



Testimony

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HAZARDOUS WASTE CLEANUP

Numbers of Contaminated Federal Sites, Estimated Costs, and EPA's Oversight Role

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GAO Highlights

Highlights of [GAO-15-830T](#), a testimony before the Subcommittee on Environment and the Economy, Committee on Energy and Commerce, House of Representatives

Why GAO Did This Study

The federal government owns over 700 million acres of land. Some of this land—which is primarily managed by USDA, Interior, DOD, and DOE—is contaminated with hazardous waste from prior uses, such as landfills and mining.

To respond to problems caused by improper disposal of hazardous substances in the past, in 1980, Congress passed CERCLA, also known as Superfund. Among other things, CERCLA requires owners and operators of hazardous waste sites to notify the federal EPA—which manages the Superfund program—of the existence of their facilities, as well as known, suspected, or likely releases of hazardous substances.

This testimony focuses on (1) numbers of contaminated and potentially contaminated federal sites for four departments; (2) spending and estimates of future costs for cleanup at these federal sites; and (3) EPA's role in maintaining the list of contaminated and potentially contaminated federal sites and ensuring that preliminary assessments of such sites are complete. This testimony is based on prior GAO reports issued from March 2009 through March 2015.

What GAO Recommends

GAO is making no new recommendations. Previously, GAO made numerous recommendations to ensure that contaminated sites were identified and assessed, and some of these recommendations have not been fully implemented. GAO will continue to monitor implementation.

View [GAO-15-830T](#). For more information, contact J. Alfredo Gómez, (202)-512-3841 or gomezj@gao.gov

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HAZARDOUS WASTE CLEANUP

Numbers of Contaminated Federal Sites, Estimated Costs, and EPA's Oversight Role

What GAO Found

The Departments of Agriculture (USDA), the Interior, Defense (DOD), and Energy (DOE) have identified thousands of contaminated and potentially contaminated sites on land they manage but do not have a complete inventory of sites, in particular, for abandoned mines. GAO reported in January 2015 that USDA had identified 1,491 contaminated sites and many potentially contaminated sites. However, USDA did not have a reliable, centralized site inventory or plans and procedures for completing one, in particular, for abandoned mines. For example, officials at USDA's Forest Service estimated that there were from 27,000 to 39,000 abandoned mines on its lands—approximately 20 percent of which may pose some level of risk to human health or the environment. GAO also reported that Interior had an inventory of 4,722 sites with confirmed or likely contamination. However, Interior's Bureau of Land Management had identified over 30,000 abandoned mines that were not yet assessed for contamination, and this inventory was not complete. DOD reported to Congress in June 2014 that it had 38,804 sites in its inventory of sites with contamination. DOE reported that it has 16 sites in 11 states with contamination.

These four departments reported allocating and spending millions of dollars annually on environmental cleanup and estimated future costs in the hundreds of millions of dollars or more in environmental liabilities. Specifically:

- GAO reported in January 2015 that, in fiscal year 2013, USDA allocated over \$22 million to environmental cleanup efforts and reported in its financial statements \$176 million in environmental liabilities to address 100 sites.
- GAO reported in January 2015 that Interior in fiscal year 2013 allocated about \$13 million for environmental cleanup efforts and reported \$192 million in environmental liabilities in its financial statements to address 434 sites.
- In July 2010, GAO reported that DOD spent almost \$30 billion from 1986 to 2008 across all environmental cleanup and restoration activities at its installations. In its fiscal year 2014 *Agency Financial Report*, DOD reported \$58.6 billion in total environmental liabilities.
- DOE reported receiving an annual appropriation of almost \$5.9 billion in fiscal year 2015 to support cleanup activities. In 2014, DOE estimated its total liability for environmental cleanup at almost \$300 billion.

As part of maintaining the list of contaminated and potentially contaminated federal sites, the Environmental Protection Agency (EPA) compiled 2,323 federal sites that may pose a risk to human health and the environment, as of August 2015, according to EPA officials. EPA is responsible for ensuring that federal agencies assess these sites for contamination and has established 18 months as a reasonable time frame for agencies to complete a preliminary assessment. However, in March 2009, GAO reported that according to EPA officials, some agencies, such as DOD, may take 2 to 3 years to complete an assessment and that EPA does not have independent authority under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to enforce a timeline for completing the preliminary assessment. In March 2009, GAO suggested that Congress consider amending CERCLA section 120 to authorize EPA to require agencies to complete preliminary assessments within specified time frames.

Chairman Shimkus, Ranking Member Tonko, and Members of the Subcommittee:

Thank you for the opportunity to discuss our work on hazardous waste cleanup at federal facilities. As you know, the federal government owns over 700 million acres of land, which includes national parks, national forests, research centers, defense installations, and laboratories. This land is primarily managed by the following four departments: Agriculture (USDA), Interior, Defense (DOD), and Energy (DOE). Some of this land may be contaminated with hazardous waste from prior uses,¹ such as landfills and mining. Many hazardous waste sites pose serious risks to human health and the environment, and their cleanup can require substantial time and expense. Abandoned mines from private mining activities on Interior and USDA lands also can present major environmental cleanup challenges and expenses for the federal government.

To respond to problems caused by improper disposal of hazardous substances in the past, in 1980, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which created the Superfund program to protect human health and the environment from the effects of hazardous waste.² Under CERCLA, potentially responsible parties, such as owners and operators of a site, are liable for conducting or paying for site cleanup of hazardous waste, or for reimbursing others who conduct cleanups on their behalf, including federal agencies.³ By June 1981, all such facility owners and operators were required to notify the federal Environmental Protection Agency (EPA)—which manages the Superfund program—of the existence of their

¹In this testimony, we use the term “hazardous waste” to refer generally to material that is or may be harmful to human health or the environment, although the term has specific meaning under the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Under RCRA, “hazardous waste” generally refers to materials specifically listed by the Environmental Protection Agency or which demonstrate certain hazardous characteristics. A “hazardous waste” under RCRA is also among the substances defined as a “hazardous substance” under CERCLA.

²The Superfund program is the federal government’s principal program to clean up hazardous waste sites.

