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**Hazardous Waste Management at  
Federal Facilities**

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Before the  
Subcommittee on Transportation,  
Tourism and Hazardous Materials,  
Committee on Energy and Commerce  
House of Representatives



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Mr. Chairman and Members of the Committee:

We appreciate the opportunity to be here today to discuss environmental problems at federal facilities. Like the private sector, federal facilities must comply with the requirements for management and cleanup of hazardous or radioactive wastes contained in the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), commonly known as Superfund. The environmental problems at federal facilities addressed by these laws are large, especially at Department of Energy (DOE) and Department of Defense (DOD) facilities, and compliance with the laws governmentwide has been slow. GAO has issued over 30 reports, several prepared at your request, Mr. Chairman, that discuss environmental problems at federal facilities and how well these facilities are complying with environmental laws. We welcome the opportunity to put these concerns into perspective to aid your consideration of proposed legislation, aimed at strengthening the enforcement of environmental laws at federal facilities.

The nation faces a formidable task to clean up thousands of sites owned by the federal government at which uncontained hazardous and radioactive wastes are contaminating soil and groundwater. The Environmental Protection Agency (EPA) has indicated that federal agencies should be the model for complying with environmental laws. While our work has shown some progress in identifying waste sites, even more remains to be done to assess their environmental impact and clean them up. In general, the federal agencies are not far enough along in their assessment process to estimate the full extent of the problem, how long it will take to clean up, or the costs. As Congress grapples with difficult budget priorities, the need for good information on the cost of clean up to aid in discussions on funding priorities is crucial.

Our work to date clearly indicates that cleaning up DOE's nuclear facilities may be the federal government's biggest challenge. Those facilities, which produce and process nuclear material for weapons, are potentially one of the more dangerous industrial operations in the world. These facilities pose a unique problem because they generate radioactive as well as hazardous waste that must be controlled and cleaned up. We have raised concerns in reports and testimonies that DOE's operations have contaminated groundwater and soil with high levels of both radioactive and hazardous substances and do not fully comply with environmental laws.

We have recommended action in specific instances to assist the Congress in assessing how well federal agencies are complying with environmental laws. For example, we recommended that DOE provide the Congress a comprehensive report on its plans, milestones, and cost estimates to bring its facilities into full compliance with applicable environmental laws. In addition, we recommended that DOE specifically budget and account for all its RCRA and CERCLA funds so the Congress and others can readily identify how much is being spent to comply with these laws. This, among other things, is the subject of one of the bills, introduced by Mr. Synar, being considered by the Committee.

Let me briefly describe the federal government's environmental compliance responsibilities, environmental problems we have identified at various federal facilities, federal efforts to comply with environmental laws, and the uncertainty of the future costs of compliance.

ENVIRONMENTAL COMPLIANCE  
RESPONSIBILITIES

The federal government has thousands of hazardous waste sites at research laboratories, maintenance facilities, municipal and state-operated landfills and dumps, and nuclear production reactors, among others. These facilities--both civilian and military--routinely generate large quantities of a variety of hazardous and, in the case of DOE, radioactive substances. Some of the hazardous chemicals include acids, nitrates, oils, reactive metals (e.g., sodium), fluoride, and heavy metals (e.g., mercury). Exposure to some of these materials in large doses can pose immediate health threats, long-term illness, or even death.

Some of the radioactive material because of its lethal levels of radiation and high heat generation--must be handled with special shielded equipment to prevent worker exposure. Other material, while less radioactive, is very toxic and can present a health hazard if inhaled or ingested. In addition, DOE's operations generate mixed waste--various combinations of hazardous and radioactive materials--such as oil contaminated with plutonium or radioactive acids. These mixed wastes pose unique handling and disposal problems because workers and the environment must be protected from the hazardous as well as the radioactive contamination.

