

GAO

Report to the Chairman, Subcommittee on
Environment, Energy, and Natural
Resources, Committee on Government
Operations, House of Representatives

July 1987

SUPERFUND

Civilian Federal Agencies Slow to Clean Up Hazardous Waste



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**Resources, Community, and
Economic Development Division**

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July 24, 1987

The Honorable Mike Synar
Chairman, Subcommittee on Environment,
Energy, and Natural Resources
Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

As you requested this report describes the status of 11 civilian federal agencies' efforts to identify, assess, evaluate, and clean up potential hazardous waste sites.

Unless you publicly release its contents earlier, we will make this report available to other interested parties 30 days after the date of this letter. At that time copies of the report will be sent to appropriate congressional committees; the Administrator, EPA; the Director, Office of Management and Budget; and the 11 agencies reviewed.

Major contributors to the report are listed in appendix II.

Sincerely yours,

A handwritten signature in cursive script that reads "Hugh J. Wessinger".

Hugh J. Wessinger
Senior Associate Director

Executive Summary

Purpose

As the owner of one-third of the nation's land area, the federal government is responsible for cleaning up perhaps thousands of sites where uncontained hazardous wastes are contaminating soil and groundwater. Since 1980, federal agencies have been required by law to determine whether their facilities and lands contain abandoned or uncontrolled hazardous wastes and to take any necessary corrective actions.

Concerned about the federal government's progress in meeting these requirements and that federal agencies be a model to others, the Chairman, Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations, asked GAO to examine the progress of 11 civilian agencies in identifying and cleaning up hazardous waste sites. These agencies account for nearly all such reported hazardous waste sites.

Background

In 1980 the Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, to respond to problems caused by improper disposal of hazardous substances in the past. Among other things, the law specified that owners and operators of facilities where hazardous wastes were stored are liable for the costs of cleaning up their sites. By June 1981 all such owners and operators were required to notify the federal Environmental Protection Agency (EPA) of the existence of their facilities, as well as known, suspected, or likely releases of hazardous substances. These notification and liability provisions applied to the federal government and its contractors and lessees as well.

With close to 730 million acres of land, federal civilian agencies' inventory of possible hazardous waste sites could be enormous. Federal lands contain thousands of municipal and state-operated landfills and dumps; former oil, gas, and mining operations; and electric power plants, as well as research laboratories, maintenance and repair facilities, and other facilities where hazardous wastes may have been disposed of or stored.

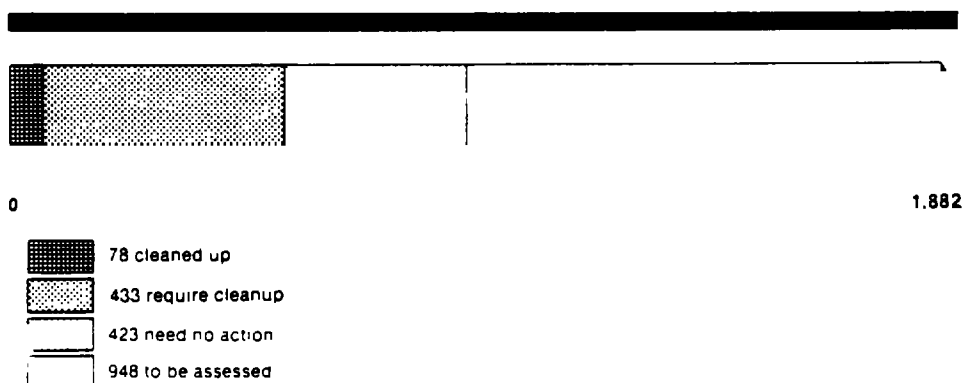
Despite the potential magnitude of the effort, civilian agencies did not begin immediately to meet CERCLA requirements. In 1984 a GAO report found that 5 of 16 civilian agencies had not undertaken any survey of their hazardous waste sites and that about a third of the locations that agencies had identified had not been evaluated to determine whether they needed to be cleaned up.

In an attempt to accelerate federal agencies' response to hazardous waste problems, the Congress' 1986 reauthorization of the Superfund called for EPA to establish and make available for public inspection a federal agency hazardous waste docket, a listing of those federal facilities reported by agencies and included in EPA's data base of hazardous waste sites. Once on the docket, a facility must be assessed by April 1988 to determine if cleanup action is required. If hazardous contamination is greatly endangering public health or the environment, agencies must follow certain statutory timetables for initiating site investigation and cleanup and annually report to the Congress on their progress on all sites.

Results in Brief

Civilian agencies have been slow to identify, assess, and clean up their hazardous waste sites. As shown in figure 1, since CERCLA's enactment 7 years ago, the 11 agencies GAO reviewed have identified 1,882 potential sites, assessed about half of them to determine whether they required cleanup, and cleaned up 78 of the 511 sites found to need it. However, most of these efforts began in 1985 and as of September 1986, only 4 of the 11 agencies had completed their site identification efforts; the other 7 were still compiling their site inventories. None of the agencies had completed their assessments, although all but 2 of them believe they will meet the April 1988 congressional deadline. Only 15 percent of the 511 sites found to require corrective action have been cleaned up, and the agencies generally would not predict when their cleanup efforts would be complete or how much they would cost.

Figure 1: Status of Cleanup at Identified Hazardous Waste Sites (Reported in September 1986)



Principal Findings

Site Identification Efforts

About 70 percent of the 1,882 potential hazardous waste sites identified as of September 1986 are at nuclear materials and weapons facilities and research laboratories belonging to the Energy Department. Interior Department agencies identified the second largest number, most of them landfills and dumps or old oil, gas, and mining sites. Maintenance and repair facilities and research laboratories make up the bulk of the hazardous waste sites included in other agencies' inventories. (See ch. 2.)

Although most of the agencies undertook limited surveys in 1981 to meet the CERCLA deadline, for a variety of reasons, more comprehensive site discovery efforts generally did not begin until 1985. As a result of this late start, only 4 agencies—the Fish and Wildlife Service, the Federal Aviation Administration (FAA), the Forest Service, and the National Aeronautics and Space Administration (NASA)—considered their site identification efforts complete by September 1986. Energy, the Agricultural Research Service, and the National Park Service hope to complete their activities this year or in 1988. The Bureau of Indian Affairs suspended its site identification efforts because, following the Superfund reauthorization, EPA took over site identification on Indian lands. The Coast Guard and the Bureau of Reclamation, on the other hand, do not expect to finish for several more years, and the Bureau of Land Management (BLM) plans to continue site identification indefinitely, reviewing its extensive land holdings on an annual basis. The latter three agencies expect to find few if any serious problems. (See ch. 2.)

Although agencies have no statutory deadlines for completing their site discovery efforts, agencies are liable for any releases of hazardous substances. It is therefore in their interest to identify and clean up sites as quickly as possible.

Site Assessment and Cleanup Activities

Overall, the 11 agencies have assessed 934 sites, about half of those identified, and determined that more than half of them, or 511 sites, will need some form of corrective action. About 85 percent of these sites, however, have yet to be cleaned up, and work has not been initiated at about 60 percent of them. (See ch. 3.)

Progress has varied among agencies. FAA and NASA, for example, have assessed most of the sites in their inventories, but the Interior agencies

and the Forest Service still have most of their assessment work ahead of them. However, most of the backlog of assessment work has been started, and most agencies expect to be able to meet the Congress' April 1988 deadline for assessments. BLM and Forest Service do not expect to have funds available to finish their assessments until later in fiscal year 1988.