³Under CERCLA, potentially responsible parties include current or former owners or operators of a site or the generators and transporters of hazardous substances.

facilities, as well as known, suspected, or likely releases of hazardous substances. These notification and liability provisions apply to the federal government and its contractors and lessees as well.

My testimony today focuses on (1) numbers of contaminated and potentially contaminated federal sites for the four departments; (2) spending on and estimates of future costs for cleanup at federal sites by the four departments; and (3) EPA's role in maintaining the list of contaminated and potentially contaminated federal sites and ensuring that preliminary assessments of such sites are complete. This testimony is based on reports we issued from March 2009 through March 2015 and, where possible, updates to numbers of contaminated and potentially contaminated sites since our reports were issued.⁴ In particular, I will be highlighting our January 2015 report that we conducted on USDA and Interior's inventory of contaminated and potentially contaminated federal sites, as well as summarizing work that we have conducted on DOD and DOE hazardous waste sites. For this work, we reviewed relevant inventory data from September 2013 to June 2014 for 10 sources within USDA and Interior and budget data related to environmental cleanup projects for fiscal years 2003 through 2013 for those agencies.⁵ In that report, we also reviewed documents, government accounting standards, and laws, and we interviewed EPA, USDA, and Interior officials. Detailed information on the scope and methods used for the January 2015 report, as well as the other reports cited throughout this statement, can be found

⁴GAO, *DOE Facilities: Better Prioritization and Life Cycle Cost Analysis Would Improve Disposition Planning*, [GAO-15-272](#) (Washington, D.C.: Mar. 19, 2015); *Hazardous Waste: Agencies Should Take Steps to Improve Information on USDA's and Interior's Potentially Contaminated Sites*, [GAO-15-35](#) (Washington, D.C.: Jan. 16, 2015); *Hazardous Waste Cleanup: Observations on States' Role, Liabilities at DOD and Hardrock Mining Sites, and Litigation Issues*, [GAO-13-633T](#) (Washington, D.C.: May 22, 2013); *Nuclear Waste: DOE Needs a Comprehensive Strategy and Guidance on Computer Models that Support Environmental Cleanup Decisions*, [GAO-11-143](#) (Washington, D.C.: Feb. 10, 2011); *Recovery Act: Most DOE Cleanup Projects Appear to Be Meeting Cost and Schedule Targets, but Assessing Impact of Spending Remains a Challenge*, [GAO-10-784](#) (Washington, D.C.: July 29, 2010); *Superfund: Interagency Agreements and Improved Project Management Needed to Achieve Cleanup Progress at Key Defense Installations*, [GAO-10-348](#) (Washington, D.C.: July 15, 2010); *Department of Energy: Actions Needed to Develop High-Quality Cost Estimates for Construction and Environmental Cleanup Projects*, [GAO-10-199](#) (Washington, D.C.: Jan. 14, 2010); and *Superfund: Greater EPA Enforcement and Reporting Are Needed to Enhance Cleanup at DOD Sites*, [GAO-09-278](#) (Washington, D.C.: Mar. 13, 2009).

⁵[GAO-15-35](#).

in each of the issued products. The work upon which this statement is based was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

CERCLA requires EPA to compile a list of contaminated and potentially contaminated federal facilities. This list, known as the Federal Agency Hazardous Waste Compliance Docket (docket), is based on information that agencies are required to report to EPA. EPA compiled the first docket in 1988 and, under CERCLA, EPA is to publish a list of any new sites added to the docket in the Federal Register every 6 months. Under section 120(c) of CERCLA, EPA is to update the docket after receiving and reviewing notices from federal agencies concerning the generation, transportation, treatment, storage, or disposal of hazardous wastes or release of hazardous substances.

After a site is listed on the docket, CERCLA requires EPA to take steps to ensure that a preliminary assessment is conducted. EPA has established 18 months as a reasonable time frame for agencies to complete the preliminary assessment. After the agency conducts the preliminary assessment, EPA reviews it to determine whether the information is sufficient to assess the likelihood of a hazardous substance release, a contamination pathway, and potential receptors. EPA may determine that the site does not pose a significant threat and requires no further action. If it determines that further investigation is needed, EPA may request that the agency conduct a site inspection to gather more detailed information. If, on the basis of the site inspection, EPA determines that hazardous substances, pollutants, or contaminants have been released at the site, EPA will use the information from the preliminary assessment and site inspection to calculate and document a site's preliminary Hazard Ranking System (HRS) score, which indicates a site's relative threat to human health and the environment based on potential pathways of contamination.⁶ Sites with an HRS score of 28.50 or greater become

⁶The HRS scores sites on four possible pathways: groundwater migration, surface water migration, soil exposure, and air migration.

eligible for listing on the National Priorities List (NPL), a list that includes some of the nation's most seriously contaminated sites.⁷ Based on the risk a site poses, EPA may place the site on the NPL. According to an EPA official, 158 federal sites are on the NPL, as of September 2015.

Once a site is on the NPL, EPA is to oversee the cleanup. As part of its oversight responsibility, EPA works with the responsible federal agency to evaluate the nature and extent of contamination at a site. The agency must then enter into an interagency agreement with EPA that includes: (1) a review of remedial alternatives and the selection of the remedy; (2) schedules for completion of each remedy; and (3) arrangements for the long-term operation and maintenance of the site. According to EPA, the agreements also provide a process for EPA and the federal agency to resolve any disagreements related to implementing the cleanup remedy, with EPA being the final arbiter of such disputes. Once the agency and EPA agree on a cleanup remedy, the agency implements the remedy at the site. Afterwards, the agency must conduct long-term monitoring to ensure the remedy remains protective of human health and the environment.⁸ For federal sites not included on the NPL, CERCLA provides that state cleanup and enforcement laws apply, and most states have their own cleanup programs to address hazardous waste sites.

Four Departments Have Identified Thousands of Contaminated and Potentially Contaminated Sites

USDA, Interior, DOD, and DOE have identified thousands of contaminated and potentially contaminated sites on land they manage, but there is not a complete inventory of sites, in particular, for abandoned mines.

⁷According to EPA, in order to maintain close coordination with the states and tribes in the NPL listing decision process, EPA's policy since 1996 has been to determine the position of the states and tribes on sites that EPA is considering for listing.

