

August 1996

# ENVIRONMENTAL PROTECTION

## Status of Defense Initiatives for Cleanup, Compliance, and Technology





**National Security and  
International Affairs Division**

B-271818

August 2, 1996

The Honorable John McCain  
Chairman  
The Honorable John Glenn  
Ranking Minority Member  
Subcommittee on Readiness  
Committee on Armed Services  
United States Senate

This report responds to your letters of January 1996, which requested specific data regarding Department of Defense (DOD) environmental cleanup, compliance, and technology development activities. As requested by your offices, this letter provides information and analyses on related DOD initiatives, and appendix I presents additional detail regarding these areas and overseas cleanup.

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**Background**

DOD is responsible for managing and caring for thousands of military installations and defense sites throughout the United States and overseas. Its operations are subject to the same environmental, safety, and health laws and regulations as private industry, as well as additional requirements for federal facilities. The day-to-day operations and activities of a typical military installation generally mirror those of a small city. As a result, DOD installations face most of the same environmental problems confronting our nation's industrial and commercial sectors.

To achieve its environmental mission, DOD organized its \$5 billion environmental program into five elements: cleanup, compliance, conservation, pollution prevention, and technology.<sup>1</sup> This report addresses three of these elements:

- cleanup (remediation), which includes identification, investigation, and cleanup of contamination from hazardous substances and waste on active and formerly used DOD land (cleanup has been funded primarily through centralized accounts for defense environmental restoration and for BRAC);
- compliance with environmental laws and regulations of federal, state, and local jurisdictions; and

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<sup>1</sup>Also contained is funding for Base Realignment and Closure (BRAC) efforts involving environmental restoration, compliance, and planning at closing installations.

- technology, under which DOD invests in research, development, demonstration, and validation of new technologies to support the other elements of its program.

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## Results in Brief

Recent DOD initiatives affecting environmental cleanup include efforts to focus funding on actual cleanup versus study and oversight, better target the funds through the use of risk determination in priority setting, and devolve the budget process to the military services. DOD has reported a reduction in the amount of funds obligated for study and oversight of cleanup activities and an increase in funds for actual cleanup activities. It has also begun to use relative risk determinations—that is, whether a site is categorized as high, medium, or low relative risk—in its cleanup planning process. DOD plans to devolve management of cleanup funding from a centralized environmental restoration account controlled by the Office of the Secretary of Defense to four processes and proposed accounts: three for the individual military departments and one for DOD-wide functions. Funding for the single account for fiscal year 1996 is currently estimated at \$1.4 billion.

Regarding compliance initiatives, your Committee expressed concern that DOD's report to Congress on environmental compliance activities does not provide data adequate to distinguish among categories and track the basis for DOD's budget request. Also, we testified<sup>2</sup> that DOD lacks the data it needs to manage its environmental compliance program. Although DOD has required the services to use an Environmental Protection Agency (EPA) system that classifies projects by type of activity, it was unable to provide data on spending by EPA classification. DOD approved plans, dated March 14, 1996, to improve its information for fiscal year 1998. We expressed concerns about the impact of definitions in those plans on priority setting, and DOD officials stated that they will act on these concerns. Detailed budget instructions for fiscal year 1998 are expected to be approved in the summer of 1996. DOD's current estimate for fiscal year 1996 compliance funding is \$2.2 billion.

With regard to environmental technology, your Committee expressed concern about DOD's strategy to identify and meet environmental technology needs and requested that DOD recommend ways to restructure environmental technology activities. DOD did not submit a separate recommendation. In commenting on our draft report, DOD officials stated

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<sup>2</sup>Environmental Protection: Issues Facing the Energy and Defense Environmental Management Programs (GAO/T-RCED/NSIAD-96-127, Mar. 21, 1996).

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that a written response is not required and restructuring efforts are reflected in the fiscal year 1997 budget submission. Also, by late summer 1996, DOD plans to implement an on-line strategic environmental technology plan that will show specific service requirements and match ongoing and planned initiatives. DOD's current estimate for fiscal year 1996 funding in environmental technology is \$216 million.

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## Recent Cleanup Initiatives

Your offices asked for an overview of DOD's effort to (1) increase the proportion of funds devoted to actual cleanup activities versus study and oversight and (2) incorporate assessments of relative risk in planning and budgeting for environmental restoration activities. DOD has also proposed to devolve management of the DOD-wide environmental restoration account to four separate accounts for the military departments and defense agencies.