The number of sites requiring cleanup will undoubtedly increase as more sites are identified and assessed. But on the basis of what is currently known, the Bureau of Reclamation is furthest along, while Energy, FAA, and Forest Service have about 80 percent or more of their cleanup work to finish. It is difficult to predict how long it will take each agency to finish cleaning up all its known hazardous waste sites, since the time required depends on the nature of the problem, the type and complexity of the remedies available, and the costs involved. Congressional and public oversight will therefore be important to ensure agencies are making reasonable progress in assessing and cleaning up hazardous waste sites.

Recommendations

Because the agencies generally have increased their site identification efforts and because the reauthorization of Superfund established deadlines and reporting provisions, GAO is not making any recommendations at this time. In addition, in separate reports, GAO has already recommended improvements in the hazardous waste cleanup programs of selected agencies.

Agency Comments

During the course of the review, GAO discussed the information presented in this report with officials of all 11 agencies to confirm the status of their programs. As directed by the requester, GAO did not ask the agencies to comment officially on a draft of this report.

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Abbreviations

ARS	Agricultural Research Service
BLA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BuRec	Bureau of Reclamation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FS	Forest Service
FWS	Fish and Wildlife Service
GAO	General Accounting Office
HSWA	Hazardous and Solid Waste Amendments
NASA	National Aeronautics and Space Administration
NPS	National Park Service
NPL	National Priorities List
RCED	Resources, Community, and Economic Development Division
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
USCG	United States Coast Guard

Introduction

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), also known as Superfund, was intended by the Congress to address problems posed by uncontrolled hazardous waste sites. It required owners and operators of facilities where hazardous substances are or were once stored or disposed of to notify the Environmental Protection Agency (EPA) of these sites, and it declared the owners liable for cleaning up any uncontained hazardous wastes. These provisions apply to the federal government as well.

As the owner of a third of the nation's land area, containing thousands of landfills, dumps, laboratories, and industrial facilities, the federal government's inventory of hazardous waste sites could be enormous. However, a 1984 report by GAO found that a number of civilian agencies had not attempted to identify hazardous substance disposal sites on their facilities, and not all identified sites had been assessed to determine whether they needed cleanup. In 1986 the Chairman, Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations, asked us to take another look at civilian federal agencies' compliance with Superfund and report on the status of hazardous waste site identification, assessment, and corrective actions within 11 civilian agencies that collectively account for nearly all reported civilian federal hazardous waste sites.

Background

The discovery of serious health and environmental problems at Love Canal and other communities around the country focused public attention on the consequences of uncontrolled hazardous waste disposal practices. To control these problems, the Congress, in 1980, enacted Superfund. The law created a \$1.6 billion trust fund over a 5-year period to clean up the sites posing the most serious threats to public health, safety, and the environment.

To find where these hazardous wastes might be located, section 103(c) of CERCLA required all past and present owners and operators of facilities where hazardous substances were stored, treated, or disposed of to notify EPA of the existence of the facility and of any known, suspected, or likely releases of hazardous substances. This information was to have been submitted to EPA by June 1981. EPA stored this information in a central data base now known as the Comprehensive Environmental Response, Compensation, and Liability Information System, or CERCLIS. From this data base, EPA, in consultation with the states, developed the National Priorities List (NPL), composed of no fewer than 400 of those

sites that posed the greatest risk or danger to public health, welfare, or the environment.

While the Superfund was meant to help pay for cleanup costs at these NPL sites, CERCLA nevertheless made clear that the parties responsible for the hazardous conditions are also responsible for their cleanup and, therefore, had to undertake the cleanups themselves or reimburse the fund. According to section 107 of CERCLA, owners and operators of disposal or storage sites, as well as generators and certain transporters of hazardous substances, are liable for all costs of removal or remedial action. Superfund pays only if responsible parties cannot be located, or are unable to pay.

Federal Government Responsibilities

Under CERCLA the federal government has the same responsibility for complying with the act as any private party and is likewise liable for cleanup. This liability extends to the government's contractors (other than cleanup contractors) and lessees. EPA's authority to take corrective action at federal hazardous waste sites is limited to the use of CERCLA funds for removal actions, but EPA may not use these moneys for long-term or permanent corrective actions at federal hazardous waste sites. Instead, federal agencies are expected to fund such actions through their normal budget process.

Nature and Extent of Federal Hazardous Waste Sites

Federal civilian agencies own about 730 million acres of land, most of it in the West. Thousands of sites on these lands have been used for municipal and state-operated landfills and dumps, oil and gas operations, and other mining activities. This acreage includes over 27,000 installations that house hospitals, laboratories and test facilities, vehicle maintenance and repair facilities, and underground fuel tanks.

Despite the potential magnitude of the effort, most federal agencies did not begin immediately to meet CERCLA site discovery and reporting requirements. In two separate reports, we examined defense and civilian agencies' progress in identifying and assessing hazardous waste sites on their lands or facilities and taking corrective actions where necessary.¹ We found that while the Department of Defense's site identification efforts were well underway, 5 of the 16 civilian agencies in our review

¹Status of Civilian Federal Agencies' Efforts to Address Hazardous Waste Problems on Their Lands (GAO/RCED-84-188, Sept. 28, 1984); Efforts to Clean Up DOD-Owned Inactive Hazardous Waste Disposal Sites (GAO/NSIAD-85-41, Apr. 12, 1985).

had not attempted to identify any hazardous waste sites and that the 1 agencies reporting sites had notified EPA of only 15 percent of the hazardous waste locations of which they were aware. Among the 340 locations identified, about a third had not yet been assessed to determine whether they required cleanup.

In addition, in several reports on Department of Energy facilities, we found soil and ground water contamination problems that could be traced to the way Energy disposes of hazardous and radioactive waste. We recommended that Energy provide the Congress with a comprehensive report on its plans, milestones, and cost estimates to bring its facilities in full compliance with environmental laws. Energy agreed with this recommendation and believes that completion of its surveys and other ongoing environmental actions will enable it to prepare an overall long-range plan.²

Recent Legislative Requirements

Following CERCLA the Congress imposed further requirements on federal agencies to identify and report hazardous waste sites to EPA and to follow certain timetables in order to proceed expeditiously with their assessment and any necessary cleanup. Section 3016 of the Resource Conservation and Recovery Act (RCRA), required each federal agency to biennially compile, publish, and submit to EPA, beginning in January 1986, an inventory of sites it owns or operates or has owned or operated at which hazardous waste is or was stored, treated, or disposed of at any time.

The 1984 Department of Defense Appropriation Act required yet another effort on the part of the federal government to identify hazardous waste sites on its lands. The act established a \$150-million fund for hazardous waste disposal operations and other environmental restoration programs at sites either currently or formerly used by the Department of Defense. The Department therefore asked federal agencies with lands that had once been used or owned by the Defense Department to identify those sites that contained hazardous or toxic wastes and report them to the Army Corps of Engineers, the agency within Defense responsible for maintaining the Department's inventory and performing any necessary cleanup.

²Environmental Issues at DOE's Nuclear Defense Facilities (GAO/RCED-86-192, Sept. 8, 1986); Unresolved Issues Concerning Hanford Waste Management Practices (GAO/RCED-87-30, Nov. 4, 1986); DOE's Transuranic Waste Disposal Plan Needs Revision (GAO/RCED-86-90, Mar. 21, 1986)

In 1986, in the Superfund Amendments and Reauthorization Act (SARA), the Congress instructed EPA to create a federal agency hazardous waste compliance docket, or listing, of all the facilities that had been reported to EPA under Section 3016 and certain other sections of RCRA, and under Section 103 of CERCLA. By April 1988 agencies must have completed a preliminary assessment of each facility on the docket and by April 1989 must determine which facilities should be placed on the national priorities list. Once a facility is listed on the NPL, the agency must begin a field study, known as a remedial investigation, and a feasibility study of alternative remedial measures within 6 months and must undertake "substantial continuous" remedial action within 15 months of the feasibility study's completion.