⁸For sites where hazardous substances, pollutants, or contaminants were left in place above levels that do not allow for unlimited use and unrestricted exposure, every 5 years following the initiation of the remedy, the agency must conduct a formal review of the site and provide it to EPA. EPA then determines whether the selected remedy is still protective of human health and the environment.

USDA

We found in our January 2015 report that there were at least 1,491 contaminated sites on land managed by USDA.⁹ These sites include 1,422 Forest Service sites,¹⁰ which are primarily abandoned mines; 2 Animal and Plant Health Inspection Service (APHIS) sites; 3 Agricultural Research Service (ARS) sites; 61 former grain storage sites once managed by the Commodity Credit Corporation (CCC);¹¹ and 3 foreclosure properties belonging to the Farm Service Agency (FSA).

In addition to sites with confirmed contamination, we found that USDA agencies have also identified some potentially contaminated sites. ARS had identified 3 sites that are potentially contaminated. Forest Service regions maintain inventories of potentially contaminated sites that include landfills, shooting ranges, and cattle dip vats, but there was no centralized database of these sites and no plans or procedures for developing one. These various inventories did not provide a complete picture of the extent of USDA's potentially contaminated sites. For example, there were an unknown number of potentially contaminated former grain storage sites in the 29 states where the CCC previously used carbon tetrachloride. This number was unknown because the CCC relies on the states to notify them of potential contamination, and 25 of the 29 states had not yet reported whether there was suspected contamination at their former CCC grain storage sites. The Forest Service also deals with various other types of hazardous waste sites, such as methamphetamine laboratories, roadside spills, and waste dumps. Forest Service officials said that, since these types of sites may involve illegal activities and are, therefore, not routinely reported, it is not possible to develop a comprehensive inventory of these types of sites.¹²

⁹[GAO-15-35](#).

¹⁰However, Forest Service officials said that some landfills and underground storage tanks may not be captured by this number.

¹¹The CCC is a government-owned and operated entity within USDA that was created to stabilize, support, and protect farm income and prices. The CCC also helps maintain balanced and adequate supplies of agricultural commodities and aids in their orderly distribution.

¹²Forest Service officials said that these types of sites are typically treated as time-critical removal actions and are cleaned up shortly after their discovery.

In addition, in January 2015, we reported that the Forest Service had not developed a complete, consistent, or usable inventory of abandoned mines and had no plans and procedures for developing such an inventory because, according to Forest Service officials, they did not have the resources to complete a comprehensive inventory of all potentially contaminated abandoned mines on the agency's lands. The Forest Service estimated that there were from 27,000 to 39,000 abandoned mines on their lands¹³—approximately 20 percent of which may pose some level of risk to human health or the environment, based on the professional knowledge and experience of agency staff. Such risks may include chemicals and explosives, acid mine drainage, and heavy metal contamination in mine waste rock. However, we concluded that because the Forest Service did not have a complete inventory of abandoned mine sites, the actual number of abandoned mines on National Forest System (NFS) lands was unknown.¹⁴

According to a USDA official, USDA first attempted to create a national inventory of mines on NFS lands in 2003. Then, in 2008, the Forest Service established the Abandoned Mine Lands (AML) database to aggregate all available data on abandoned mines on NFS lands. The AML database drew data on pending abandoned mine sites from the 2003 database and Forest Service regional inventories, as well as from the U.S. Geological Survey and various other federal, state, and local databases. USDA officials said that, once the AML database was established, the purpose of the earlier database shifted away from maintaining an AML inventory to tracking sites that entered into the CERCLA process.

However, as we reported in January 2015, the AML database has a number of shortcomings. For example, the data migration from multiple inventories led to data redundancy issues, such as some mine sites being listed multiple times under the same or different names. In addition, USDA officials told us that there was a lot of variation in the accuracy and

¹³According to USDA officials, this estimate was derived from a 1995 USDA report that acknowledged uncertainties associated with the data used to generate the estimate. For some states, the data were fairly accurate but, in other cases, the data were incomplete or missing.

¹⁴NFS is a national system of federally owned units of forest, range, and related land that are administered by the Forest Service or designated for administration through the Forest Service.

completeness of the data on these mine sites, but a quality assurance review had not yet been performed. One Forest Service official said that, because of these problems, the data in the AML database were unusable for purposes of compiling a complete and accurate inventory of abandoned mines. In 2012, the Forest Service tried to obtain the agency resources necessary to clean up the database. Even though the Forest Service rated this project as “critical,” the project did not receive any resources because other projects were deemed more important, according to a Forest Service official.

Similarly, in our January 2015 report, we found several problems with the Forest Service’s regional abandoned mine inventories.¹⁵ First, some regional inventories were incomplete. For example, officials in Forest Service Region 10, which is composed solely of the State of Alaska, said they believed there may be some abandoned mines scattered throughout Tongass and Chugach National Forests that had not yet been inventoried. They said that Forest Service Region 10 did not have enough staff to assess all abandoned mines across such a large area.¹⁶ Second, several Forest Service regional inventories contained inaccurate data. Third, the Forest Service’s regional offices maintained their inventories differently. Some regional offices maintained their own inventories of potentially contaminated sites, whereas other regional offices utilized state or local agencies’ inventories. Finally, the type of data on abandoned mines varied from region to region, making it difficult to consolidate into a coherent national database. Some regional offices tracked mines at the site level, some by their features—such as mine shafts, pits, ore piles, or machinery—and some used both approaches.¹⁷ For example, officials in Forest Service Region 3 told us that they had identified over 3,000 abandoned mine sites, and officials in Forest Service Region 4 told us that they had identified approximately 2,000 mine features but had not yet consolidated these features into mine sites. We

¹⁵According to Forest Service officials, the Forest Service regional offices conducted inventory efforts in the 1980s and 1990s. Officials noted, however, that each regional office inventoried its sites differently, and some inventory efforts were more comprehensive than others.

¹⁶Officials in Forest Service Region 10 said that their region’s focus has been on cleanup of known priority sites rather than completing their inventory of potentially contaminated sites.

¹⁷A mine feature is a single human-made object or disturbance associated with mining. A mine site can be composed of one or more features.

reported in January 2015 that, without a comprehensive inventory of such sites or plans and procedures for developing one, USDA and the Forest Service will not have reasonable assurance that they are prioritizing and addressing the sites that pose the greatest risk to human health or the environment.