Study and oversight obligations have significantly decreased since 1993, when they were \$1 billion, or 62 percent of DOD's total \$1.6-billion costs. By fiscal year 1995, costs of studies and oversight had fallen to \$585 million, or about 39 percent of the \$1.5-billion total. For fiscal year 1997, DOD projects a further decline to 26 percent for studies and oversight versus 74 percent for cleanup activities. In commenting on this report, DOD officials stated that some level of study will need to continue. Studies are required by the National Contingency Plan<sup>3</sup> and are also needed to characterize sites, determine whether remediation is needed, and identify contaminants, if any.

We obtained data from the defense components in February and March 1996 that shows DOD has conducted relative risk assessments on about 70 percent of the 10,361 operational and formerly used defense sites that may require future cleanup.<sup>4</sup> Over half of these sites have been identified as high relative risk without any further ranking within the category. Efforts to rank cleanup sites across geographic and organizational boundaries are still in their infancy.

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<sup>3</sup>The National Oil and Hazardous Substances Pollution Contingency Plan establishes EPA policy and key response steps for implementing the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

<sup>4</sup>In commenting on this report, officials of the Office of the Secretary of Defense stated that they could not verify the service data because they could not independently recreate it as of the dates involved. DOD's report to Congress for fiscal year 1995 states that, as of September 30, 1995, 56 percent of 12,570 sites at active and former facilities had received relative risk ratings. In addition, 10,019 sites required no further cleanup.

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DOD plans to devolve budgeting for environmental cleanup from the centralized departmental process used since 1984 into separate service and defense agency budget processes. Congress had established a centralized account in 1984 to facilitate oversight and to ensure management attention to environmental restoration. DOD is now proposing legislation to Congress that would remove the single account for restoration funds, which is funded for fiscal year 1996 at \$1.4 billion, and create in its place four accounts with otherwise similar provisions. In its March 1996 report to Congress on devolvement, DOD stated this is another step to make the program as efficient as possible by putting responsibility, accountability, and funding together. DOD policy guidance and reporting requirements for the fiscal year 1997 Defense Budget, dated July 1995, provided the military services with the specific funding categories to be used and the types of activities to include in each category.

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## Environmental Compliance Initiatives

DOD environmental compliance initiatives aim to improve the adequacy of data available to manage this program. Your Committee's report on the National Defense Authorization Act for Fiscal Year 1996 in July 1995 stated that DOD's report to Congress on environmental compliance activities does not distinguish among categories sufficiently to track the basis for DOD's budget request. Our March 1996 testimony also noted that DOD lacks the data it needs to manage its environmental compliance program, particularly when compared to the data used to manage cleanup activities. For example, Congress receives annual reports with installation-level data on planned and actual expenditures for cleanup, but DOD does not have comparable expenditure data on compliance activities. (In commenting on this report, DOD officials stated there is no requirement for including actual expenditure data in the annual DOD environmental quality report.) DOD has required the services to use an EPA system that classifies whether projects address current or near-term noncompliance with environmental laws and regulations or are only indirectly related to compliance time lines. However, DOD was unable to provide data on planned or actual expenditures by EPA classification.

In 1994, the Office of the Secretary of Defense established a working group that developed plans to ensure that detailed compliance data can be obtained as needed. DOD approved the plans to improve data and oversight for fiscal year 1998 by such actions as setting goals and measuring progress. Detailed budget instructions are expected by summer 1996. As we stated in testimony before joint subcommittees of the House Committee on National Security, we agree with DOD's approach to

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developing these plans. However, we are concerned that the class definitions are a significant departure from DOD's past definitions and do not conform to EPA definitions. As a result, the number of projects within the high priority category may expand without decisionmakers being able to distinguish among different types. DOD officials stated that they will act to ensure that the priorities are not diluted as they proceed and that, at a meeting subsequent to our testimony, EPA officials stated that DOD's definitions were acceptable.

An April 30, 1996, EPA memorandum to DOD stated that the Agency accepted DOD's definitions for the DOD environmental quality report to Congress. However, it also cited DOD's agreement to separately provide EPA with computer disks of project-level data and to supplement the project listings with the detailed project data needed to support EPA's automated system. The additional detail agreed to by DOD will allow EPA to recategorize DOD projects according to EPA definitions for governmentwide comparability.

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## Environmental Technology Initiatives

According to DOD, technological innovation is the key to more efficiently and effectively meeting the environmental restoration challenge it faces. To facilitate the development and deployment of better, less costly, and more efficient environmental technologies, DOD developed a strategy designed to foster technologies with such benefits as the highest payback. DOD's strategy is based on systematically identifying needs, and developing, demonstrating, and validating prioritized technologies. Once needs and related projects have been reviewed across the military services, high-priority projects are funded through service, DOD-wide, or other multiagency environmental programs.