Over the last decade, the Congress has enacted major legislation concerning the management and cleanup of hazardous and/or radioactive waste. CERCLA, as amended, makes all past and present owners of hazardous waste sites--CERCLA's definition of hazardous waste includes radioactive waste--responsible for reporting them to EPA and liable for the costs of cleaning them up. This liability extends to federal agencies as well. To pay for cleanup costs until they can be recovered from owners, CERCLA, as amended, provides for a \$10.1 billion cleanup fund, called

Superfund. Although federal agencies must comply with CERCLA's requirements to the same extent as private entities, the Superfund cannot be used to clean up federally-owned sites--agencies must request the needed funds from the Congress. In October 1986, the Congress passed the Superfund Amendments and Reauthorization Act of 1986 (SARA) which extended and amended the CERCLA legislation. It gave new emphasis to the programs at federal facilities by imposing additional requirements such as establishing a compliance docket and imposing deadlines for assessing each of the facilities on the docket and initiating and completing any necessary evaluations and corrective actions.

RCRA requires owners or operators of facilities that generate, treat, store, or dispose of hazardous waste to obtain a permit and comply with performance, recordkeeping, reporting, and facility operation standards. In November 1984, the Congress amended RCRA adding, among others, a provision requiring cleanup of any contamination or other corrective action for disposal units or sites no longer in use as a condition for receiving a final RCRA permit for ongoing operations. Thus, inactive sites became subject to RCRA as well as CERCLA.

RCRA, unlike CERCLA, specifically excludes radioactive waste from its regulation. There has been some confusion over the years concerning EPA's jurisdiction over the mixed waste generated by DOE which contain both hazardous and radioactive waste. An April 1987 DOE rule clarifies that EPA has jurisdiction under RCRA over the hazardous waste portion of the mixed waste and DOE will continue to regulate the radioactive portion under the Atomic Energy Act of 1954. If a conflict develops when applying both laws to a specific waste problem, then RCRA yields to the Atomic Energy Act.

ENVIRONMENTAL PROBLEMS AT  
FEDERAL FACILITIES

Federal facility operations have contaminated groundwater and soil with hazardous and, in the case of DOE, radioactive substances. In some cases, such as at Fernald and Mound in Ohio and Rocky Flats in Colorado, this contamination has migrated off-site and could potentially affect the general public. At some of DOE's facilities, such as Hanford, Washington, and Savannah River, South Carolina, the sites may have become irreversibly contaminated and may require long-term institutional control. Let me briefly summarize a few examples from our work over the past few years that highlight the seriousness of the environmental problems existing at federal facilities.

In September 1986 we issued a report that examined environmental conditions at nine DOE facilities nationwide and found that groundwater and soil had been contaminated at most of these facilities.<sup>1</sup> At eight facilities, the groundwater had been contaminated to high levels with hazardous and/or radioactive material. For example, DOE facilities in Colorado, South Carolina, and Tennessee contaminated the groundwater with solvents (cleaning agents) that are as much as 1,000 times above proposed drinking water standards. Other DOE facilities in South Carolina and Washington State contaminated the groundwater with radioactive materials that are more than 400 times greater than drinking water standards. At Fernald and Mound in Ohio, the contamination has migrated off-site into drinking water supplies--both a well and an aquifer. In addition, DOE's Savannah River operations have contaminated a drinking water aquifer underlying the site. State officials are concerned that the existing contamination at many of the DOE facilities may pose a public health threat and that DOE is

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<sup>1</sup>NUCLEAR ENERGY: Environmental Issues at DOE's Nuclear Defense Facilities (GAO/RCED-86-192, Sept. 1986).

adding to the problem by continuing to discharge radioactive and hazardous material into the environment.

DOE's operations had also contaminated soil at six facilities. At some DOE sites--the Y-12 plant in Oak Ridge, Tennessee; Fernald; Mound; and Rocky Flats--the contamination had migrated off-site. Of the off-site contamination problems, the Y-12 plant could pose a public health threat. Mercury from that plant's operations contaminated a stream bed and a flood plain. In some locations, the contamination is greater than 2,000 times background levels and over 150 times greater than the state's public health guidelines. To make matters worse, contaminated soil from the flood plain was used in various construction projects around the town of Oak Ridge. In addition, off-site plutonium contamination of the soil at Mound may endanger public health if it is disturbed.