Consequently, in January 2015, we recommended that the Secretary of Agriculture direct the heads of the department's land management agencies to develop plans and procedures for completing their inventories of potentially contaminated sites. USDA disagreed with our recommendation and stated that it had a centralized inventory and that this inventory was in a transition phase as a result of reduced funding levels. USDA also stated that it had taken a number of actions to manage its inventory in a more cost-effective manner, reduce operating costs, and eliminate data collection redundancies across the USDA agencies. Subsequently, in a June 2015 letter to GAO, USDA described three corrective actions that the department planned to take in response to our recommendation. We believe that these actions are needed.

Interior

We found in our January 2015 report that Interior had identified 4,722 sites with confirmed or likely contamination. These include 4,098 Bureau of Land Management (BLM) sites that the agency reported had confirmed contamination or required further investigation to determine whether remediation was warranted. The majority of these sites were abandoned mines. Interior's National Park Service (NPS) identified 417 sites with likely or confirmed contamination; the Bureau of Indian Affairs, 160 sites; the Fish and Wildlife Service, 32 sites; and the Bureau of Reclamation, 15 sites. These Interior agencies identified additional locations of concern that would require verification or initial assessment to determine if there were environmental hazards at the sites. Officials we interviewed from Interior agencies, except BLM, told us that they believed they had identified all sites with likely environmental contamination. We also found that the total number of sites BLM may potentially have to address is unknown, due primarily to incomplete and inaccurate data on abandoned mines on land managed by the agency.

BLM accounts for the largest number of contaminated sites and sites that need further investigation in Interior's inventory. Table 1 shows the number of contaminated or potentially contaminated sites in BLM's inventory as of April 2014, and the extent to which remediation measures had been undertaken or were completed.

Table 1: BLM's Contaminated or Potentially Contaminated Sites Identified as of April 2014

	Hazardous materials sites	Abandoned mines with potential environmental contamination	Total sites
Requires further investigation and/or remediation	346	2,853	3,199
Has remediation measures planned or under way	546	353	899
Has been remediated	1373	886	2,259
Requires no further action	88	568	656
Total	2,353	4,660	7,013

Source: Bureau of Land Management's (BLM) Abandoned Mine Lands/Site Cleanup Inventory database. | [GAO-15-830T](#)

Note: According to BLM, the Abandoned Mine Lands/Site Cleanup Inventory database is the agency's source of information regarding the inventory and status of abandoned mine and hazardous materials sites. BLM has not yet assessed all the sites on the ground, and the agency is constantly reviewing and updating the data.

We reported in January 2015 that BLM had also identified 30,553 abandoned mine sites that posed physical safety hazards but needed verification or a preliminary assessment to determine whether environmental hazards were present.¹⁸ However, the number of potentially contaminated mines may be larger than these identified sites because BLM had not identified all of the abandoned mines on the land it manages. We reported that BLM estimated that there may be approximately 100,000 abandoned mines that had not yet been inventoried in California, Nevada, and Utah, and that it would take 2 to 3 years to complete the estimates for the other nine BLM states.¹⁹ BLM estimated that it will take decades to complete the inventory. To inventory a site, BLM field staff must visit the site to collect data, research the land ownership and extent of mining activity that occurred, and record the information in BLM databases.

In January 2015, we reported that BLM has an ongoing effort to estimate the number of abandoned mines and mine features that have not yet been inventoried on BLM lands and the approximate cost to complete the

¹⁸ [GAO-15-35](#).

¹⁹ [GAO-15-35](#).

inventory. BLM established inventory teams in several states to go out and identify sites.²⁰ In addition, BLM began an initiative in California to determine the number of sites that need to be inventoried after the state provided the agency with digitized maps of potential mine sites and verified a sample of the sites. For California, BLM estimated that 22,728 sites and 79,757 features needed to be inventoried. BLM estimated that approximately 69,000 and 4,000 sites remained to be inventoried in Nevada and Utah, respectively, on BLM land. BLM officials told us that they expect to provide a report to Congress on the inventory work remaining in these three states in 2015. The nine remaining states with BLM land do not have the digital geographic data available that BLM used for California, Nevada, and Utah, according to BLM officials, making it difficult for BLM to develop similar estimates for these states.²¹ BLM officials told us that the U.S. Geological Survey was working on an effort to develop datasets similar to those used to estimate the number of abandoned mines on BLM land in California, Nevada, and Utah.

We found that Interior's Bureau of Indian Affairs, Bureau of Reclamation, Fish and Wildlife Service, and NPS also have sites with environmental contamination. Officials from each of these agencies told us that they believed their inventories of sites with environmental contamination were complete. Both Fish and Wildlife Service and NPS had identified locations of concern, where contamination is suspected based on known past activities or on observed and reported physical indicators requiring further assessment. For NPS, nearly half of these sites are old dump sites.

NPS also has abandoned mines on the lands it manages. In 2013, NPS completed a system-wide inventory and assessment project to identify abandoned mines on lands it manages. NPS's inventory identified 37,050 mine features at 3,421 sites on NPS land. In January 2015, we reported that, of the total inventory, NPS officials said they believed that 3,841 features at 1,270 sites still required some level of effort to address human health and safety and/or environmental concerns. As a result of NPS' system-wide inventory, officials with the agency's Abandoned Mineral

²⁰In May 2013, BLM published a report that summarizes recent inventory efforts titled *Abandoned Mine Lands: A New Legacy*.

²¹BLM has 12 state offices located in Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Wyoming, and an eastern states office.

Lands Program told us that they believed that their inventory of all potentially contaminated sites was largely complete.

DOD

As we reported in our July 2010 report,²² before federal environmental legislation was enacted in the 1970s and 1980s regulating the generation, storage, treatment, and disposal of hazardous waste, DOD activities and industrial facilities contaminated millions of acres of soil and water on and near DOD properties in the United States and its territories. DOD activities released hazardous substances into the environment primarily through industrial operations to repair and maintain military equipment, as well as the manufacturing and testing of weapons at ammunition plants and proving grounds.

