

GAO

Report to the Chairman, Subcommittee  
on Oversight of Government  
Management, the Federal Workforce, and  
the District of Columbia, Committee on  
Governmental Affairs, U.S. Senate

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July 2003

# SUPERFUND PROGRAM

## Current Status and Future Fiscal Challenges



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Accountability \* Integrity \* Reliability

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# SUPERFUND PROGRAM

## Current Status and Future Fiscal Challenges

Highlights of [GAO-03-850](#), a report to the Chairman, Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia, Committee on Governmental Affairs, U.S. Senate

### Why GAO Did This Study

Congress established the Superfund program in 1980 to clean up highly contaminated hazardous waste sites. Among other things, the law established a trust fund to help the Environmental Protection Agency (EPA) pay for cleanups and related program activities. The trust fund was financed primarily by three dedicated taxes until 1995, when the taxing authority expired. EPA continues to discover sites eligible for cleanup under the Superfund program.

GAO was asked to examine the current status of the Superfund program, the factors guiding EPA's selection of sites to be placed on its National Priorities List, and the program's future outlook.

### What GAO Recommends

In considering changes to the program to address future challenges associated with the Superfund program's fiscal uncertainty, GAO recommends that the Administrator, EPA, develop indicators that can be used to measure program performance.

EPA generally agreed with this report's findings and recommendation but provided a number of comments, which we incorporated in this report as appropriate.

[www.gao.gov/cgi-bin/getrpt?GAO-03-850](http://www.gao.gov/cgi-bin/getrpt?GAO-03-850).

To view the full product, including the scope and methodology, click on the link above. For more information, contact John B. Stephenson at (202) 512-3841 or [stephensonj@gao.gov](mailto:stephensonj@gao.gov).

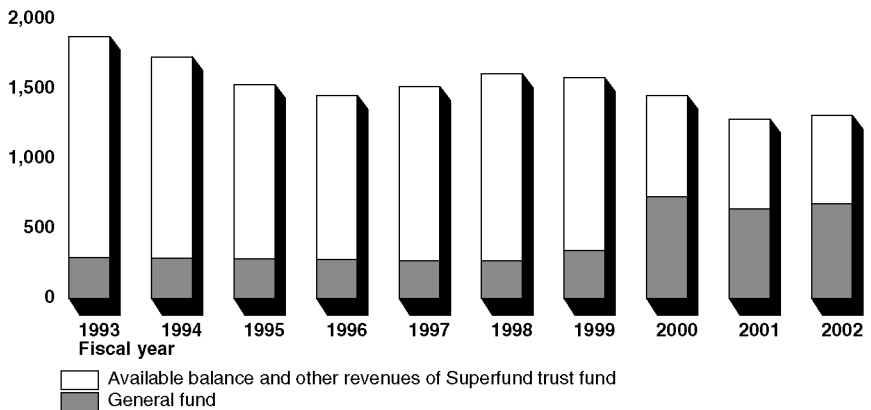
### What GAO Found

The balance of the Superfund trust fund available for future appropriations has decreased significantly since 1996, while highly contaminated hazardous waste sites continue to be added to the National Priorities List (NPL), EPA's list of the nation's most contaminated sites. A decline in revenues to the trust fund has led the Superfund program to rely increasingly on appropriations from the general fund. In EPA's fiscal year 2004 budget request for the Superfund program, the general fund appropriation would make up about 80 percent of the program's total appropriation.

At the end of fiscal year 2002, the NPL had 1,233 sites in various stages of cleanup. EPA considers many factors in selecting from the sites that are eligible to be listed, the most prominent of which are the availability of alternative federal or state programs that could be used to clean up the site, the status of responsible parties associated with the sites, and the cost and complexity of the cleanup required.

As the Superfund program continues to add sites to the NPL and funding sources shift toward general fund appropriations, the effect of EPA's actions to address future program challenges remains uncertain. Because Superfund lacks indicators to fully measure the outcomes of the program's cleanup efforts, EPA has asked an advisory council to develop criteria by which to measure the program's progress. However, it is unclear whether the advisory council will reach consensus on its recommendations, and its findings are not expected until December 2003, at the earliest. Performance indicators could help EPA and the Congress make the difficult funding, policy, and program decisions that the current budget environment demands.

**Total Appropriations to the Superfund Program, Fiscal Years 1993 through 2002**  
Constant 2002 dollars in millions



Source: The President's Budget Appendix, fiscal years 1995 through 2004.

Note: These appropriations do not include spending authority for offsetting collections.