Congressional direction resulted in DOD initiatives to develop a research plan and a supporting requirements database. The 1992 Defense Authorization Act required the Director of Defense Research and Engineering to develop a strategic investment plan for environmental quality research and development. A DOD panel of engineers published a Tri-Service Environmental Quality Research and Development Strategic Plan in January 1993 and an updated version in October 1994. The strategic plan matches various technology projects against specific service requirements. The next version of the Strategic Plan, expected in late summer 1996, will be automated. In response to 1994 direction by the House Committee on Armed Services, the Deputy Under Secretary for Environmental Security issued the Environmental Technology

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Requirements Strategy in March 1995 that will create a requirements database. This document identifies prioritized service technology needs by category. For example, a high-priority Navy requirement in the compliance category is Hazardous Waste Management Ashore. According to DOD officials, this requirements document will likely be issued biannually.

We identified work in two high-priority requirements areas where several projects were underway or planned. Although projects were funded from various sources and managed by different programs or services, program and project officials were generally aware of other projects in the two areas. Officials explained that differences in the projects generally related to how the technology was applied. For example, the Environmental Security Technology Certification Program is funding a Navy project to demonstrate the feasibility of using plasma arc technology to eliminate hazardous waste on a Navy installation. The Navy is also funding a project to study the feasibility of using plasma arc technology to eliminate hazardous waste material aboard ships.

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## Scope and Methodology

The information presented in this report is drawn from our recent testimony and from our review of DOD's environmental cleanup, compliance, and technology issues.

We obtained cleanup and compliance budget data from and interviewed officials in the Office of the Deputy Under Secretary of Defense for Environmental Security. The data came from the fiscal years 1995, 1996, and 1997 budget submissions and other budgetary sources. The fiscal year 1997 budget submission was in draft at the time the data was provided, and some parts are being updated. Data for fiscal years 1996 and 1997 is estimated. We compared the data provided with other original summary sources for comparable periods when available. We also discussed compliance definitions with EPA officials.

We discussed environmental technology programs and projects with officials in the Office of the Deputy Under Secretary of Defense for Environmental Security, the Director of Research and Engineering, and the services. We selected two specific technology areas and analyzed data on similar projects in those technology areas. We also visited the National Defense Center for Environmental Excellence in Johnstown, Pennsylvania, which was conducting work in the technology areas we reviewed.



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The information in appendix I is our analysis of data reported by DOD. We compared data to other sources where possible, but did not trace the data to individual transactions. We did not, for example, perform detailed examinations at installations to identify the types of expenditures that DOD reported as being spent for cleanup. As requested, we provided detailed data on (1) defense environmental restoration account expenditures for actual cleanup versus study and oversight; (2) cleanup funding by category of priority, with additional data for medium and low relative risk, and unranked sites; (3) overseas cleanup; (4) environmental compliance expenditures by selected categories; and (5) environmental technology development programs.

We performed our work from February through April 1996 in accordance with generally accepted government auditing standards.

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## Agency Comments

We received official oral comments from DOD officials, who generally concurred with our data. Technical changes and updated data were incorporated in this report where appropriate.

DOD did not fully concur with our observations regarding the impact of DOD's definitions of compliance classes not conforming to EPA's definitions and stated that at an April 19, 1996, meeting, EPA officials accepted DOD's definitions. As we noted in the report, DOD must also provide EPA with additional details that will allow EPA to recategorize DOD projects according to EPA definitions for governmentwide comparability. We will consider questions involving the impact of DOD's revised definitions as part of ongoing work for congressional requesters.

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Unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after its issue date. At that time, we will send copies to appropriate congressional committees; the Secretary of Defense; the Administrator, EPA; and the Director of the Office of Management and Budget. We will provide copies of this report to other interested parties upon request.

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Please contact me on (202) 512-8412 if you or your staff have any questions concerning this report. Major contributors to this report are listed in appendix II.

A handwritten signature in black ink, appearing to read "David R. Warren" with a stylized flourish at the end.

David R. Warren  
Director, Defense Management Issues

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# Additional Information on Environmental Cleanup, Compliance, and Technology Development

Figure I.1:

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GAO Areas Addressed by Requested Work

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- Defense Environmental Restoration Account (DERA) funding for cleanup versus study and oversight
  - DERA funding by relative risk
  - Overseas cleanup
  - Environmental compliance
  - Environmental technology
-

Figure I.2:

## GAO Cleanup Versus Study and Oversight

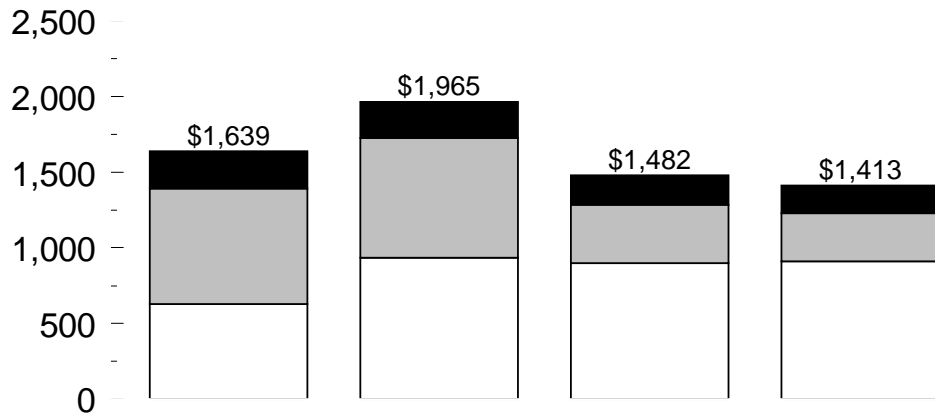
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- Actual cleanup costs and percentages increased while study and oversight costs decreased.
  - Salaries, program overhead, travel, and administrative costs are not easily broken out by the defense components.
-

Figure I.3:

## GAO Cleanup Versus Study and Oversight: Funding by Fiscal Year

Dollars in millions

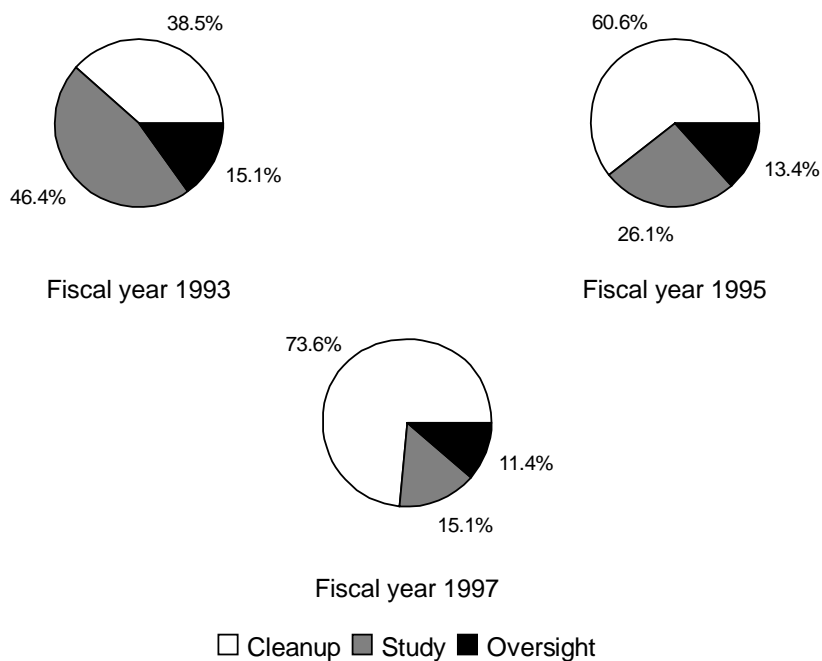


	1993	1994	1995	1996
Cleanup <sup>a</sup> <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; background-color: white;"></span>	630	934	898	911
Study <span style="display: inline-block; width: 10px; height: 10px; background-color: gray;"></span>	761	793	386	319
Oversight <span style="display: inline-block; width: 10px; height: 10px; background-color: black;"></span>	248	238	198	183

<sup>a</sup>Includes potentially responsible party funding from DOD.

Figure I.4:

## GAO Cleanup Versus Study and Oversight: Percentage of Funding



Note 1: Calculations of cleanup include potentially responsible party funding.

Note 2: Totals may not add to 100 percent due to rounding.

Figure I.5:

## GAO DERA Funding by Relative Risk

- DOD dollars and projects for 1995 were affected by rescission action.
- Services reported in February 1996 that 10,000 sites required cleanup, with 7,450 evaluated as having a relative risk (4,000 of the 7,450 sites were assessed as high relative risk).
- Funding for fiscal years 1996 and 1997 focused on high relative risk.

Note: In commenting on a draft of this report, officials of the Office of the Secretary of Defense (OSD) stated that the number of sites, provided by the services, cannot be verified by OSD.



Figure I.6:

## GAO DERA Funding by Relative Risk: Categorization

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- Percentage of projects unfunded were 29.8% of high relative risk projects, 84.1% of medium relative risk projects, and 89.3% of low relative risk projects.
  - A consistent methodology was used to categorize sites, but there was no general ranking across organizations or geographic boundaries.
  - Most funded lower relative risk projects are associated with facility agreements.
- 

Note: In commenting on a draft of this report, OSD officials stated that the project percentages, provided by the services, cannot be verified by OSD.