In June 2014, DOD reported to Congress that it had 38,804 sites in its inventory of sites with contamination from hazardous substances or pollutants or contaminants at active installations, formerly used defense sites, and Base Realignment and Closure (BRAC) locations in the United States, as well as munition response sites that were known or suspected to contain unexploded ordnance, discarded military munitions, or munitions constituents.^{23, 24} Of these 38,804 sites, DOD's report shows that 8,865 have not reached the department's response complete milestone—which occurs when a remedy is in place and required remedial action operations, if any, are complete.

In May 2013, we reported that in addition to having a large number of contaminated and potentially contaminated sites in its inventory, of all federal agencies, DOD had the greatest number of sites listed on the NPL.²⁵ We reported that, as of April 2013, DOD was responsible for 129

²²[GAO-10-348](#).

²³Department of Defense, Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, *Defense Environmental Programs Annual Report to Congress for FY 2013* (June 2014).

²⁴Formerly used defense sites are defined as properties that were under the jurisdiction of DOD and owned by, leased to, or otherwise possessed by the United States at the time of actions leading to contamination by hazardous substances or other hazards prior to October 17, 1986, but have since been transferred to states, local governments, federal entities, and private parties.

²⁵[GAO-13-633T](#).

of the 156 federal facilities on the NPL at the time (83 percent). Also, we reported in March 2009 that the majority of DOD sites were not on the NPL and that most DOD site cleanups were overseen by state agencies rather than EPA, as allowed by CERCLA.²⁶

Our work has found that the lack of interagency agreements between EPA and DOD has historically contributed to delays in cleaning up military installations. For example, we reported in July 2010 that, as of February 2009, 11 DOD installations did not have an interagency agreement, even with CERCLA's requirement that federal agencies enter into interagency agreements with EPA within a certain time frame to clean up sites on the NPL, and even though the department had reached agreement with EPA on the basic terms.²⁷ Without an interagency agreement, EPA does not have the mechanisms to ensure that cleanup by an installation proceeds expeditiously, is properly done, and has public input, as required by CERCLA. We found one DOD installation that, after 13 years on the NPL and receipt of EPA administrative cleanup orders for sitewide cleanup, had not signed an interagency agreement. We recommended that the Administrator of EPA take action to ensure that outstanding CERCLA section 120 interagency agreements are negotiated expeditiously. In May 2013, we reported that DOD had made progress on this issue by decreasing the number of installations without an interagency agreement from 11 to 2, but both of those sites still posed significant risks.²⁸

According to an EPA official, as of September 2015, one of these two installations now has an interagency agreement. However, according to this official, there is no interagency agreement at the other installation—Redstone Arsenal in Alabama. We recommended that EPA pursue changes to a key executive order that would increase its authority to hasten cleanup at sites without an interagency agreement. EPA agreed but has not taken action to have the executive order amended. We also suggested in July 2010 that Congress consider amending CERCLA section 120 to authorize EPA to impose administrative penalties at federal facilities placed on the NPL that lack interagency agreements within the CERCLA-imposed deadline of 6 months after completion of the remedial investigation and feasibility study.²⁹ We believe that this leverage could

²⁶ [GAO-09-278](#).

²⁷ [GAO-10-348](#).

²⁸ [GAO-13-633T](#).

²⁹ [GAO-10-348](#).

help EPA better satisfy its statutory responsibilities with agencies that are unwilling to enter into agreements where required under CERCLA section 120.

DOE

As we reported in March 2015,³⁰ 70 years of nuclear weapons production and energy research by DOE and its predecessor agencies generated large amounts of radioactive waste, spent nuclear fuel, excess plutonium and uranium, contaminated soil and groundwater, and thousands of contaminated facilities, including land, buildings, and other structures and their systems and equipment. DOE's Office of Environmental Management (EM) is responsible for one of the world's largest environmental cleanup programs, the treatment and disposal of radioactive and hazardous waste created as a by-product of producing nuclear weapons and energy research.³¹ The largest component of the cleanup mission is the treatment and disposal of millions of gallons of highly radioactive waste stored in aging and leak-prone underground tanks. In addition, radioactive and hazardous contamination has migrated through the soil into the groundwater, posing a significant threat to human health and the environment.

According to DOE's fiscal year 2016 congressional budget request, EM has completed cleanup activities at 91 sites in 30 states and in the Commonwealth of Puerto Rico, and EM has remaining cleanup responsibilities at 16 sites in 11 states.³² EM cleanup work activities are carried out by contractors, such as Washington River Protection

³⁰ [GAO-15-272](#).

³¹ [GAO-11-143](#).

³² Department of Energy, Office of Chief Financial Officer, *Department of Energy FY 2016 Congressional Budget Request, Environmental Management*, DOE/CF-0111 Volume 5 (February 2015).

Solutions, for the operation of nuclear waste tanks at the Hanford Site in Washington State.³³

In March 2015,³⁴ we reported that the National Nuclear Security Administration (NNSA), a separately organized agency within DOE,³⁵ also manages many contaminated facilities. Some of these facilities are no longer in use, others are still operational. Once NNSA considers these facilities to be nonoperational, they may be eligible for NNSA to transfer to EM. We found that NNSA had identified 83 contaminated facilities at six sites for potential transfer to EM for disposition over a 25-year period, 56 of which were currently nonoperational. Until the sites are transferred to EM, however, NNSA is responsible for maintaining its facilities and incurring associated maintenance costs to protect human health and the environment from the risk of contamination. NNSA's responsibilities may last for several years, or even decades, depending on when EM is able to accept the facilities. We found that as NNSA maintains contaminated nonoperational facilities, the facilities' condition continues to worsen, resulting in increased costs to maintain them.

As we reported in March 2015, EM has not accepted any facilities from NNSA for cleanup in over a decade. EM does not accept facilities for transfer until funding is available to carry out the decontamination and decommissioning work. In addition, EM officials told us that they also do not include facilities maintained by NNSA in their planning until they have available funding to begin cleanup work. We concluded that without integrating NNSA's inventory of nonoperation facilities into its process for prioritizing facilities for disposition, EM may be putting lower-risk facilities under its responsibility ahead of deteriorating facilities managed by NNSA

³³In November 2014, we reported on DOE's ability to respond to leaks and intrusions at the Hanford site. GAO, *Hanford Cleanup: Condition of Tanks May Further Limit DOE's Ability to Respond to Leaks and Intrusions*, [GAO-15-40](#) (Washington, D.C.: Nov. 25, 2014). In addition, we have ongoing work reviewing the factors that contributed to two separate accidents in 2014 at DOE's Waste Isolation Pilot Plant near Carlsbad, New Mexico. This plant is designed to safely dispose of a specific type of nuclear waste, referred to as transuranic waste, that is generated by DOE's nuclear weapons research, production, and cleanup activities at sites across the country.