To keep the public informed about agencies' progress, SARA requires EPA to publish its docket every 6 months and directs the Agency to establish a program to provide the public with information about the facilities on the docket. The act also requires agencies to report annually to the Congress on the progress of their assessment and cleanup activities at facilities on the NPL, as well as at other facilities.

Objectives, Scope, and Methodology

In light of our past work, and concerned that federal agencies be a model to others, the Chairman, Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations, asked us to determine whether federal civilian agencies were making satisfactory progress toward cleaning up their hazardous waste sites. Following the Chairman's March 17, 1986, letter and discussions with his office, we agreed to examine the status of agencies' site identification efforts, their assessment activities, and corrective actions.

Although our 1984 report covered the CERCLA activities of 16 agencies, we focused our current review on those 11 agencies that together accounted for over 95 percent of the hazardous waste sites reported in 1984. Included in this review are

- the National Aeronautics and Space Administration (NASA);
- the Department of Energy;
- the Federal Aviation Administration (FAA), and the U.S. Coast Guard, within the Department of Transportation;
- the Bureau of Land Management (BLM), the Bureau of Reclamation, the Fish and Wildlife Service, the Bureau of Indian Affairs, and the National Park Service, within the Department of the Interior; and

- the Agricultural Research Service and the U.S. Forest Service, within the Department of Agriculture.

These agencies include the federal government's land management agencies (the Interior bureaus and the Forest Service) and some of the largest nonmilitary research departments and agencies (Energy, NASA, and Agricultural Research Service).

To determine their progress, we relied on the agencies' assessments of the work they needed to perform, how much of it they had completed, and how much remained. Once we arrived at our estimates of the numbers of sites identified, assessed, and cleaned up, we reviewed our data with agency staff to verify their accuracy.

We obtained our information by reviewing records maintained at agency headquarters and regional offices and by interviewing officials there who were knowledgeable about their agencies' CERCLA activities. In some cases these officials were in charge of an agency-wide CERCLA program; in other cases, they were the environmental coordinators for their departments or bureaus and were familiar with the activities of the field offices at which CERCLA activities were conducted. In either case, these representatives furnished us with information on what their agencies had done, resources expended on their efforts (where information was available), and plans for the future.

Our review of agency records included internal memoranda; planning and budget documents; internal status reports, including contractor reports; and reports on environmental audits when these were performed. In addition to these documents, we reviewed CERCLA, SARA, and other pertinent legislation; implementing regulations; and EPA guidance to federal agencies. At EPA headquarters we interviewed officials of the Superfund program as well as officials responsible for overseeing federal facility compliance with all environmental laws.

Once we had determined how far agencies had progressed, we examined the likelihood that agencies could meet the deadlines set by SARA for assessing facilities listed on EPA's docket. We first checked the agencies' inventories against those facilities listed in EPA's CERCLIS data base and the other data bases that will make up the initial docket. For those facilities likely to be on the docket, we then looked at how far along agencies were in their assessments and asked agency officials their opinions as to whether they would meet SARA deadlines.

We conducted our review in accordance with generally accepted government auditing standards. The review occurred between May 1986 and March 1987. We discussed our findings with agency officials and incorporated their comments when appropriate. At the Chairman's request, we did not seek official comments on this report by the 11 agencies.

Status of Site Identification Efforts

As of September 1986 federal civilian agencies had identified 1,882 potential hazardous waste sites on their lands and facilities, well over twice the number identified in 1984. Most of these sites belong to the Department of Energy. Although a number of agencies reported some hazardous waste sites to EPA in 1981, they regarded this as a one-time requirement and did not begin comprehensive surveys until several years later. As a result, only NASA, FAA, the Forest Service, and the Fish and Wildlife Service consider their inventories complete. Three others—Energy, the National Park Service, and the Agricultural Research Service—expect to complete their inventories in 1987 or 1988, but the Coast Guard and Bureau of Reclamation expect to take 4 or 5 years. The Bureau of Indian Affairs has stopped work on its inventory because of provisions in SARA for EPA to conduct an inventory of Indian lands. Because of its vast land holdings, BLM cannot determine when its inventory will be finished. In any event, agencies have no statutory deadline for completing their inventories.

Hazardous Waste Sites Identified

As can be seen in table 2.1, as of September 1986, the 11 agencies we examined had identified 1,882 potential hazardous waste sites, a more than 100 percent increase over the 852 sites the agencies had discovered by 1984. About 70 percent of the sites—1,326—belong to the Energy Department, while the 5 Interior agencies account for 385 sites, or about 20 percent. The inventories do not include any of the approximately 7,000 potential hazardous waste sites formerly owned or used by the Department of Defense and believed to be Defense's responsibility.

Table 2.1: Potential Federal Hazardous Waste Sites (Reported in September 1986)

Agency	Type of facility/activity							Total
	Municipal landfill/dump	Mining, oil, or gas operation	Maintenance and repair facility	Lab or test facility	Farming/external source	Nuclear material/weapon production	Other activities ^a	
Agriculture								
ARS	0	0	1	6	0	0	0	7
FS	43	37	3	0	0	0	4	87
Energy	0	0	0	245 ^b	0	1 061	20	1,326
Interior								
BIA	15	7	0	0	0	0	14	36
BLM	87	92	0	0	0	0	3	182
BuRec	8	2	4	0	20 ^c	0	1	35
FWS	14	30	11	0	29	0	8	92
NPS	4	31	2	2	0	0	1	40
NASA	0	0	0	34	0	0	0	34
Transportation								
FAA	0	0	1	14	0	0	0	15
USCG	0	0	28	0	0	0	0	28
Total	171	199	50	301	49	1,061	51	1,882

^aIncludes some sites where we could not determine the source of the hazardous materials. Also includes abandoned buildings, lumber mills, a sewage treatment plant, a naturally occurring chromite site, and electrical generating facilities.

^bIncludes some sites with radioactive wastes.

^cAlthough national wildlife refuges are managed by FWS, BuRec has assumed lead responsibility for assessment and cleanup.

Source: GAO tabulation and categorization of agency-furnished data.

The Energy Department's 1,326 potential hazardous waste sites are located at over 130 research and test facilities and power-generating plants. These sites hold materials generated by nuclear weapons testing and production, nuclear reactors, electricity generating plants, and fossil fuel and other energy research and development programs. About half of Energy's potential sites—equal to more than one third of all 11 agencies' sites—are located at a single facility in Hanford, Washington, that houses the Pacific Northwest Laboratory, the Hanford Engineering Development Laboratory, and Hanford Production Operations. The facility has produced plutonium for nuclear weapons for more than 40 years.

and conducts energy research and development activities, all of which have resulted in both radioactive and hazardous chemical waste products stored or disposed at 648 sites at Hanford.

Energy's remaining 678 sites are distributed over its other facilities. While none contain nearly as many sites as Hanford, the Rocky Flats plant in Colorado, which produces plutonium for weapons, contains 74 identified sites, and the Savannah River facility in South Carolina, which also produces nuclear materials, has 65 sites. Altogether, 1,061 of Energy's identified sites are located on facilities at which nuclear materials and weapons are produced.

Among the other 10 agencies, mines and oil and gas operations account for the greatest number of identified hazardous waste sites, nearly 200, while landfills and dumps comprise the second largest category. These are located on Forest Service, BLM, and other Interior lands but were or are operated by state or local governments, in the case of most landfills and dumps, and private companies holding mineral rights or leases.

At 49 sites the Fish and Wildlife Service and the Bureau of Reclamation have found that agricultural drainwater and other external sources may be causing contamination on wildlife refuges, including the Kesterson Wildlife Refuge in California. Although wildlife refuges are managed by the Fish and Wildlife Service, the Bureau of Reclamation, because of its responsibility for the irrigation projects that drain into Kesterson and other refuges, is acting as the lead agency within Interior for evaluation and corrective action.