Figure I.7:

# GAO DERA Funding by Relative Risk: Focus on High Relative Risk

Dollars in millions

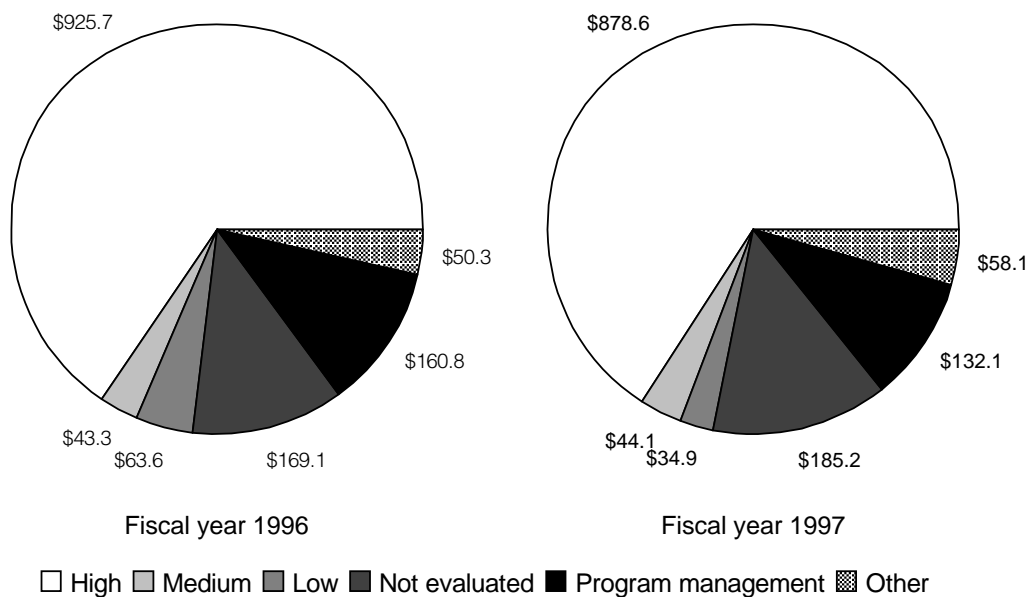
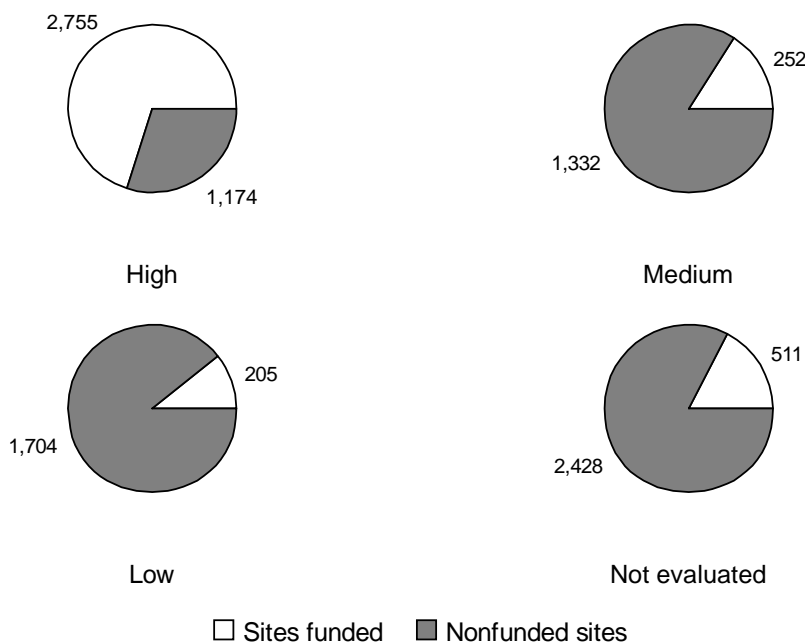


Figure I.8:

# GAO DERA Funding by Relative Risk: Funded Sites by Category



Note 1: 10,361 total sites as of March 1, 1996.

Note 2: In commenting on a draft of this report, OSD officials stated that the distribution of sites, provided by the services, cannot be verified by OSD.