³⁴[GAO-15-272](#).

³⁵Congress created NNSA as a semiautonomous agency within DOE under title 32 of the National Defense Authorization Act for Fiscal Year 2000. Pub. L. No. 106-65, § 3211 (1999).

that are of greater risk to human health and the environment. We therefore recommended that EM integrate its lists of facilities prioritized for disposition with all NNSA facilities that meet EM's transfer requirements and that EM should also include this integrated list as part of the Congressional Budget Justification for DOE. We also recommended that EM analyze and consider life cycle costs for NNSA facilities that meet its transfer requirements and incorporate the information into its prioritization process. Analyzing life cycle costs of nonoperational facilities shows that accelerating cleanup of some facilities, while others are maintained in their current states, could offer significant cost savings. DOE stated that it concurred with the issues identified in our report and described actions it plans to implement to address them. For example, DOE stated that it has formed a working group that may address GAO's findings.

Four Departments Have Reported Spending Millions Annually for Cleanup at Federal Sites and Have Estimated Future Costs from Hundreds of Millions to Billions of Dollars

The four departments reported allocating and spending millions of dollars annually on environmental cleanup. They also estimated future costs in the hundreds of millions of dollars or billions to clean up sites and address their environmental liabilities.

USDA

We reported in January 2015 that the majority of USDA's environmental cleanup funds are spent cleaning up ARS's Beltsville NPL facility and abandoned mines and landfills on NFS lands, as well as mitigating potential groundwater contamination from activities at former CCC grain storage sites.³⁶ In fiscal year 2013, USDA allocated over \$22 million to environmental cleanup efforts. Specifically, USDA allocated (1) \$3.7

³⁶[GAO-15-35](#).

million for department-wide cleanup projects, the majority of which were for cleanup at USDA's Beltsville site and to cover legal expenses; (2) approximately \$14 million for the Forest Service to conduct environmental assessments and cleanup activities; and (3) \$4.3 million in funds to mitigate contamination at former grain storage sites. The Forest Service also allocated approximately \$20 million in one-time Recovery Act funds in fiscal year 2009 to cleanup activities at 14 sites located on, or directly impacting, land managed by the Forest Service.³⁷

In addition, USDA seeks cost recovery of cleanup costs and natural resource damages under CERCLA from potentially responsible parties, such as owners and operators of a site, to help offset cleanup costs at sites where they caused or contributed to contamination.³⁸ Cost recovery amounts vary from year to year. We found that for fiscal years 2003 to 2013, USDA typically recovered \$30 million or less annually. However, according to department documents, USDA successfully recovered over \$170 million from a single mining company as part of a bankruptcy case in 2009. These funds were used to conduct cleanup activities at 13 mine sites located on NFS lands. In fiscal year 2011, USDA recovered \$65 million from another mining company for restoration of injured natural resources in the Coeur d'Alene River Basin NPL site in Idaho.

In its fiscal year 2013 financial statements, USDA reported a total of \$176 million in environmental liabilities. These liabilities represent what USDA determined to be the probable and reasonably estimable future costs to address 100 USDA sites, as required by federal accounting standards. The \$176 million amount included: \$165 million to address asbestos contamination,³⁹ \$8 million for up to 76 CCC former grain storage sites in

³⁷American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115. The purposes of the act, among other aims, are to preserve and create jobs, to promote economic recovery, and to provide investments to increase economic efficiency by spurring technological advances in science and health.

³⁸USDA's cost recovery amounts include (1) costs already incurred by USDA and reimbursed by a potentially responsible party (PRP), (2) funds that a PRP has agreed to provide for future cleanup work, and (3) the value of cleanup work directly performed by the PRP.

³⁹USDA did not report asbestos cleanup liabilities prior to fiscal year 2013. As a result, USDA only reported \$10 million in environmental and disposal liabilities in fiscal year 2012.

the Midwest that are contaminated with carbon tetrachloride,⁴⁰ and \$3 million for 24 Forest Service sites, including guard stations, work centers, and warehouses, among others.⁴¹ In addition, USDA reported \$120 million in contingent liabilities in its fiscal year 2013 financial statements.⁴² Of this amount, \$40 million was for environmental cleanup at four phosphate mine sites in southeast Idaho.⁴³

Interior

We reported in January 2015 that Interior allocated about \$13 million for environmental cleanup efforts in fiscal year 2013. Specifically, Interior allocated \$10 million for cleanup projects department-wide; NPS allocated an additional \$2.7 million, and the Fish and Wildlife Service allocated over \$800,000 for environmental assessment and cleanup projects. In addition, BLM allocated more than \$34 million to its hazardous management and abandoned mine programs. BLM provided over \$18 million to its state offices; however, the amount specifically used for environmental cleanup projects was not readily available. BLM also spent over \$27 million in one-time Recovery Act funds on physical safety and/or environmental remediation projects at 76 locations. According to BLM, there were 31 projects for environmental activities.

For fiscal years 2003 through 2013, Interior allocated over \$148 million in Central Hazardous Materials Fund (CHF) resources to its agencies to support response actions undertaken at contaminated sites under

⁴⁰CCC reported a cost range of \$8 million to \$55 million on its agency financial statements.

⁴¹These 24 Forest Service sites do not include any abandoned mines.

⁴²A contingent liability is an existing condition, situation, or set of circumstances involving uncertainty as to possible loss to an entity that will ultimately be resolved when one or more future events occur or fail to occur.