Finally, 50 sites associated with agencies' maintenance and repair activities were identified as containing hazardous wastes. The Coast Guard, for example, had 28 sites resulting from maintenance and repair of its ships, aircraft, buoys, and lighthouses.

Status of Agency Inventories

As of September 1986, only the Forest Service, NASA, the Fish and Wildlife Service, and FAA regarded their site discovery efforts as complete. The other agencies, for the most part, are still identifying new sites and adding to their inventories. However, although Energy, the National Park Service, and the Agricultural Research Service expect to complete their inventories by late 1987 or 1988, the Coast Guard and Bureau of Reclamation do not expect to finish for another 4 to 5 years, and BLM cannot predict when its efforts will be finished. The Bureau of Indian

Affairs had also not completed its inventory of sites on Indian lands, that responsibility having been assigned to EPA.

Almost all agencies have identified sites by having their field offices review their records and interview knowledgeable personnel, both current and former. Energy and NASA also undertook physical inspections of their facilities to locate hazardous waste sites. BLM, however, generally identifies new sites from among those reported by others to EPA and states. Because they relied on existing staff to conduct surveys as part of other official duties, the agencies could not tell us how much they have spent, or expect to spend, on their site discovery activities. Even NASA and the Agricultural Research Service, which contracted for environmental reviews, could not attribute costs to site discovery because the contracts served multiple purposes.

Initiation of Site Discovery

As noted in the previous chapter, Section 103(c) of CERCLA required agencies to notify EPA by June 1981 of the existence of facilities where hazardous substances had been stored, treated, or disposed of. However, as we reported in 1984, agencies identified relatively few locations. Some agencies—NASA, Forest Service, FAA, and Agricultural Research Service among them—were unaware that they had such a reporting requirement. Other agencies simply reported whatever information they could gather in the few months before the statutory deadline.

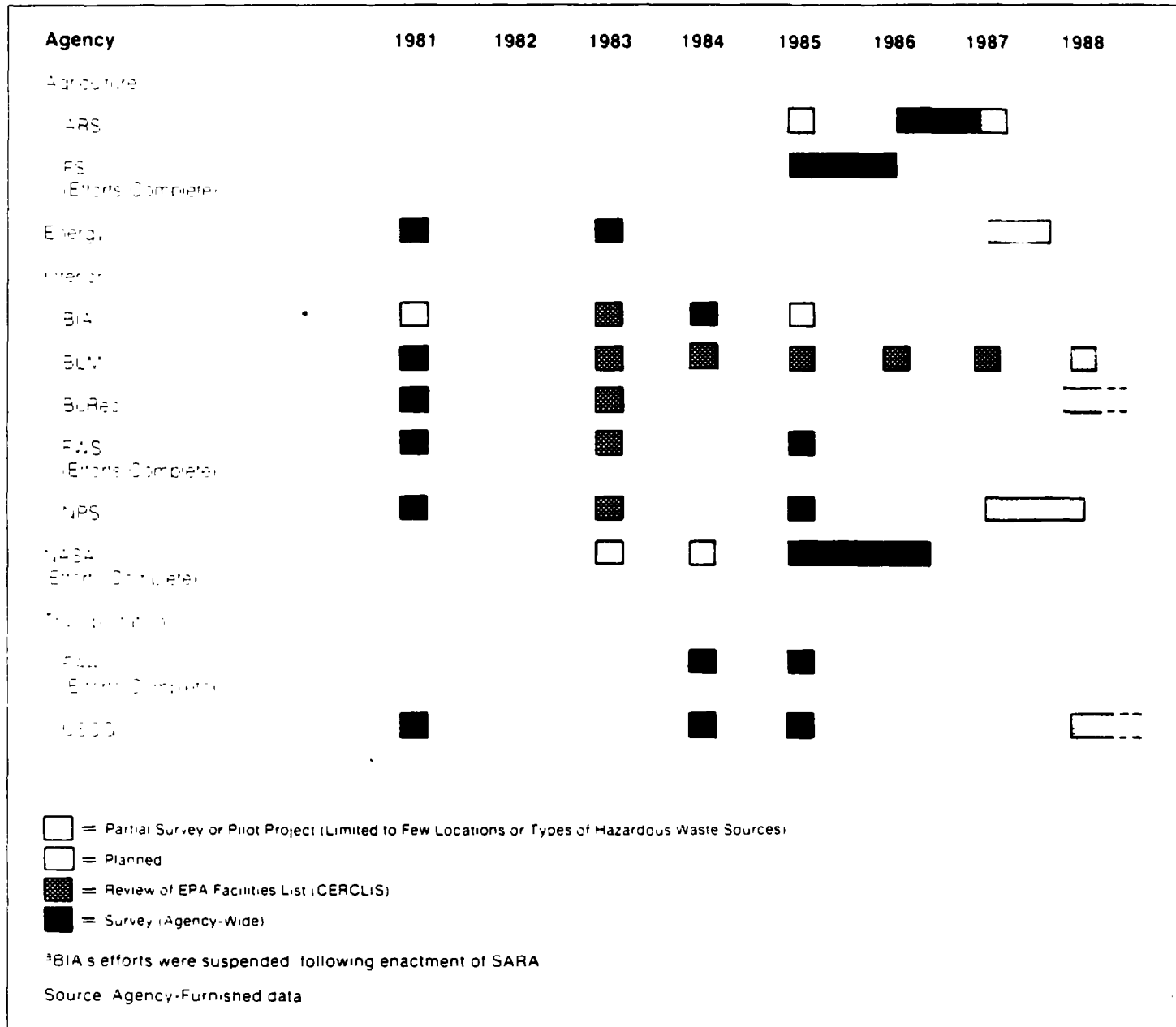
As figure 2.1 shows, some agencies resumed their site discovery efforts in 1983, but for the most part, these were either reviews of EPA's data base or surveys of a limited number of installations. In general, agencies believed that section 103(c) was a one-time reporting requirement and made little effort to add to the information submitted for the statutory deadline until 1985, when they had to identify hazardous waste sites in order to meet the requirements of Section 3016 of RCRA. At that time, the Department of Energy instituted a comprehensive survey to augment its prior identification efforts; the surveys undertaken by the Forest Service, Agricultural Research Service, and NASA in 1985 were meant to satisfy their original CERCLA requirement.

Department of Energy

In 1983 Energy's field organizations undertook a survey to identify inactive hazardous waste sites. The results were consolidated with the Department's 1981 list and with those sites in EPA's data base that Energy had confirmed to be inactive waste sites on its lands, and they

Chapter 2
Status of Site Identification Efforts

Figure 2.1: Status of Site Discovery Efforts



were forwarded to EPA in 1984. To assure that all its facilities were complying with CERCLA, Energy developed a Department-wide comprehensive survey to document the status of all its hazardous waste sites and set up priorities for cleanup. The program began formally in April 1985.

Phase I of Energy's five-phase CERCLA program incorporates both the identification of hazardous waste sites and assessments of whether potential contamination problems exist. It begins by evaluating site histories and records to find inactive sites that might, because of migration of hazardous substances, pose a risk to health, safety, and the environment. The review also includes a physical inspection to validate information. A report summarizing the results of Phase I is prepared, with a recommendation for further work if potential contamination problems are found. Energy field operations staff, as do the field staff of most other agencies, conduct the Department's identification efforts.

Although the Department originally anticipated completing Phase I by April 1986, by September 1986 it had received only 40 draft reports out of approximately 100 or so reports that may be prepared in total.¹ Energy officials said the reports that have been received include most of Energy's major facilities. They now anticipate that the rest of the reports, as well as any revisions to those already received, will be completed by early 1988 and could verify another 400 to 550 potential sites.

