industry. May address rotogravure, fexography, offset lithography, screen printing, letter press, and other parts of the printing and publishing industry.	Proposed Rule March 14, 1995 (60 FR 13664). Final Rule expected March 1996.
NESHAP for Polymers and Group 1 Resins	40 CFR 63	NESHAPs for emissions from process vents, equipment leaks, wastewater, and storage at facilities that manufacture butyl rubber, epichlorohydrin elastomer, ethylene propylene rubber, Hypalon (TM), neoprene, nitrite butadiene rubber, polybutadiene rubber, polysulfide rubber, and styrene butadiene rubber and latex.	Proposed Rule June 12, 1995 (60 FR 30801). Final Rule expected May 1995.

[1] Dates maybe updated for future revisions of this notebook

SUMMARY AND STATUS OF PENDING REGULATIONS
THAT MAY AFFECT FEDERAL FACILITIES

Regulation Title	CFR Section	Summary of Content	Status[1]
NESHAP: Polymers and Resins/Group II	40 CFR 63	NESHAPs for emissions from process vents, equipment leaks, wastewater, and storage at facilities engaged in epoxy resin production and non-nylong polyamide resin production processes.	Proposed Rule May 16, 1994 (59 FR 25387). Final Rule was expected February 1995.
NESHAP: Surface Coating Operations in Shipbuilding and Ship Repair	40 CFR 63	NESHAPs to control emissions from painting. Also proposed limits for VOCs.	Proposed Rule expected January 1995. Final Rule was expected November 1995.
NESHAP: Aerospace Industry	40 CFR 63	NESHAPs from facilities that manufacture or rework military and commercial aircraft, subassemblies, and aircraft parts. Most HAPs come from solvent usage (for example, methyl ethyl ketone, methyl isobutyl ketone, toluene, and methylene chloride).	Proposed Rule June 9, 1994 (59 FR 29216) Final Rule was expected July 1995.
NESHAP: Off-Site Operations	40 CFR 63	NESHAPs for facilities that treat, store, dispose, recycle, recover, or re-refine solid waste received from off-site. Would include commercial waste treatment facilities, used oil re-refining, solvent recovery plants, transfer stations, and industrial landfills.	Proposed Rule October 13, 1994 (59 FR 51913; also see 59 FR 65744). Final Rule was expected November 1995.
NESHAP: Polymers and Resins/Group III	40 CFR 63	NESHAPs for amino, acetal, and phenolic resin production, based on emissions of phenol or formaldehyde.	Proposed Rule undetermined. Final Rule undetermined. (Statutory deadline November 1997).
NESHAP: Polymers and Resins/Group IV	40 CFR 63	NESHAPs for manufacturers of polyethylene, terephthalate, methymethacrylate-butodine-styrene, and styrene-acrylonitrile polymers. Emissions from process vents, equipment leaks, wastewater, and storage at facilities will be addressed.	Proposed Rule expected March 1995. Final Rule expected March 1996.