Figure I.9:

## GAO DERA Funding by Relative Risk: Medium and Low Relative Risk Sites for Fiscal Year 1997

Dollars in millions

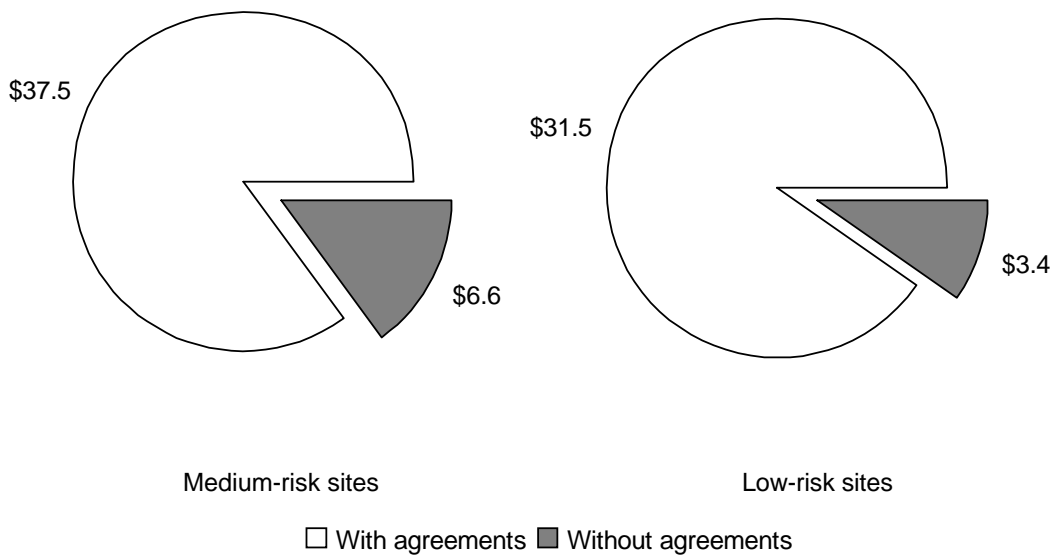


Figure I.10:

## GAO Overseas Cleanup

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- Reported overseas cleanup used mostly Operations & Maintenance funds (97 percent).
  - About \$102 million was obligated in 4 years.
  - Obligations are primarily for actual cleanup rather than study or oversight.
  - Most overseas funding was for Army sites.
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Figure I.11:

## GAO Overseas Cleanup: Funding by Fiscal Year by Component

Dollars in thousands

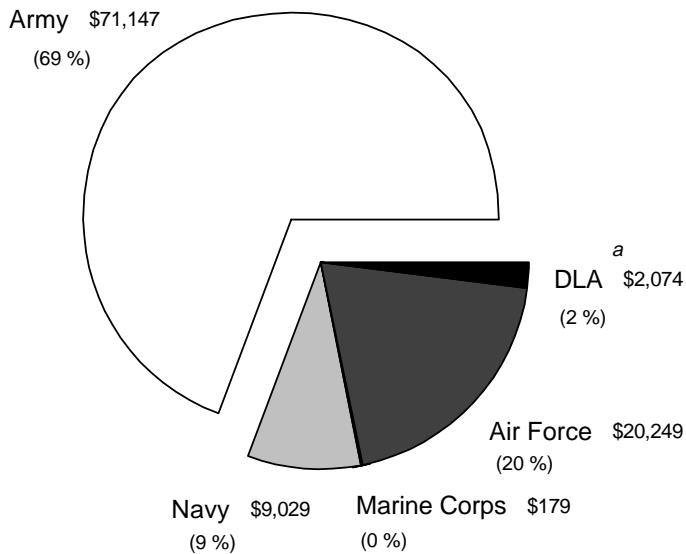
	<b>Study</b>	<b>Cleanup</b>	<b>Oversight</b>	<b>Total</b>
1993	\$4,657	\$29,462	\$171	\$34,290
1994	7,445	14,867	376	22,688
1995	3,943	18,659	636	23,237
1996	3,925	17,369	1,169	22,462
<b>Total</b>	<b>\$19,970</b>	<b>\$80,357</b>	<b>\$2,352</b>	<b>\$102,678</b>

Note: Totals may not add due to rounding.

Figure I.12:

## GAO Overseas Cleanup: Combined Funding by Defense Component (fiscal years 1993-96)

Dollars in thousands



<sup>a</sup>Defense Logistics Agency.

Figure I.13:

**GAO Overseas Cleanup: Number of Sites/Projects  
 Funded by Defense Component by Fiscal Year**

	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>
Army	68	63	50	69
Navy & Marine Corps	3	12	15	11
Air Force	21	35	18	20
Defense Logistics Agency	1	2	2	1

Note: Due to multiple year funding, some sites/projects are listed in more than 1 fiscal year.