National Aeronautics and Space Administration

Because it was unaware of the requirements, NASA headquarters did not submit any information to EPA for Section 103(c) of CERCLA. In 1983, however, it became concerned about complying with CERCLA and began a pilot project at its Kennedy Space Center to evaluate past site use and hazardous waste disposal practices. As a result of this pilot project, NASA discovered it lacked information on its facilities' compliance with environmental laws overall and consequently instituted an environmental audit program, beginning in 1984 with a pilot project at the Goddard Space Flight Center. In April 1985 NASA required all of its 31 facilities to have environmental audits conducted. The audits—which looked at the facilities' compliance with all federal, state, and local environmental regulations governing air and water quality, hazardous waste, toxic substances, and pesticides—were completed by the end of fiscal year 1986 at a cost of \$533,000. As a result, the agency identified 3 facilities with 1 potential site each that had not been previously known and confirmed

¹Energy has 33 facilities that were previously assessed under other programs and for which no Phase I reports are required.

that further assessment work and cleanup was needed or had been taken at 31 sites.

Department of the Interior

Although the Interior bureaus also resumed site identification efforts in 1983, for the most part they limited their investigation to verifying data on hazardous waste sites that had already been identified and included in EPA's data base, not necessarily adding new sites to its inventory. In May 1983 Interior asked its bureaus to review EPA's list of facilities and identify those that were on lands under their management jurisdiction, as well as those facilities on adjacent lands that could affect the bureaus' lands, resources, or programs. All of the bureaus conducted this check.

BLM has continued to use this method to compile its inventory. With responsibility for more than 340 million acres, BLM generally relies on EPA and state computer lists to identify sites that might have been used by private companies, state or local governments, or another federal agency but are located on BLM lands. BLM then determines whether the bureau or some other party has principal responsibility for site cleanup.

Agency officials also told us, however, that if BLM learns of a hazardous waste problem on its lands—pesticides or waste oils dumped in a landfill, for example—field officials may look at similar facilities within their districts to see whether hazardous wastes had also been disposed of or stored there. In September 1986, for example, the BLM Director instructed state offices to determine whether significant spills had occurred at aircraft staging facilities for pesticide spraying and application and to identify those sites.

However, although BLM has over 1,000 active or closed landfills and dumps on its lands and some number of abandoned mines, the agency has no plans to survey for hazardous wastes on any lands or facilities other than staging facilities. According to the agency, such an effort would probably yield little and cost a great deal. On the other hand, BLM said, it has been able to identify 70 new sites a year over the last 2 years using state and EPA lists and its limited investigations of specific types of problems. It plans to continue this approach indefinitely.

The Fish and Wildlife Service, on the other hand, has surveyed all of its facilities. In conjunction with its 1983 review of sites contained in EPA's list, the Director asked its field staff to survey agency field stations and research stations where unwanted chemicals may have been disposed.

Field staff were instructed to review their records and interview current and former officials who might be familiar with the history of any disposal sites on Fish and Wildlife Service lands. This 1983 review, which identified 38 sites, was followed in 1985 with a survey of contamination problems within the national wildlife refuges. Another 41 sites were found in addition to those already known. As a result of this latest survey, the Fish and Wildlife Service believes its inventory is now complete.

The Bureau of Indian Affairs headquarters also followed up its 1983 check with requests for information from its field offices. These requests were sent in 1984 and 1985, resulting in the identification of 18 sites in addition to the 18 sites that had been identified earlier. Although the Bureau of Indian Affairs believes that others may exist, it has no further plans to identify new sites because Section 207 of SARA requires the President to determine the extent of hazardous waste sites on Indian lands, and he delegated this responsibility to EPA. As of March 1987 EPA was in the process of preparing its report.

The National Park Service's only follow-up to its 1983 review was performed in 1985 when, in response to the section 3016 reporting requirements, it directed its regional offices to furnish information to EPA on any inactive hazardous waste sites on its lands. This survey identified 28 abandoned mine sites. The Park Service believes it has more sites, mostly at dumps and abandoned mines, and plans to survey its 337 parks, monuments, and other properties during summer 1987 and complete the survey by the end of 1987 or early 1988.

Also in 1985, the Bureau of Reclamation proposed to identify hazardous waste sites on its lands using an existing 5-year land use inventory program; the agency then estimated a discovery rate of 10 sites a year over the 6 million acres it administers. According to the Commissioner of Reclamation, the Bureau is still developing survey procedures that are not yet being applied consistently in the regions. He added, however, that the Bureau does not expect the land surveys to identify any significant sites. On the other hand, the Bureau expects that it may find additional sites during the course of the Department's study of contamination caused by its irrigation projects. That study's inventory is due to be completed in late 1988.

Department of Transportation

One of the Transportation agencies, the Coast Guard, performed a survey of potential hazardous waste sites in 1981. Because it was unaware

of the requirement. FAA did not inventory its facilities until 1984, when it identified one facility as having several hazardous waste sites. It followed up in 1985 in order to respond to section 3016 requirements and found another facility with a site. FAA now believes that the latest survey was comprehensive and includes all the hazardous waste sites on 17 facilities.

The Coast Guard followed up on its 1981 survey in 1984 and again in 1985 for section 3016. Only one district responded to the 1984 survey and accounts for 17 of the 28 sites in the Coast Guard's current inventory. No sites were reported in the 1985 survey. Because only 1 of 12 districts accounts for a majority of the agency's sites and headquarters believes more sites may exist, the agency plans to survey all of its facilities. However, because of limited staff and resources to conduct the inventory, Coast Guard's environmental compliance officer said the agency will focus first on the 2 technical support centers and the 25 larger air stations. According to the compliance officer, these facilities would be the ones most likely to have hazardous waste sites. In addition, the agency will conduct its hazardous waste surveys beginning in fiscal year 1988 and extending over 5 years. However, the compliance officer did not expect any serious problems to be discovered and indicated that the surveys would mostly serve to document this.

Department of Agriculture

The Department of Agriculture's agencies were also unaware of CERCLA's requirement and did not undertake any site identification until 1985, when Agriculture undertook a Department-wide survey. The Forest Service completed that survey in 1986, on the basis of a review of available records and the familiarity of field personnel with Forest Service lands. Although the Forest Service could not say with certainty that all of the potential sites had been identified, agency officials said another special survey effort is not necessary and considers its inventory of 87 sites complete.

Like the Forest Service, the Agricultural Research Service began its site discovery efforts in 1985, but it was not until July 1986 that it began a comprehensive survey. At that time, administrative staff at all 135 of its research centers responded to detailed questionnaires on their hazardous substance disposal practices. The Agricultural Research Service is currently verifying the survey results and expects its inventory to be complete in late 1987. The agency spent about \$100,000 for this survey.

Conclusions

Although slow to start, all 11 agencies in our review have various programs for identifying hazardous waste sites. A number of them believe that they have finished or will complete their inventories within the next year or so, but a few do not expect to finish in the near future. The Coast Guard and the Bureau of Reclamation plan to spend 4 to 5 more years looking for hazardous waste sites, and BLM expects to continue the approach it now uses indefinitely. These three agencies argue that it would not be cost-effective to proceed more rapidly because they expect to find few, if any, serious problems.

Although agencies have been slow in completing their inventories of hazardous waste sites, no deadline for completing these inventories exist. However, since the agencies are liable for any releases of hazardous substances from their facilities, it is in the government's interest to identify and correct any hazardous waste problems as quickly as possible.