[1] Dates maybe updated for future revisions of this notebook

SUMMARY AND STATUS OF PENDING REGULATIONS
THAT MAY AFFECT FEDERAL FACILITIES

Regulation Title	CFR Section	Summary of Content	Status[1]
NESHAP: Reinforces Plastic Composites Production	40 CFR 63	NESHAPs for plants engaged in the manufacturing of homopolymers or copolymers that contain materials designed to enhance the chemical, physical, or thermal properties of the polymer (for example, hand and spray layup of gelcoats that incorporate styrene).	Proposed Rule expected December 1996. Final Rule expected November 1997.
NESHAP: Manufacturers of Acrylic/Modacrylic Fibers	40 CFR 63	NESHAPs for plants engaged in the manufacturing of acrylic or modacrylic fibers, targeting emissions from the polymerization reaction. Primary emissions of concern are vinyl acetate and acrylonitrile.	Proposed Rule undetermined. Final Rule undetermined. (Statutory deadline November 1997).
Standards for Tank Vessel Loading Operations	40 CFR 90	Regulation to control VOCs and HAPs from tank vessel loading operations.	Proposed Rule May 13, 1994 (59 FR 25004). Final Rule was expected April 1995.
VOC Regulation for Architectural and Industrial Maintenance Coatings	40 CFR [Not determined]	Regulation to control VOC emissions from architectural and industrial maintenance coatings applied to stationary structures, portable buildings, pavements, or curbs.	Proposed Rule expected May 1995. Final Rule undetermined.
NSPS for Nitrogen Oxides (NOx)	40 CFR 60.40	Revision to current NSPSs for electric utility and industrial steam generating units.	Proposed Rule expected October 1994. Final Rule was expected April 1995.
Emission Standards for Clean Fuel Vehicles and Engines, Requirements for Clean Fueled Vehicle Conversions, California Pilot Test Program	40 CFR 88	Will establish state program standards to require centrally fueled fleets to include some clean fuel vehicles in their new purchases; establish clean fuel vehicle standards, including conversion standards; and California pilot test program.	Proposed Rule Vehicle Conversion/Standards June 10, 1993 (58 FR 32474); CA Pilot June 29, 1993 (58 FR 34727). Final Rule: Clean Fuel Definition December 9, 1993 (58 FR 64679); Vehicle Conversion/Standards were expected October 1994.

[1] Dates maybe updated for future revisions of this notebook

SUMMARY AND STATUS OF PENDING REGULATIONS
THAT MAY AFFECT FEDERAL FACILITIES

Regulation Title	CFR Section	Summary of Content	Status[1]
NESHAP: Chromium Electroplating	40 CFR 63	Rule will impose standards for chromium emissions from electroplating operations. Hard decorative and anodizing operations may be affected.	Proposed Rule December 16, 1993 (58 FR 65767. Final Rule was expected January 1995.
NESHAP: Halogenated Solvent Cleaning	40 CFR 63	Emission standards would apply to new and existing organic halogenated solvent cleaners (degreasers) using any of the 189 HAPs referenced in Section 112 of the Clean Air Act (CAA).	Proposed Rule November 29, 1993 (58 FR 62566). Final Rule December 2, 1994 (59 FR 61801).
NESHAP: Chromium Industrial Process Cooling Towers (IPCT)	40 CFR 63	Rule imposes work practice standard that prohibits the use of chromium-based water treatment chemicals in new and existing industrial process cooling towers (IPCT) that are major sources.	Final Rule September 8, 1994 (59 FR 46339). Effective date: Existing IPCTs March 8, 1996; New IPCTs initial date of use after September 8, 1994.
NESHAP: Hazardous Organic	40 CFR 63	Rule establishes emission limits for 112 organic chemicals emitted at both new and existing synthetic organic chemical manufacturing industries that are major sources.	Final Rule April 22, 1994 (59 FR 19402). Effective Date April 22, 1994.
Designation Under CERCLA and Reportable Quality Adjustments for CAA HAPs and RCRA Hazardous Wastes	40 CFR 117, 302, and 355	List and specify reportable quantities for non-Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) CAA HAPs and specified RCRA wastes (F037 and F038). Makes release of reportable quantity of such wastes a reportable event.	Proposed Rule October 22, 1994 (58 FR 54836). Final Rule was expected February 1995.
Release Prevention and Risk Management	40 CFR 68	Regulation and guidance requiring stationary sources where a regulated substance is present to implement a risk management plan for the detection and prevention of accidental releases.	Proposed Rule October 22, 1993 (58 FR 54190; Supplement expected February 1995. Final Rule expected May 1996.