In a May 1987 report on hazardous waste activities at DOD installations in Guam,<sup>2</sup> we reported that the drinking water aquifer was contaminated to a level, according to EPA, that poses an unacceptable health risk to those drinking the water for an extended period of time. For example, concentration levels of a cleaning solvent were reported in 1986 in one well that were about 5 times EPA's proposed standard.

Our report noted that there were several suspected sources of this contamination. First, maintenance activities at Anderson Air Force Base (Anderson) involved improper dumping or spillage of hazardous waste, such as cleaning solutions, into the storm drainage system or directly on the ground. This storm water drainage system consists of storm drains, which rapidly remove surface runoff water into the aquifer through more than 100 dry wells. These storm drains and dry wells can act as direct conduits

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<sup>2</sup>HAZARDOUS WASTE: Abandoned Disposal Sites May Be Affecting Guam's Water Supply (GAO/NSIAD-87-88BR, May 1987).

for contaminants to enter the aquifer, Guam's primary source of drinking water.

Anderson has also identified other suspected sources of aquifer contamination, including about 20 abandoned landfills, where hazardous waste such as cleaning solvents could have been disposed. EPA and Guam EPA also believe there may be other abandoned sites that Anderson has not identified that adversely affect Guam's drinking water supply.

FEDERAL GOVERNMENT HAS BEEN SLOW  
TO COMPLY WITH ENVIRONMENTAL LAWS

We believe the types of environmental problems just described have occurred, in part, because of the federal government's insufficient emphasis on complying with environmental protection laws. Examples such as federal facilities that have been out of compliance with RCRA for more than 3 years and agencies that have not completely identified all their potential hazardous waste sites demonstrate the slow pace that the federal government has taken in its compliance efforts. Let me briefly summarize some of our work over the past few years that will provide additional insight concerning RCRA and CERCLA compliance.

RCRA Compliance

Our May 1986 report reviewed compliance with RCRA at 17 federal civilian agencies in 12 states.<sup>3</sup> We found that 9 of the 17 agencies had a moderate to high level of confidence that all of their hazardous waste handlers--generators; transporters; and treatment, storage, and disposal facilities--had been identified. However, several agencies estimated that hundreds of additional

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<sup>3</sup>Federal Civil Agencies Slow to Comply With Regulatory Requirements (GAO/RCED-86-76, May 1986).



facilities have yet to be evaluated to determine whether they handled hazardous waste.

We also found that almost half of the 72 handlers that EPA had inspected were cited for violations and about 66 percent of those handlers had violations considered by EPA to be among the most serious. In addition, these violations often required lengthy periods of time to correct. Nineteen of the facilities cited remained out of compliance for 6 months or more, and some had been out of compliance for more than 3 years. Facilities remained out of compliance for a number of reasons, including a lack of federal agency emphasis on RCRA and limited agency knowledge and expertise concerning RCRA requirements.

In a May 1986 report we reviewed DOD compliance with RCRA at 14 installations in 7 states.<sup>4</sup> We found that in 1984 12 of the 14 were considered out of compliance with RCRA. These installations were out of compliance for a number of reasons, including the inability of DOD's assigned agent, the Defense Logistics Agency, to dispose of hazardous waste and to construct waste storage facilities in a timely manner.

For the 12 installations not in compliance, 65 percent of the violations were considered the most serious type, as defined by EPA guidelines. These included problems in tracking of hazardous waste shipments, hazardous waste container management, and groundwater monitoring. In addition, DOD could have done more to reduce the volume of waste, such as requiring disposal by changing maintenance and overall processes and procedures, reusing and recycling the waste materials, and better utilizing industrial waste treatment plants.

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<sup>4</sup>HAZARDOUS WASTE: DOD's Efforts to Improve Management of Generation, Storage, and Disposal (GAO/NSIAD-86-60, May 1986).