Status of Assessment and Corrective Actions

Most of the federal agencies' hazardous waste site assessment and cleanup activities are still ahead of them. About half of the sites discovered have yet to be assessed, although most agencies believe that they will meet SARA's deadline for completing assessments. Of those sites that have been assessed, about 55 percent, or 511 sites, were recommended for corrective actions, and 423 were found to require no further action. However, the agencies had cleaned up only 78 sites, or about 15 percent of those that required cleanup. (App. I depicts the status of 11 agency-identified hazardous waste sites.) Most cleanup has involved transporting barrels of hazardous waste to licensed facilities. Because no statutory deadlines exist for completing cleanup and agencies have just begun their efforts, the Congress and the public will have to pay particular attention to agencies' progress in coming years.

Agency Progress in Assessing Hazardous Waste Sites

Once it identifies a site that may contain hazardous waste, an agency conducts a preliminary assessment to determine whether the hazardous substances are uncontained and contaminating soil, groundwater, or the air. Based on readily available information, these assessments let the agency know whether no further action is necessary, emergency action is called for, or additional investigation is needed. Information obtained during a preliminary assessment includes (1) types and amounts of hazardous substances present, (2) pollutant dispersal pathways, such as surface water or groundwater, (3) places that have become contaminated, such as water supplies or wildlife habitat, (4) facility management practices, and (5) potentially responsible parties.

Preliminary assessments may also include site inspection, monitoring, surveys, and testing to determine if any immediate danger exists for persons living or working near the facility. In general, the collection of samples is minimal unless there is an apparent risk to the public, such as the use of nearby wells for drinking water, citizen complaints of unusual taste or odor in drinking water, or chemical odors or unusual health problems in the vicinity of the release. During this portion of the assessment, the agency hopes to determine the need for immediate removal action and the amounts, types, and location of hazardous substances stored and to assess the potential for substances to migrate from areas where they were originally located.

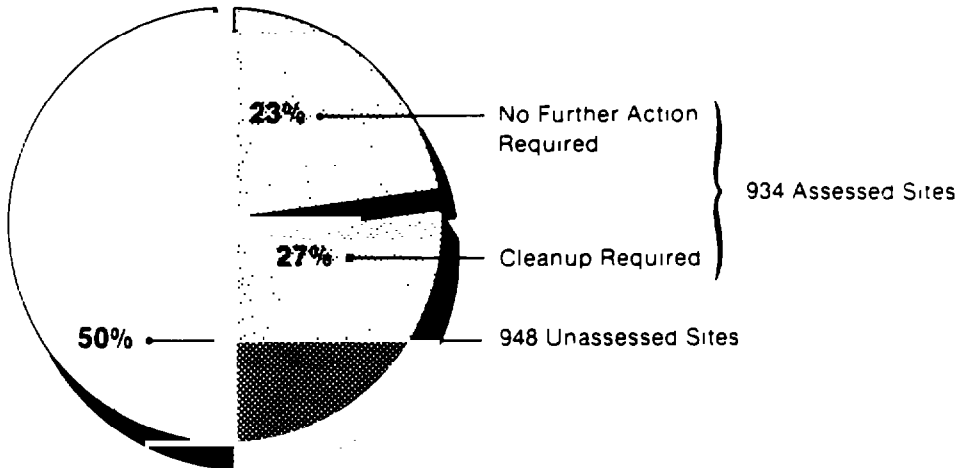
The agencies have generally conducted assessments using their own staff or contractors; but in some instances, EPA, another federal agency, or a state regulatory agency has assisted in assessing an agency's sites. For example, Nevada and Idaho state environmental protection agencies

assessed 64 BLM sites (72 percent of its assessed inventory) under federal grants authorized by RCRA.¹ EPA assessed several Bureau of Indian Affairs and Fish and Wildlife Service sites under Superfund authorities, and six other Bureau of Indian Affairs sites were assessed by both EPA and the Indian Health Service.

Current Status of Assessments

As of September 1986 the 11 agencies in our review had assessed 934 sites, or about 50 percent, of the 1,882 sites discovered. Among these, agencies found sites that did not contain hazardous wastes or substances as was first thought, as well as sites that did contain hazardous substances; but agencies decided no cleanup action was presently required at these sites. On the other hand, 511 sites, or 55 percent of those that were assessed, were recommended for corrective actions. Figure 3.1 and table 3.1 show agencies' progress in assessing identified hazardous waste sites.

Figure 3.1: Assessment Status of Identified Hazardous Waste Sites



¹Section 3012 of the Resource Conservation and Recovery Act authorizes grants to states for the assessment of hazardous waste sites.

**Chapter 3
Status of Assessment and Corrective Actions**

Table 3.1: Status of Agency Assessments of Federal Hazardous Waste Sites (Reported in September 1986)

Percentages are of identified sites

Agency	Sites identified	Sites assessed			Assessments needed		
		Total assessed	No further action	Cleanup required	Total needed	Assessment initiated	Assessment not started
Agriculture							
ARS	7	4 (57%)	3	1	3 (43%)	3	•
FS	87	25 (29%)	1	24	62 (71%)	2	60
Energy	1,326	673 (51%)	292	381	653 (49%)	653	•
Interior							
BIA	36	12 (33%)	3	9	24 (67%)	14	•
BLM	182	89 (49%)	78	11	93 (51%)	35	56
BuRec	35	14 (40%)	2	12	21 (60%)	11	•
FWS	92	44 (48%)	25	19	48 (52%)	48	•
NPS	40	7 (17.5%)	0	7	33 (82.5%)	23	1
NASA	34	27 (79%)	19	8	7 (21%)	4	•
Transportation							
FAA	15	14 (93%)	0	14	1 (7%)	•	•
USCG	28	25 (89%)	0	25	3 (11%)	•	•
Total	1,882	934 (49.6%)*	423	511	948 (50.4%)*	793	151

*Percentage of total is not completely rounded for accuracy

Source: Agency-furnished data.

Among the four agencies that said they have completed their site identification efforts, FAA and NASA have assessed the largest portions of their inventories—93 percent and 79 percent, respectively. The Fish and Wildlife Service has assessed about half of its inventory, while the Forest Service has assessed less than one third of its inventory.

Among the other seven agencies, the Coast Guard has assessed nearly all; and Energy and the Agricultural Research Service, each a little more than half of its identified sites. The other four Interior bureaus, particularly the National Park Service and Bureau of Indian Affairs, have the major portion of their inventories still to assess. However, because EPA is conducting the inventory of Indian lands required by SARA, the Bureau of Indian Affairs plans to complete only the 14 assessments it now has underway; the remaining 10 sites will be assessed by EPA.

For all these agencies, of course, the number of assessments required will increase as new sites are identified and documented. The Agricultural Research Service, for example, added 2 sites to its inventory after September 1986, the Coast Guard added 9 sites, and Energy added 543 potential sites following revised and newly-submitted Phase I reports.

Although assessments have been completed or at least initiated at most of the sites, assessments have not yet begun at 155 sites. Energy, the Fish and Wildlife Service, and the Agricultural Research Service had started to assess all their remaining sites as of September 1986, and FAA, the Coast Guard, and NASA planned to begin their remaining assessments in fiscal year 1987. The other agencies, however, had still not started on a good portion of their remaining assessment work.

Will Agencies Meet SARA's Assessment Deadline?

As discussed in chapter 1, Section 120 of SARA gives agencies until April 1988 to complete preliminary assessments of those federal facilities that had been reported to EPA by October 1986 and included in EPA's initial federal agency hazardous waste compliance docket. Although EPA has not yet published the docket, it appears that about half the facilities that will be listed have already been assessed.² While most agencies expect to complete assessments of the remaining facilities on time, a few are not confident that they will meet the deadline.