[1] Dates maybe updated for future revisions of this notebook

SUMMARY AND STATUS OF PENDING REGULATIONS
THAT MAY AFFECT FEDERAL FACILITIES

Regulation Title	CFR Section	Summary of Content	Status[1]
Pesticides and Groundwater State Management Plan Regulation	40 CFR 152.170	The regulation will designate certain individual pesticides to be subject to EPA approved state management plans (SMP) as a condition of legal sale and use. This regulation will establish SMPs as a new regulatory requirement for those pesticides; absent an EPA-approved state plan specifying risk reduction measures, use of the chemical would be prohibited. The rule would specify procedures and deadlines for development, approval and implementation of SMPs.	Proposed Rule was expected April 1995. Final Rule undetermined.
Pesticide Management and Disposal: Standards for Pesticide Containers and Containment	40 CFR 156 and 165	The 1988 amendments to the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) significantly expanded EPA authority to regulate the management of pesticides and their containers, including storage, transportation, and disposal. EPA may exercise this authority through labeling provisions, and other regulations for storage, transport, and disposal of pesticides.	Proposed Rule: Container design, residue removal, bulk containment February 11, 1994 (59 FR 6712); Storage, disposal, mixer/loader, transportation undetermined. Final Rule undetermined.
Classification of Certain Pesticides for Restricted Use Due to Groundwater Concerns	40 CFR 152.170	This rule will apply groundwater contamination criteria to select pesticides for restricted use (RU) classification due to groundwater concerns. Once promulgated, classified pesticides will be restricted to use by trained and certified operators.	Proposed Rule expected May 31, 1991 (56 FR 22076). Final Rule was expected May 1995.

[1] Dates maybe updated for future revisions of this notebook

APPENDIX C

OVERVIEW OF AGENCY POLLUTION PREVENTION STRATEGIES

OVERVIEW OF AGENCY POLLUTION PREVENTION STRATEGIES

This table reviews the general compliance status of selected Federal entities with various key provisions of Executive Order 12856. This table has been photocopied from EPA document number 300-R-95-014 "Meeting the challenge: A Summary of Federal Agency Pollution Prevention Strategies." Its content is limited to the information that was available at the time of that document's publication.

APPENDIX D

ACTIVITIES SPONSORED BY TRADE ASSOCIATIONS AND FEDERAL FACILITIES

ACTIVITIES SPONSORED BY TRADE ASSOCIATIONS AND FEDERAL FACILITIES

A large number of associations interact with various federal facilities. Because of the diverse nature of the federal facility sector and the diverse skill mixes of its employees, a number of the associations listed below conduct activities and share information with the various federal agencies.

Presented on the following pages is a list of trade associations that are involved with federal facilities.

DEPARTMENT OF DEFENSE

American Institute of Hydrology
3416 University Avenue, SE
Minneapolis, MN 55414-3328
(612) 379-1030
Federal Facility Environmental Program Involvement:
This professional, educational organization registers and certifies hydrologists and hydrogeologists. The organization provides a forum for the discussion of national and international hydrology issues and provides continuing education for its members.

American Society of Naval Engineers
1452 Duke Street
Alexandria, VA 22314-3458
(703) 836-6727
Federal Facility Environmental Program Involvement:
This organization is a professional engineering society that represents the areas of naval and marine engineering, naval aviation, combat systems, the environment, and other professions engaged in naval construction, operation, and maintenance. The organization offers opportunities for information transfer, provides continuing education, and bestows honors and awards.

Association of Naval Aviation
5205 Leesburg Pike, Suite 200
Falls Church, VA 22041-3863
(703) 998-7733
Federal Facility Environmental Program Involvement:
This organization is a professional, nonprofit, educational society of naval aviation, whose purpose is to educate the public and national leaders on the roles of the Navy, Marine Corps, and Coast Guard aviation as key elements of the national defense posture. The association works actively at high-level deliberations on national security, recognizes outstanding achievements in the field, supports the interaction between military and other federal organizations, and serves as a repository of historical data.

Marine Technology Society
1828 L Street, NW, Suite 906
Washington, DC 20036-5108
(202) 775-5966
Federal Facility Environmental Program Involvement:
This professional society provides technical support and education to improve humans' ability to work at ocean depths. This international, multidisciplinary society publishes a technical journal, conducts naval research, and provides education in oceanography and marine sciences.

Military Operations Research Society
101 S. Whiting Street, Suite 202
Alexandria, VA 22304
(703) 751-7290
Federal Facility Environmental Program Involvement:
This professional society provides research analysts in the area of management science. The society consists of 33 working groups, one of which focuses on environmental issues, and its members are 50 percent military personnel and 50 percent contracting personnel.