Figure I.14:

## GAO Environmental Compliance

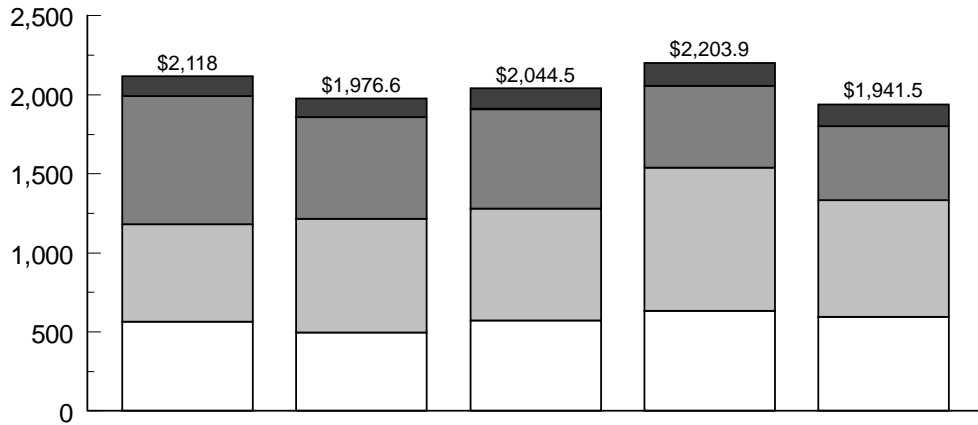
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- Services could not provide data by Environmental Protection Agency class or by recurring/nonrecurring costs.
  - DOD plans to change budget reporting to include the above data.
  - Funding is shown by defense component, appropriation, and media.
  - Comparison of compliance, conservation, and pollution prevention funding.
-

Figure I.15:

**GAO Environmental Compliance: Funding by Defense Component by Fiscal Year**

Dollars in millions

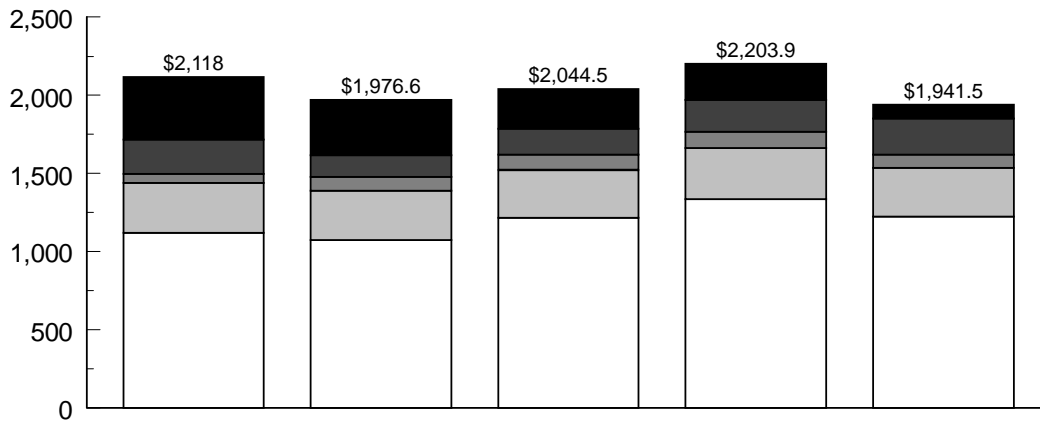


		1993	1994	1995	1996	1997
Army	□	565.7	497.8	572.2	632.8	595.8
Navy	□	615.9	717.4	710.8	907.7	738.9
Air Force	■	811.9	643.2	628.3	517.9	467.5
Defense agencies	■	124.5	118.2	133.2	145.5	139.3

Figure I.16:

## GAO Environmental Compliance: Funding by Appropriation Account by Fiscal Year

Dollars in millions



		1993	1994	1995	1996	1997
O&M	□	1,122.7	1,073.7	1,218.9	1,336.6	1,224.9
DBOF	▒	317.8	319.4	304.6	329.0	311.9
RDT&E	▓	59.7	89.4	98.4	104.0	84.0
Other	■	218.2	136.5	165.2	205.0	233.0
MILCON	■	399.6	357.6	257.4	229.3	87.7