The problems of delayed hazardous waste disposal, slow construction of storage facilities, and limited hazardous waste reduction still exist at the individual installations we reviewed. For example, our April 1987 report noted that DOD's Guam installations had not complied with RCRA regulations concerning hazardous waste management because of the Defense Logistics Agency's inability to dispose of their hazardous waste. At Anderson and the Naval Complex in Guam, hazardous waste was not disposed of in a timely manner because of the difficulty in finding a capable contractor willing to bid on the disposal contract. Because Guam does not have adequate storage facilities, waste materials were being stored improperly, and as of July 31, 1986, 97 percent of the containers of hazardous waste awaiting disposal had been in storage for over 90 days--RCRA regulations limit temporary storage to 90 days.

#### CERCLA Compliance

Our December 1987 report concerning the extent of the nation's potential hazardous waste problem reported that federal agencies had identified about 5,400 potential hazardous waste sites on their lands, although we believe that will increase as agencies complete their identification efforts.<sup>5</sup> DOD accounts for 3,526 of these potential sites, located on 529 military bases and installations. According to DOD reports, nearly all of the sites have been assessed and 99, or about 3 percent, have been cleaned up.

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<sup>5</sup>Extent of Nation's Potential Hazardous Waste Problem Still Unknown (GAO/RCED-88-44, December 1987).

In our July 1987 report we stated that 11 civilian agencies<sup>6</sup>-- those that account for nearly all potential hazardous waste sites identified by civilian agencies--had identified 1,882 potential sites.<sup>7</sup> Over 70 percent of these sites belong to the DOE and are located at research laboratories and nuclear materials and weapons facilities.

Based on what the agencies said they needed to do to identify, assess, and clean up their waste sites, we found that as of September 1986, 4 of the 11 agencies had completed their site identification efforts. Of those sites identified, the agencies had assessed about half to determine if cleanup was needed. All but two agencies--Bureau of Land Management and Forest Service--believed that they would meet the SARA deadline of April 1988 when preliminary assessments are due. Further, of those civilian agency sites that had been targeted for cleanup, 15 percent had been cleaned up.

Under CERCLA, liability for the cleanup of hazardous waste sites does not terminate when the property is sold to another party. Therefore, we reviewed DOD's effort to identify contamination on its excess properties. In a December 1986 report we found that DOD had not adequately assessed the condition of its excess land and had declared seven potentially contaminated properties to be excess.<sup>8</sup> Further, at six installations, hazardous waste sites were in the nearby vicinity of excess property. At

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<sup>6</sup>The 11 civilian agencies reviewed were the Department of Energy, the National Aeronautics and Space Administration, the Federal Aviation Administration, the U.S. Coast Guard, the Bureau of Land Management, the Bureau of Reclamation, the Fish and Wildlife Service, the Bureau of Indian Affairs, the National Park Service, the Agricultural Research Service, and the U.S. Forest Service.

<sup>7</sup>SUPERFUND: Civilian Federal Agencies Slow to Clean Up Hazardous Waste (GAO/RCED-87-153, July 1987).

<sup>8</sup>HAZARDOUS WASTE: DOD Efforts to Preclude Disposal of Contaminated Property Need Improvement (GAO/NSIAD-87-45, Dec. 1986).

four of these installations, we were told by state environmental officials that migration of contaminants from these sites may affect the excess property.

FUTURE COSTS UNCERTAIN BUT  
WILL BE IN THE TENS OF BILLIONS

The cost of complying with environmental laws at federal facilities will be substantial. However, because so many uncertainties exist--federal facilities have not fully identified their problems or the solutions to correct them--the total costs to address the environmental concerns are not known. In addition, the 11 civilian agencies we reviewed could not provide information on how much they had spent on site identification and cleanup because their budgets did not separately identify these costs. Therefore, the Congress has little information on both what has been spent and what the federal government should spend in the future to deal with the environmental problems that exist at its facilities. However, we believe that future costs will be in the tens of billions of dollars.