National Association of Superintendents of
U.S. Naval Shore Establishments
5301 Etheridge Circle
Virginia Beach, VA 23464
(804) 479-4635
Federal Facility Environmental Program Involvement:
This labor organization is made up of top-level management personnel working primarily at national shipyards. The members of the organization resolve various issues associated with activities taking place at the nation's shipyards.

Society of American Military Engineers
607 Prince Street
P.O. Box 21289
Alexandria, VA 22314-3117
(703) 549-3800
Federal Facility Environmental Program Involvement:
This organization exists in the interest of national defense, bringing together all phases of U.S. engineering, civil sector, and military, for the advancement of the knowledge of the science of military engineering and the rapid mobilization of engineering capabilities. Members include military personnel and civilians who interact with one another through meetings and work together to publish books and articles in periodicals.

DEPARTMENT OF ENERGY

Federal Energy Bar Association

American Association of Blacks in Energy
927 15th Street, NW, Suite 200
Washington, DC 20005-2304
(202) 371-9530
Federal Facility Environmental Program Involvement:
TBD

American Nuclear Society
555 N. Kensington Avenue
LaGrange Park, IL 60525
(708) 352-6611
Federal Facility Environmental Program Involvement:
This is a nonprofit, international, scientific, and educational organization with a focus on the diverse fields of nuclear science and technology. The society promotes the advancement of engineering and science related to the atomic nucleus, integrates the many nuclear science and technology disciplines, encourages research, establishes scholarships, develops cooperative relationships with government agencies, and disseminates technical information through meetings and technical papers.

Association of Energy Engineers
4025 Pleasantdale Road, Suite 420
Atlanta, GA 30340-4264
(404) 447-5083
Federal Facility Environmental Program Involvement:
This nonprofit professional society is made up of 8,200 members in the U.S. and throughout the world. The society provides a forum for the exchange of technical and managerial information on all aspects of energy and the environment. The society, which publishes several journals, consists of three divisions: the Cogeneration & Competitive Power Institute, the Environmental Engineers & Managers Institute, and the Demand-Side Management Society.

1350 Connecticut Avenue, NW
Suite 300
Washington, DC 20036
(202) 223-5625
Federal Facility Environmental Program Involvement:
TBD

Institute of Nuclear Materials Management
60 Revere Drive, Suite 500
Northbrook, IL 60062
(708) 480-9573
Federal Facility Environmental Program Involvement:
This international educational society consists of 750 members who meet annually and work together to provide seminars and other forms of continuing education on the topic of nuclear materials management. The society is made up of six divisions and includes members from diverse fields, such as nuclear physicists and waste management specialists.

Institute of Nuclear Power Operations
700 Galleria Parkway
Atlanta, GA 30339-5957
(404) 644-8000
Federal Facility Environmental Program Involvement:
This organization works directly with power utilities that pay a membership fee to it. The organization evaluates the operations of power plants, providing consultation on their better operation.

Integrated Waste Services Association
1401 H Street, NW, Suite 220
Washington, DC 20005
This association was formed in 1991 to promote integrated solutions to solid waste management problems. The organization encourages the use of waste-to-energy technology as a key component of community solid waste management programs. This nonprofit organization consists of 65 companies throughout the nation, 58 of which are waste-to-energy facilities.

APPENDIX E

RELATED EPA DOCUMENTS

FFEO Resources

Following is a list of recent documents and resources available from the Federal Facilities Enforcement Office. To order, check off the documents desired and fax to (202) 260-9437 or mail this page to FFEO U.S. EPA (2261), 401 M Street, SW, Washington, DC 20460.

- *Guidance for Implementing Executive Order 12856: Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements - March 28, 1995*. (EPA 300-B-95-005, April 1995, 55 pp.) Provides section-by-section interpretive guidance on E.O. 12856, explains how federal agencies should comply with EPCRA reporting requirements, and offers "leadership options" for federal agencies in meeting the goals of the executive order.