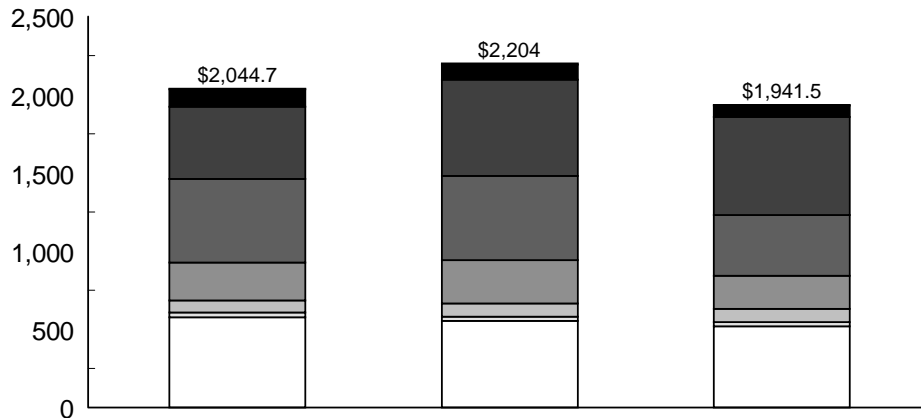
Legend  
 O&M - Operations & Maintenance  
 DBOF - Defense Business Operations Fund  
 RDT&E - Research, Development, Test, and Evaluation  
 MILCON - Military Construction

Appendix I  
 Additional Information on Environmental  
 Cleanup, Compliance, and Technology  
 Development

Figure I.17:

GAO Environmental Compliance:  
 Funding by Media by Fiscal Year

Dollars in millions

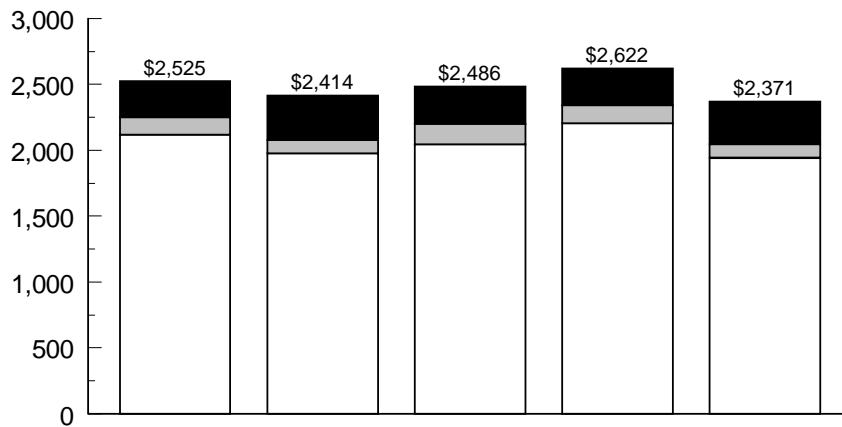


	1995	1996	1997
Hazardous waste management	576.4	555.8	520.4
Solid waste management	33.0	27.3	26.0
Underground storage tanks	76.6	83.3	86.1
Air quality management	241.6	277.9	214.2
Water quality management	538.0	540.7	387.6
Laws & regulations	461.0	617.3	627.4
Assessment & planning	112.6	95.1	74.0
Education & training	5.5	6.6	5.8

Figure I.18:

**GAO Environmental Compliance:  
 Funding Compared to Conservation and  
 Pollution Prevention by Fiscal Year**

Dollars in millions



		1993	1994	1995	1996	1997
Compliance	□	2,118	1,977	2,045	2,204	1,942
Conservation	■	133	99	154	137	106
Pollution prevention	■	274	338	287	281	323

Figure I.19:

## GAO Environmental Technology

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- Environmental Technology Requirements Strategy document identified user needs.
    - Issued by Deputy Under Secretary of Defense/Environmental Security and lists over 500 technology area needs.
  - The Director, Defense Research and Engineering, developed a plan to address needs (Green Book).
    - Plan lists ongoing and planned projects within needs areas.
-

Figure I.20:

GAO Environmental Technology:  
DOD and Service Projects

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- We examined projects in two high priority technology areas to determine extent of coordination.
  - Plasma arc technology is being evaluated as a means of eliminating hazardous waste.
  - Nonchromate conversion coating alternatives are being evaluated to eliminate chromate toxic waste by-products.
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Figure I.21:

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GAO Environmental Technology:  
DOD and Service Projects (cont.)

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- For both technologies:
    - Several projects were funded and conducted by different programs and services.
    - Program and project officials were aware of other projects in technology area.
    - Rationale for different projects was based on different applications.
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Figure I.22:

## GAO Environmental Technology: DOD Databases

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- In 1994, House Committee on Armed Services directed DOD to create an environmental requirements database.
  - The March 1995 Environmental Technology Requirements Strategy was issued containing over 500 requirements across the 4 environmental pillars.
  - The Tri-Service Environmental Quality Research and Development Strategic Plan (Green Book) was published in October 1994. DOD plans to implement an on-line system in summer 1996.
-

# Major Contributors to This Report

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