The 11 civilian agencies we reviewed could not predict how long it would take them or how much it would cost to clean up the sites they knew required corrective action. Nearly all of the agencies had no target dates for completing cleanup at these sites and were reluctant to establish any. According to agency officials, the amount of time needed to clean up sites depends on the complexity of the remedial design, its costs, and whether these cleanups have to compete with other agency programs for funds.

Our work at DOE provides a perspective of some of the costs that have been identified. For example, DOE plans to change its disposal operations to get final RCRA permits for nine facilities that we reviewed at an estimated cost of \$200 million. DOE is also studying ways to reduce, eliminate, or recycle low-level

radioactive liquid waste rather than discharge it directly into the soil. A study conducted at one DOE facility--Hanford--estimates that alternative disposal methods could cost up to \$500 million.

For the most part, civilian agencies could not tell us how much they had spent on cleanup because their budgets do not separately identify the costs of hazardous waste cleanups. In our December 1987 report on DOE's budgeting and accounting for RCRA and CERCLA funds,<sup>9</sup> we found that these funds are primarily commingled with money allotted for DOE defense operations and are not readily distinguishable. Therefore, DOE cannot readily demonstrate compliance with Executive Order 12088, which, in part, requires executive agencies to ensure that sufficient funds are requested in their budgets and that funds appropriated for compliance with environmental standards are not used for other purposes. DOE also cannot promptly address the Congress' concerns regarding DOE's environmental funding. Therefore, we recommended that the Secretary of Energy specifically identify in DOE's future budgets to the Congress all of DOE's RCRA and CERCLA funds and separately account for them.

In regard to DOD facilities, we reported that DOD's estimate to comply with CERCLA in 1985 was \$5 to \$10 billion. More recent estimates place the cost as high as \$14 billion. We also asked DOD officials to estimate the costs for DOD facilities to comply with RCRA. They were unable to provide those costs, according to the officials, because of the magnitude and complexity of the problem and insufficient staff to determine the costs.

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<sup>9</sup>ENVIRONMENTAL FUNDING: DOE Needs to Better Identify Funds for Hazardous Waste Compliance (GAO/RCED-88-62, Dec. 1987).

## SUMMARY

Because federal facilities have been slow to comply and enforce RCRA and CERCLA, the extent of the environmental problems and the magnitude of the costs involved have yet to be established, but appear to be staggering. Federal agencies have not been able to predict how quickly they will complete cleanup actions since these schedules depend on the nature of the problem, the type of remedy required, and the agencies' ability to obtain necessary funds. The Congress needs to have better information on what is being spent to comply with these environmental laws and what it can expect in the future.

Let me briefly highlight the concerns at one of these agencies. DOE faces special problems in that its nuclear defense facilities have polluted the environment not only with hazardous substances but also with radioactive substances. In addition, many of these facilities are old, some are already operating beyond their expected life, and unresolved concerns exist about not only the environmental problems but also the operational safety of many of the facilities. Because of these concerns, we believe that the Congress needs an overall strategic plan from DOE which defines the universe of problems it faces in managing and rebuilding its nuclear defense complex. In March 1987 we recommended that DOE prepare such a strategy to include not only actions needed to rebuild or upgrade facilities with time frames and cost estimates but also actions needed to protect the environment and assure the Congress and the public of DOE's safe operation.

DOE has not yet presented such a strategy to the Congress, but in its fiscal year 1989 budget has requested hundreds of millions of dollars to upgrade facilities such as those at Rocky Flats and Fernald. Without such a strategy, no clear integration of current or short-term needs to long-term needs can occur to avoid expenditures on unneeded or low priority activities. Furthermore,

DOE nor the Congress is in a position to make the most meaningful decisions about the nuclear defense complex. Therefore, DOE needs to complete its strategy to ensure that available funds in a deficit conscious environment are targeted to the most critical needs.

In closing, Mr. Chairman, our testimony today provides a perspective on the environmental problems and issues at federal facilities and the remaining work to be done to manage and clean up hazardous and radioactive waste at these sites. We believe that the Committee has recognized the difficult challenge ahead. We will be happy to work with Committee as it debates the current bills aimed at improving environmental compliance by federal agencies.