- *Executive Order 12856: Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements: Questions and Answers.* (EPA 745-R-95-011, March 1995, 40 pp.) Provides detailed questions and answers to assist federal facilities in determining their EPCRA reporting requirements and complying with E.O. 12856.

- *Environmental Management System Benchmark Report: A Review of Federal Agencies and Selected Private Corporations.* (EPA 300-R-94-009, December 1994, 121 pp.) A comparison of performance in six environmental management areas of civilian federal agencies, the Department of Energy, the Army, Navy, and Air Force, and three private sector corporations (Chevron, Xerox, and 3M).

- *Federal Facilities Multi-Media Enforcement/ Compliance Initiative.* (EPA 300-R-94-007, November 1994, 85 pp.) National highlights of the initiative in FY 1993-94, plus reports from each EPA region.

- *Federal Facility Pollution Prevention Planning Guide.* (EPA 300-B-94-012, November 1994, 29 pp.) Designed to help federal agencies prepare facility prevention plans under E.O. 12856. Outlines steps to follow in developing plans and provides lists of contacts.

- *Federal Agency Environmental Management Program Planning Guidance.* (EPA 300-B-95-001, October 1994, 66 pp. plus 17 appendices) Guidance to federal manager on preparing A-106 plans. Includes overview of the A-106 process, descriptions of each element, and an instruction kit for completing new program plans and updating existing plans.

- *Catalogue of Federal Agency Environmental Compliance/Management Documents.* (EPA 300-B-94-011, June 1994, 79 pp.) Annotated listing of over 200 federal agency environmental compliance and management documents published by EPA and other agencies on compliance with specific environmental laws, policies, and environmental management programs.

- *Pollution Prevention in the Federal Government: Guide for Developing Pollution Prevention Strategies for Executive Order 12856 and Beyond.* (EPA 300-B-94-007), April 1994, 44 pp. plus 7 appendices with texts of executive orders.) Provides background on executive orders requirements and EPA activities in pollution prevention, focusing on the government's roles in setting policies and regulations, making acquisitions, generating hazardous waste and managing facilities, and facilitating R&D and tech transfer.

- *The State of Federal Facilities: A Comprehensive Overview of the Environmental Compliance Status of Federal Facilities through the End of FY 1992 ("Keystone Report").* (EPA 300-R-94-001, February 1994) Includes briefing charts, graphs, tables, and bar charts with statistics on federal compliance with CERCLA, RCRA, NPDES, TSCA, Public Water Supply Supervision, TRI, and the status of the base closure program.

- *Pollution Prevention and Right-to-Know in the Government: Executive Order 12856.* (EPA 100-K-93-001, October 1993, 15 pp.) Briefly reviews the importance of the executive order, lists key deadlines, and includes text of E.O. 12856.

- *Generic Protocol for Conducting Environmental Audits of Federal Facilities.* (February 1995) Available on-line through Enviro$ense, on diskette from FFEO, and in hardcopy from NTIS. Material is intended to assist in conducting environmental audits and environmental management assessments. Protocols can be customized to agency requirements.

- *Enviro$ense*, EPA's free, public, integrated environmental information system, offers information exchange and documents relating to pollution prevention and federal facilities. To access via modem, dial 703-908-2092 (baud 2400 to 14,400, 8, N, 1, emulation: ANSI, BBS, or VT-100). Access via the Internet and the World Wide Web is at: http://wastenot.gov/envirosense.