After comparing the agencies' inventories with the facilities in EPA's data bases that will make up the docket, we found that 257 facilities were listed in these data bases. (Indian lands are not included because EPA does not treat them as federal facilities.) These 257 facilities will most likely be the ones included in the initial docket, which, according to EPA officials, will be published in early summer 1987. Although about half of the facilities included in the agencies' inventories will be listed in EPA's initial docket, a number will not, for a variety of reasons: In some cases, the agency wanted to make certain that the sites actually contained hazardous substances before reporting them to EPA; in other cases, the facility had been cleaned up and the agency did not consider it necessary to report it.

Overall, of the 257 facilities that will probably be included in the initial docket, assessments have been completed for 145, or 56 percent. (See table 3.2.) The Coast Guard, Bureau of Reclamation, and FAA have

²Although agencies' inventories separately list all the hazardous waste sites within each of their facilities, EPA's initial docket will list only the facilities.

already completed their required assessments. The Fish and Wildlife Service has completed 7 of its listed 13 assessments: the 6 remaining are all underway and are expected to be finished by April 1988. BLM has completed about two thirds of its assessments. However, it has few assessments ongoing, and because it will not have funds available until the beginning of fiscal year 1988, it does not believe it will be able to finish the remaining assessments on time. Likewise, although it has about half of its assessments to do, the Forest Service is waiting for fiscal year 1988 funds and is, therefore, not confident that it will have enough time to complete its assessments by the SARA deadline.

Table 3.2: Assessment Status of Facilities Likely to Be Included in the Federal Hazardous Waste Compliance Docket (Reported in September 1986)

Percentages are of total facilities				
Agency	Completed	Ongoing	Not started	Total
Agriculture				
ARS	2(67%)	1(33%)	0	3
FS	8(44%)	2(12%)	8(44%)	18
Energy	20(34%)	38(66%)	0	58
Interior				
BLM	92(65%)	9(7%)	40(28%)	141
BuRec	2(100%)	0	0	2
FWS	7(54%)	6(46%)	0	13
NPS	4(57%)	3(43%)	0	7
NASA	5(50%)	3(30%)	2(20%)	10
Transportation				
FAA	1(100%)	0	0	1
USCG	4(100%)	0	0	4
Total	145(56%)	62(24%)	50(20%)	257

Source: GAO tabulation of agency-furnished data. Does not include hazardous waste generators and transporters because EPA had not decided to include these facilities at the time of our review.

The other four agencies—Energy, NASA, National Park Service, and Agricultural Research Service—believe they will be able to complete their required assessments by April 1988. All agencies added, however, that whether they can meet the deadline will depend on the quality of the assessment information EPA requires for each facility.

Agency Progress in Cleaning Up Hazardous Waste Sites

After an agency finds a hazardous or threatened release on its lands or facilities, it tailors its response to the nature of the hazard. If the site poses an imminent threat because of the potential for fire or drinking-water contamination, for example, the agency may take what is called a removal action. Removal actions are generally immediate or short-term actions, such as installing a fence to limit access or moving barrels of hazardous substances off-site to a special disposal facility.

Remedial actions, on the other hand, are generally long-term and are intended to provide permanent remedies. They usually entail extensive field studies, known as remedial investigations, as well as feasibility studies to determine alternative cleanup approaches, their effectiveness, and their costs. Remedial actions might be preceded by removals and might include "capping" the site with waterproof clay or installing ground liners to prevent seepage into groundwater.

As noted in chapter 1, SARA requires agencies to begin remedial investigations and feasibility studies within 6 months after a site is included on the NPL and to begin corrective action within 15 months of completing the studies.³

Status of Site Cleanup

Of the sites assessed, 511, or about 55 percent, were recommended for some form of corrective action. (See table 3.3.) However, corrective actions have been completed at only 78 sites, or 15 percent of those known to require cleanup, and no action has yet been initiated at 253 sites, or about 50 percent of the sites requiring cleanup. (See figure 3.2.) Here too, however, as agencies progress in their site identification and assessment efforts, the number of sites requiring cleanup will more than likely grow, and the status of agencies' corrective actions will change, with more sites to be cleaned up.

³As of January 1987, 48 federal facilities, including Department of Defense facilities, were proposed for the NPL.

Figure 3.2: Status of Corrective Actions Known to Be Needed

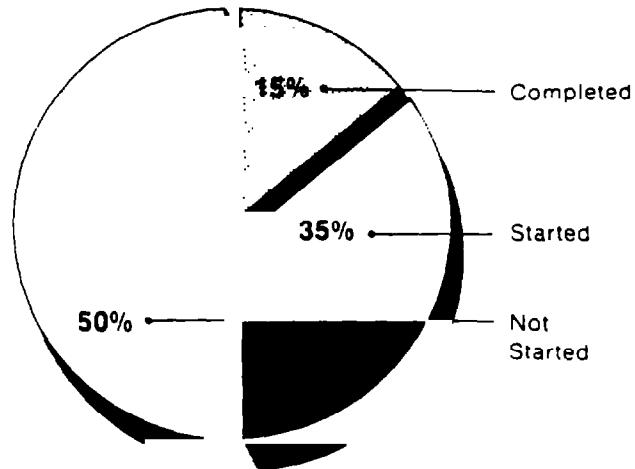


Table 3.3: Corrective Actions at Federal Hazardous Waste Sites (Reported in September 1986)

Percentages are of sites recommended for corrective action

Agency	Sites recommended for corrective action	Corrective action completed	Corrective action remaining	
			Initiated	Not started
Agriculture				
ARS	1	0	1 (100%)	
FS	24	3 (12.5%)	3 (12.5%)	18 (75%)
Energy				
	381	37 (10%)	125 (33%)	219 (57%)
Interior				
BIA	9	4 (44%)	5 (56%)	
BLM	11	4 (36%)	6 (55%)	1 (9%)
BuRec	12	7 (58%)	3 (25%)	2 (17%)
FWS	19	6 (32%)	13 (68%)	
NPS	7	2 (28.5%)	3 (43%)	2 (28.5%)
NASA				
	8	2 (25%)	6 (75%)	
Transportation				
FAA	14	3 (21%)	11 (79%)	
USCG	25	10 (40%)	4 (16%)	11 (44%)
Total	511	78 (15%)	180 (35%)	253 (50%)

Source: Agency-furnished data

Seventy-four of the 78 corrective actions completed were removals, involving the transport of hazardous waste to licensed disposal facilities. For example,

- At its Savannah River plant, Energy excavated seven pits that had been used to dispose of hazardous chemicals, metals, and pesticides; placed the soil in 55-gallon drums, and packaged the soil for storage in a licensed disposal facility. The Department also removed radioactively contaminated soil from over a dozen sites at its Rocky Flats facility.
- The Coast Guard removed more than 1,000 cubic feet of zinc and mercury batteries from open dumping grounds and creeks on its facilities in Aberdeen and Crisfield, Maryland.
- The National Park Service removed approximately 150 barrels of used oil and solvents that, over the years, had washed ashore at Padre Island National Seashore to a licensed disposal facility for storage.

Remedial actions had been completed at 4 of the 78 cleaned-up sites, 2 belonging to the Forest Service and 1 each belonging to BLM and the Bureau of Indian Affairs. Two of the sites were a dump and an evaporation pond that had been capped with clay, another was a landfill that had been covered over with soil, and at the fourth, an old mine. mining waste were contained by trenches and other barriers.

On the basis of the number of sites that agencies had determined to be in need of corrective action as of September 1986, the Bureau of Reclamation was furthest along in cleaning up its sites, with seven removals completed, or about 58 percent of the sites needing corrective action. In contrast, the Forest Service, Energy, and FAA have about 80 percent or more of their cleanup work to finish. In addition, six agencies—BLM, the Bureau of Reclamation, the Forest Service, Energy, the National Park Service, and the Coast Guard—still have sites at which work has not yet been initiated.