⁴³The \$40 million represents the lower end of a range of cleanup costs for these four mine sites. The mining company that leases these sites sued the U.S. government to recover its response costs incurred in connection with the remediation of the four mines, which are located on federal land. The court ultimately approved a settlement under which the mining company would pay 67 percent, and the government would pay 33 percent of all past and future costs. In court documents, the United States noted that the total cleanup costs for the sites are unknown, but preliminary estimates are in the hundreds of millions of dollars. *Nu-West Mining, Inc. v. United States*, 2013 U.S. Dist. LEXIS 32747, D. Idaho (2013). Forest Service officials noted that, absent the completion of feasibility studies and the development of remediation cost estimates on these sites, any cost estimates are highly speculative.

CERCLA. This amount includes over \$49 million in CHF cost recoveries. Interior's agencies undertook 101 projects with CHF funding during fiscal years 2003 through 2013. These projects supported a range of activities, from project oversight to advanced studies (e.g., remedial investigations, feasibility studies, engineering evaluations, and cost analyses) to removal and remedial actions. The majority of sites receiving CHF funding were abandoned mines, landfills, and former industrial facilities. In fiscal year 2013, Interior allocated \$10 million to the CHF.

During our work for the January 2015 report, BLM officials told us that the current funding levels were not sufficient to complete the inventory and address the physical and environmental hazards at abandoned mines. In its 2014 and 2015 budget justifications, Interior described proposals to charge the hardrock mining industry fees and use the funds to address abandoned mines. Similarly, an NPS official told us that the agency has inadequate funding to address its over 400 potentially contaminated and contaminated sites. According to an NPS official, the agency had been able to address its highest risk sites. If there is a very significant risk, NPS can usually obtain funds to address the portion of the site that has the highest risk, if not the site as a whole. According to NPS officials, NPS has not selected response actions for almost 300 sites because current funding levels are not sufficient to address them.

As we found in our January 2015 report,⁴⁴ Interior reported \$192 million in environmental liabilities in its fiscal year 2013 financial statements. These liabilities represent what the agency has determined to be the probably and reasonably estimable future cost for completing cleanup activities at 434 sites, as required by federal accounting standards.⁴⁵ These activities include studies or removal and remedial actions at sites where Interior has already conducted an environmental assessment and where Interior caused or contributed to the contamination or has recognized its legal obligation for addressing the site. Interior also disclosed in the notes to its financial statements the estimated cost range for completing cleanup

⁴⁴[GAO-15-35](#).

⁴⁵This number reflects the low end of a range of probable future costs for completing cleanup activities at these sites.

activities at these sites. The cost range disclosed was approximately \$192 million to \$1.3 billion.⁴⁶

Interior also disclosed the estimated costs for government-acknowledged sites—sites that are of financial consequence to the federal government with damage caused by nonfederal entities—where it was reasonably probable that cleanup costs would be incurred. In fiscal year 2013, Interior disclosed in the notes to its fiscal year 2013 financial statements a cost range for these activities to be approximately \$62 million to \$139 million. The majority of this cost range was related to addressing 85 abandoned mine sites. As we have previously reported,⁴⁷ cleanup costs for abandoned mines vary by type and size of the operation. For example, the cost of plugging holes is usually small, but reclamation costs for large mining operations can reach tens of millions of dollars.

DOD

Historically, we have found that DOD has spent billions on environmental cleanup and restoration at its installations. For example, in July 2010, we reported that DOD spent almost \$30 billion from 1986 to 2008 across all environmental cleanup and restoration activities at its installations, including NPL and non-NPL sites.⁴⁸ In March 2010, we reported that since the Defense Environmental Restoration Program (DERP) was established, approximately \$18.4 billion had been obligated for environmental cleanup at individual sites on active military bases, \$7.7 billion for cleanup at sites located on installations designated for closure under BRAC, and about \$3.7 billion to clean up formerly used defense sites.⁴⁹ In June 2014, DOD reported to Congress that, in fiscal year 2013, DOD obligated approximately \$1.8 billion for its environmental restoration activities.

In its *Agency Financial Report* for fiscal year 2014, DOD reported \$58.6 billion in total environmental liabilities.⁵⁰ These liabilities include, but are

⁴⁶The difference between the upper and lower ends of the range (\$1.1 billion) reflects the additional potential cost for addressing these sites.

⁴⁷[GAO-13-633T](#).

⁴⁸[GAO-10-348](#).

⁴⁹[GAO-10-547T](#).

⁵⁰Department of Defense, *Agency Financial Report Fiscal Year 2014*, 2-73362DA (Nov. 13, 2014).

not limited to, cleanup requirements for DERP for active installations, BRAC installations, and formerly used defense sites.

DOE

According to DOE's fiscal year 2016 Congressional budget request,⁵¹ DOE received an annual appropriation of almost \$5.9 billion in fiscal year 2015 to support the cleanup of radioactive and hazardous wastes resulting from decades of nuclear weapons research and production.⁵² DOE has estimated that the cost of this cleanup may approach \$300 billion over the next several decades. As we reported in May 2015,⁵³ DOE spent more than \$19 billion since 1989 on the treatment and disposition of 56 million gallons of radioactive and hazardous waste at its Hanford site in Washington State. In July 2010, we reported that four large DOE cleanup sites received the bulk of the \$6 billion in Recovery Act funding for environmental cleanup.⁵⁴ We previously reported that those sites have had problems with rising costs, schedule delays, and contract and project management.⁵⁵

In 2014, DOE estimated that its total liability for environmental cleanup,⁵⁶ the largest component of which is managed by EM, is almost \$300 billion and includes responsibilities that could continue beyond the year 2089.⁵⁷ We are beginning work at the request of the Senate Armed Services Committee to examine DOE's long-term cleanup strategy, what is known

⁵¹Department of Energy FY 2016 Congressional Budget Request, *Environmental Management*, DOE/CF-0111 Volume 5 (February 2015).

⁵²[GAO-10-784](#).

⁵³[GAO-15-354](#).

⁵⁴[GAO-10-784](#).

⁵⁵GAO, *Department of Energy: Contract and Project Management Concerns at the National Nuclear Security Administration and Office of Environmental Management*, [GAO-09-406T](#) (Washington, D.C.: Mar. 4, 2009); *Hanford Waste Treatment Plant: Department of Energy Needs to Strengthen Controls over Contractor Payments and Project Assets*, [GAO-07-888](#) (Washington, D.C.: July 20, 2007); and *Nuclear Waste: Better Performance Reporting Needed to Assess DOE's Ability to Achieve Goals of the Accelerated Cleanup Program*, [GAO-05-764](#) (Washington, D.C.: July 29, 2005).