APPENDIX F

LIST OF ACRONYMS

List of Acronyms

AFS	-	AIRS Facility Subsystem (CAA database)
AIRS	-	Aerometric Information Retrieval System (CAA database)
BIF	-	Boilers and Industrial Furnaces (RCRA)
BLM	-	Bureau of Land Management
BOD	-	Biochemical Oxygen Demand
BRAC	-	Base Realignment and Closure Act
CAA	-	Clean Air Act
CAAA	-	Clean Air Act Amendments of 1990
CERCLA	-	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	-	CERCLA Information System
CERFA	-	Community Environmental Response Facilitation Act
CFA	-	Civilian Federal Agency
CFC	-	Chlorofluorocarbon
CO	-	Carbon Monoxide
COD	-	Chemical Oxygen Demand
CSA	-	Community Service Association
CSI	-	Common Sense Initiative
CWA	-	Clean Water Act
CZMA	-	Coastal Zone Management Act
D&B	-	Dun & Bradstreet Marketing Index
DOA	-	Department of Agriculture
DOC	-	Department of Commerce
DoD	-	Department of Defense
DOE	-	Department of Energy
DOI	-	Department of the Interior
DOJ	-	Department of Justice
DOL	-	Department of Labor
DOT	-	Department of Transportation
DUSD(ES)	-	Deputy Undersecretary of Defense (Environmental Security)
ELP	-	Environmental Leadership Program
EM	-	Environmental Management
EPA	-	United States Environmental Protection Agency
EPCRA	-	Emergency Planning and Community Right-to-Know Act
FCC	-	Federal Communication Commission
FFCA	-	Federal Facility Compliance Act
FEMA	-	Federal Emergency Management Agency
FFEO	-	Federal Facilities Enforcement Office
FFTS	-	Federal Facility Tracking System
FHLB	-	Federal Home Loan Bank Board
FIFRA	-	Federal Insecticide, Fungicide, and Rodenticide Act
FINDS	-	Facility Indexing System
FMECI	-	Federal Facility Multimedia Enforcement Initiative
FWPCA	-	Federal Water Pollution Control Air
FY -	Fiscal Year	
GOCO	-	Government-Owned, Contractor-Operated
GSA	-	General Services Administration
HAP	-	Hazardous Air Pollutants (CAA)
HHS	-	Department of Health and Human Services
HSDB	-	Hazardous Substances Data Bank
HUD	-	Department of Housing and Urban Development

IDEA	-	Integrated Data for Enforcement Analysis
ICA	-	International and Community Association
INS	-	Immigration and Naturalization Service
LDR	-	Land Disposal Restrictions (RCRA)
LEPC	-	Local Emergency Planning Committees
MACT	-	Maximum Achievable Control Technology (CAA)
MCLG	-	Maximum Contaminant Level Goals
MCL	-	Maximum Contaminant Levels
MEK	-	Methyl Ethyl Ketone
MSDS	-	Material Safety Data Sheets
NAAQS	-	National Ambient Air Quality Standards (CAA)
NAFTA	-	North American Free Trade Agreement
NASA	-	National Aeronautics and Space Administration
NCDB	-	National Compliance Database (for TSCA, FIFRA, EPCRA)
NCP	-	National Oil and Hazardous Substances Pollution Contingency Plan
NEIC	-	National Enforcement Investigation Center
NEPA	-	National Environmental Policy Act
NESHAP	-	National Emission Standards for Hazardous Air Pollutants
NOAA	-	National Oceanic and Atmospheric Administration
NO_2	-	Nitrogen Dioxide
NOV	-	Notice of Violation
NO_x	-	Nitrogen Oxide
NPDES	-	National Pollution Discharge Elimination System (CWA)
NPL	-	National Priorities List
NRC	-	National Response Center
NSF	-	National Science Foundation
NSPS	-	New Source Performance Standards (CAA)
OAR	-	Office of Air and Radiation
OECA	-	Office of Enforcement and Compliance Assurance
OPA	-	Oil Pollution Act
OPPTS	-	Office of Prevention, Pesticides, and Toxic Substances
OSHA	-	Occupational Safety and Health Administration
OSW	-	Office of Solid Waste
OSWER	-	Office of Solid Waste and Emergency Response
OW	-	Office of Water
P2	-	Pollution Prevention
PCS	-	Permit Compliance System (CWA Database)
POTW	-	Publicly Owned Treatment Works
PPA	-	Pollution Prevention Act
RCRA	-	Resource Conservation and Recovery Act
RCRIS	-	RCRA Information System
SARA	-	Superfund Amendments and Reauthorization Act
SDWA	-	Safe Drinking Water Act
SEP	-	Supplementary Environmental Projects
SERC	-	State Emergency Response Commissions
SI	-	Smithsonian Institution
SIC	-	Standard Industrial Classification
SO_2	-	Sulfur Dioxide
SO_x	-	Sulfur Oxides
TOC	-	Total Organic Carbon
TRI	-	Toxic Release Inventory
TRIS	-	Toxic Release Inventory System
TCRIS	-	Toxic Chemical Release Inventory System