In some cases, agencies are working with other parties to assume responsibility, in whole or in part, for cleanup. For example, during its remedial investigation and feasibility studies at its Santa Susana facility, NASA discovered that the Department of Defense may be partly responsible for the presence of hazardous waste there. NASA has asked Defense to contribute funds for cleanup, and a cost-sharing agreement between the two agencies is now being drawn up. In the meantime, NASA is proceeding with site cleanup. Similarly, the National Park Service has monitoring systems in place at two former municipal landfill sites in Gateway National Recreation Area and is waiting for the city of New

York to carry out its court-ordered cleanup. At two Fish and Wildlife Service facilities, the company responsible for disposing of hazardous wastes is designing the cleanup plan.

For the most part, 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 addition, agencies could not predict how long it would take them or how much it would cost to clean up the 433 sites they now know to require corrective action, particularly in those cases involving groundwater contamination. Nearly all of the agencies had no target dates for completing cleanup at these sites and were reluctant to establish any. Officials told us that 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. At some sites, for example, problems were identified a number of years ago, and various steps have been taken. However, it is still not clear what will be done, when cleanup will be finished, or how much it will cost:

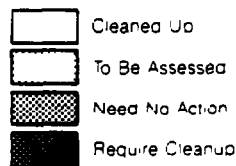
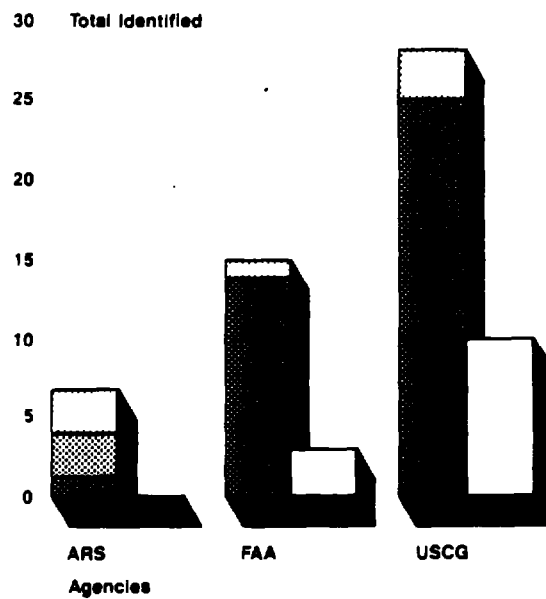
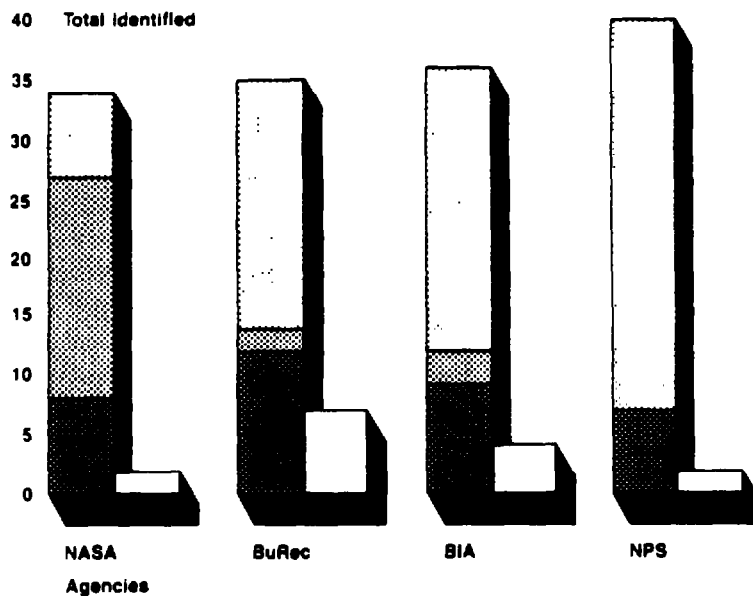
- Although contaminated wells were discovered outside the Coast Guard's Traverse City, Michigan, Air Station in 1980, it took about 4 years to confirm that the contamination emanated from the air station. Some wells were installed to restrain the flow of contaminants into groundwater, but the Coast Guard still has to complete its study of more permanent corrective measures. Thus far, the agency has spent over \$5 million on interim measures and studies, but it may cost another \$5 million to \$10 million for cleanup, depending on the solution finally adopted.
- After high levels of the metal selenium were discovered in 1982 and 1983 in fish and waterfowl at the Kesterston Reservoir in California, the Fish and Wildlife Service concluded that the contamination was coming from agricultural drainwater carried into the reservoir by the San Luis Drain Canal, part of an irrigation project built by the Bureau of Reclamation. In 1985 the Secretary of the Interior ordered the reservoir to be closed for drainwater disposal. The Bureau of Reclamation completed its study of alternative remedies and recommended the least costly plan, involving closing off the site rather than cleaning it up, at a cost of close to \$7 million over a 5-year period. However, in early 1987 the state of California rejected the proposal as insufficient. If the state's recommendation for cleanup is followed, the Bureau of Reclamation may have to spend up to \$27 million over 5 years.

Conclusions

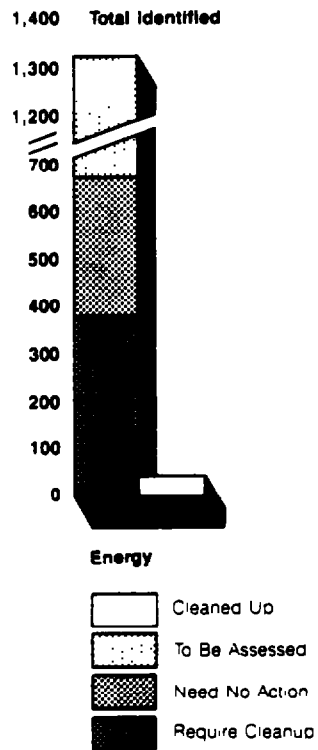
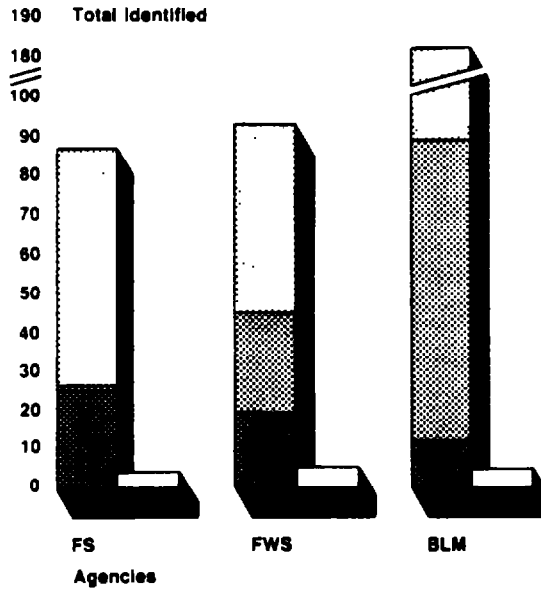
Federal agencies still have most of their assessment and cleanup work to do, at unknown but considerable costs. As additional sites are discovered, the amount of effort required will increase.

Agencies will have attained one important statutory goal if they finish assessing those facilities on EPA's docket by April 1988, a deadline most of them believe they will meet. However, it is difficult to predict how quickly agencies will complete necessary 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. SARA will force agencies to begin cleanup measures by certain dates, but these apply only to sites on the NPL. For all other sites, the law requires only that EPA and the agencies keep the public and the Congress periodically informed about cleanup progress. Congressional and public oversight will therefore be important to ensure that federal agencies make reasonable progress in cleaning up their hazardous wastes.

Hazardous Waste Cleanup at 11 Civilian Federal Agencies (Reported in September 1986)



**Appendix I
 Hazardous Waste Cleanup at 11 Civilian
 Federal Agencies (Reported in
 September 1986)**



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