⁵⁶These liabilities include total environmental cleanup and disposal liabilities.

⁵⁷Department of Energy, *Fiscal Year 2014 Agency Financial Report*, DOE/CF-0106 (Nov. 14, 2014).

about the potential cost and timeframes to address DOE's environmental liabilities, what factors does DOE consider when prioritizing cleanup activities across its sites, and how DOE's long-term cleanup strategy address the various risks that long-term cleanup activities encounter.

EPA's Oversight Role Includes Maintaining a List of Potentially Hazardous Sites and Ensuring that Preliminary Assessments Are Completed

As part of its oversight role in maintaining the list of contaminated and potentially contaminated federal sites and ensuring that preliminary assessments of such sites are complete, EPA has compiled a docket of over 2,300 federal sites that may pose a risk to human health and the environment.⁵⁸ EPA is responsible for ensuring that the federal agencies assess these sites for contamination. Our January 2015 report focused on reviewing the extent to which USDA and Interior have assessed the majority of sites listed on the docket.

Federal Agency Hazardous Waste Compliance Docket

As of August 2015, the agency's docket listing consisted of 2,323 sites that may pose a risk to human health and the environment, which EPA compiled largely from information provided by federal agencies.⁵⁹ We found in January 2015 that EPA has published many updates of the docket, but the agency has not consistently met the 6-month reporting requirement.⁶⁰ Prior to 2014, the effort to compile and monitor the docket listings was a manual process. However, in 2014, EPA implemented revised docket procedures with a computer-based process that is to compile potential docket listings from agency notices by searching electronic records. EPA officials said that they expect the new system to allow them to update the docket in a more timely way in the future. EPA

⁵⁸It is EPA's policy to exclude certain categories of sites from its docket listing. For instance, small quantity generators of hazardous waste (less than 1,000 kilograms in any month) are excluded from docket listing unless they have reported releases. According to EPA, the agency also does not include previously owned federal facilities or sole transporters of hazardous waste.

⁵⁹The docket represents the universe of federal sites to be considered for possible inclusion on the NPL.

⁶⁰[GAO-15-35](#).

has published two docket updates with this new system, in December 2014 and August of 2015.

As we reported in January 2015, EPA officials told us that it is difficult for EPA to know about a site to list if agencies have not reported it. However, if EPA learns about a site that has had a release or threat of a release of hazardous substances through other means, EPA will list the site on the docket. It is important to note that the docket is a historical record of potentially contaminated sites that typically have been reported to EPA by agencies. Because it is a historical record, sites that subsequently were found to not be contaminated, and sites that the agencies may have addressed, are still included on the docket.

In our January 2015 report on USDA and Interior potentially contaminated sites, we discussed the docket with officials from these two departments. We found that Interior and USDA officials disagreed with EPA officials over whether some of these sites should have been listed on the docket. Interior officials believed that CERCLA does not give EPA the discretion to list Interior sites unless Interior reports them to EPA and that EPA should limit its listing of sites on the docket to those reported by an agency under one of the provisions specifically noted in CERCLA. Interior and USDA officials also believed that abandoned mines should not be listed on EPA's docket because the agencies did not cause the contamination and, therefore, the sites should not be considered federal sites. However, EPA officials believed that, regardless of whether USDA and Interior are legally liable for addressing these sites, they have an independent responsibility under Executive Order 12,580 and CERCLA as land management agencies owning the sites to address them.⁶¹

Preliminary Assessments

As I stated earlier, EPA established 18 months as a reasonable time frame for agencies to complete a preliminary assessment. However, in March 2009, we reported that EPA officials from two regions told us that some agencies such as DOD may take 2 to 3 years to complete a preliminary assessment because EPA does not have independent authority under CERCLA to enforce a timeline for completion of a preliminary assessment.⁶² In March 2009, we suggested that Congress

⁶¹Exec. Order No. 12,580, Superfund Implementation, 52 Fed. Reg. 2,923 (Jan. 29, 1987).

⁶²[GAO-09-278](#).

consider amending CERCLA section 120 to authorize EPA to require agencies to complete preliminary assessments within specified time frames.

For USDA and Interior, we found in our January 2015 report that as of February 2014, both Interior and USDA had conducted a preliminary assessment of the majority of their sites on EPA's docket.⁶³ However, EPA, Interior, and USDA have differing information on the status of preliminary assessments for the remaining docket sites. Our analysis of data in EPA's Comprehensive Environmental Response, Compensation, and Liability Information System for our January 2015 report found that USDA still needed to conduct a preliminary assessment at 50 docket sites, and Interior needed to conduct a preliminary assessment at 79 docket sites. When we reviewed the status of these sites with USDA and Interior officials, the officials told us that they believed their agencies had met the preliminary assessment requirement for many of these sites.

To help resolve disagreements between EPA and USDA and Interior regarding which remaining docket sites require preliminary assessments, we recommended, in January 2015, that EPA take three actions. First, EPA should review available information on USDA and Interior sites where EPA's Superfund Enterprise Management System indicates that a preliminary assessment has not occurred to determine the accuracy of this information, and update the information, as needed. After completing this review, EPA should inform USDA and Interior whether the requirement to conduct a preliminary assessment at the identified sites has been met or if additional work is needed to meet this requirement. Finally, EPA should work with the relevant USDA and Interior offices to obtain any additional information needed to assist EPA in determining the accuracy of the agency's data on the status of preliminary assessments for these sites. EPA agreed with these recommendations and, according to EPA officials, the agency has started taking steps to address them.

⁶³ [GAO-15-35](#).

Chairman Shimkus, Ranking Member Tonko, and Members of the Subcommittee, this concludes my prepared statement. I would be pleased to answer any questions you may have at this time.

GAO Contact and Staff Acknowledgments

If you or your staff members have any questions about this testimony, please contact me at (202) 512-3841 or gomezj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this testimony. Other individuals who made key contributions include: Barbara Patterson (Assistant Director), Antoinette Capaccio, Rich Johnson, Kiki Theodoropoulos, and Leigh White.

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