TSCA	-	Toxic Substances Control Act
TSDF	-	Treatment Storage and Disposal Facility
TSS	-	Total Suspended Solids
TVA	-	Tennessee Valley Authority
UIC	-	Underground Injection Control (SDWA)
USPS	-	U.S. Postal Service
UST	-	Underground Storage Tanks (RCRA)
VA	-	Department of Veterans Affairs
VOC	-	Volatile Organic Compounds

APPENDIX G

SECTOR MANUALS

Contacts for Available Sector Notebooks

The Sector Notebooks were developed by the EPA Office of Compliance. Particular questions regarding th e Sector Notebook Project in general can be directed to the EPA Work Assignment Managers:

Michael Barrette
US EPA Office of Compliance
401 M St., SW (2223-A)
Washington, DC 20460
(202) 564-7019

Gregory Waldrip
US EPA Office of Compliance
401 M St., SW (2223-A)
Washington, DC 20460
(202) 564-7024

Questions and comments regarding the i ndividual documents can be directed to the appropriate specialists listed below.

Document Number	Industry	Contact	Phone (202)
EPA/310-R-95-001	Dry Cleaning Industry	Joyce Chandler	564-7073
EPA/310-R-95-002	Electronics and Computer Industry	Steve Hoover	564-7007
EPA/310-R-95-003	Wood Furniture and Fixtures Industry	Bob Marshall	564-7021
EPA/310-R-95-004	Inorganic Chemical Industry	Walter DeRieux	564-7067
EPA/310-R-95-005	Iron and Steel Industry	Maria Malave	564-7027
EPA/310-R-95-006	Lumber and Wood Products Industry	Seth Heminway	564-7017
EPA/310-R-95-007	Fabricated Metal Products Industry	Greg Waldrip	564-7024
EPA/310-R-95-008	Metal Mining Industry	Keith Brown	564-7124
EPA/310-R-95-009	Motor Vehicle Assembly Industry	Suzanne Childress	564-7018
EPA/310-R-95-010	Nonferrous Metals Industry	Jane Engert	564-5021
EPA/310-R-95-011	Non-Fuel, Non-Metal Mining Industry	Keith Brown	564-7124
EPA/310-R-95-012	Organic Chemical Industry	Walter DeRieux	564-7067
EPA/310-R-95-013	Petroleum Refining Industry	Tom Ripp	564-7003
EPA/310-R-95-014	Printing Industry	Ginger Gotliffe	564-7072
EPA/310-R-95-015	Pulp and Paper Industry	Maria Eisemann	564-7016
EPA/310-R-95-016	Rubber and Plastic Industry	Maria Malave	564-7027
EPA/310-R-95-017	Stone, Clay, Glass and Concrete Industry	Scott Throwe	564-7013
EPA/310-R-95-018	Transportation Equipment Cleaning Industry	Virginia Lathrop	564-7057

APPENDIX H

LIST OF REFERENCES

List of References

Environmental Quality: Twenty-Fourth Annual Report; The Council on Environmental Quality

Guidance for Implementing Executive Order 12856; EPA Document Number 300-B-95-005

Federal Agency Environmental Management Program Planning Guidance; EPA Document Number 300-B-95-001

Meeting the Challenge: A Summary of Federal Agency Pollution Prevention Strategies; EPA Document Number 300-R-95-014

Draft Strategy for Improving Environmental Management Programs at Civilian Federal Agencies; November 1995

TYPING CONTROL SHEET

Work Assignment No.	:	170-R110040102
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