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**Abbreviations**

ATSDR	Agency for Toxic Substances and Disease Registry
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
EPA	Environmental Protection Agency
FTE	Full time equivalent
NIEHS	National Institute for Environmental Health Science
NPL	National Priorities List
ORD	Office of Research and Development
OSWER	Office of Solid Waste and Emergency Response
RCRA	Resource Conservation and Recovery Act

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United States General Accounting Office  
Washington, D.C. 20548

July 31, 2003

The Honorable George V. Voinovich  
Chairman  
Subcommittee on Oversight of Government Management,  
the Federal Workforce, and the District of Columbia  
Committee on Governmental Affairs  
United States Senate

Dear Mr. Chairman:

The Environmental Protection Agency (EPA) estimates that one in four Americans lives within 4 miles of a hazardous waste site. Congress established the Superfund program in 1980 to address the threats that these sites pose to human health and the environment. Among the hazardous waste sites that the Superfund program addresses are manufacturing facilities where hazardous waste has been spilled or disposed of on site, waste disposal facilities where soil or groundwater has been contaminated, or sites where toxic materials have been disposed of improperly and abandoned. EPA, which administers the Superfund program, has identified 44,000 potentially hazardous waste sites and continues to discover about 500 additional sites each year. EPA places the nation's most seriously contaminated sites, which typically are expensive and can take many years to cleanup, on its National Priorities List (NPL). At the end of fiscal year 2002, there were 1,233 sites on the NPL.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 established the Superfund program to clean up highly contaminated hazardous waste sites. CERCLA authorizes EPA to compel the parties responsible for the contamination to clean up the sites; allows EPA to pay for cleanups, then seek reimbursement from the responsible parties; and establishes a trust fund to help EPA pay for cleanups and related program activities. The law also authorizes states to participate in the cleanup process, provides for public participation in the cleanup decisions, and provides that responsible parties are liable for damage to injured natural resources. In addition, the law establishes a process for cleaning up hazardous waste at federal facilities, although the Superfund trust fund is generally not available to fund these federal cleanups, which are funded from federal agency appropriations.

States and responsible parties play a significant role in the cleanup of hazardous waste sites. Most states have established their own programs to

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clean up hazardous waste sites independently of the federal Superfund program. However many of these state programs have limited capacity to address costly and complex sites that do not have responsible parties to pay for the cleanup. Within the Superfund program, states may enter into agreements with EPA to perform certain program actions, such as initial site assessments; EPA also consults with states on cleanup decisions throughout the cleanup process. Parties responsible for the contamination, such as current or former owners or operators of a site or the generators and transporters of the hazardous substances, often pay for and sometimes even perform the cleanup under agreements with EPA or the state. In some cases, parties responsible for the contamination cannot be identified or do not have sufficient resources to perform the cleanup.

To fund the Superfund program, CERCLA established a trust fund that can be used to conduct removal and remedial actions, to administer and manage the program, and to identify and oversee responsible parties. Until 1995, the trust fund was financed primarily by a tax on crude oil and certain chemicals and an environmental tax on corporations. The authority for these taxes expired in December 1995 and has not been reauthorized; however, the trust fund continues to receive revenue from interest accrued on the unexpended invested balance, recoveries of cleanup costs from responsible parties, and collections of fines and penalties. The trust fund has also received revenue from annual general fund appropriations that, along with its other revenues, have been used to fund the Superfund program's operations. As the general fund appropriations grow, the debate continues on whether to reinstate the taxes to support the Superfund program.

As agreed with your office, we examined (1) the current status of the Superfund program, (2) the factors guiding EPA's selection of sites to be placed on the NPL, and (3) the program's future outlook. To address these objectives, we discussed the Superfund program with officials in EPA headquarters, the 10 EPA regions, 10 states, associations that represent states, industry groups, and environmental groups.<sup>1</sup> To assess the program's status, we reviewed the status of the 1,560 hazardous waste sites that have been proposed and/or listed on the NPL since the beginning of the

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<sup>1</sup>We interviewed officials of the five states that have had the most sites proposed to the NPL in the last 5 years (California, Florida, New Jersey, New York, and Texas) and of the five states that have not had any sites proposed in the past 10 years (Arizona, Delaware, North Dakota, Nevada, and Wyoming).

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program, program funding and expenditure data, and EPA's use of human capital resources to administer the Superfund program. In this report, we present all program funding and expenditure data in constant 2002 dollars. In our review of cleanup actions, we focused on remedial actions, which are generally costly and can take a long time to complete. To assess the NPL listing process, we evaluated EPA's minimum eligibility criteria, policies, guidance, and recent practices; we also assessed the extent of EPA's coordination with states. We analyzed available data on state hazardous waste cleanup programs, focusing on the coordination between federal and state programs to address current and future Superfund sites. To assess the program's future fiscal outlook, we examined the effect of the expiration of the taxing authority for the trust fund, identified and reviewed estimates of future funding requirements and workload projections, and examined EPA's current efforts to address future program needs. We did not examine future challenges associated with benefits, health risks, or cleanup standards. Appendix I provides detailed information on our scope and methodology.

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## Results in Brief

The balance of the Superfund trust fund available for future appropriations has decreased significantly since 1996, while additional hazardous waste sites continue to be placed on the NPL. The Superfund trust fund revenues from taxes, cost recoveries, interest, fines, and penalties have decreased from more than \$2 billion in fiscal year 1995, the year the taxing authority expired, to less than \$370 million in fiscal year 2002 when presented in constant 2002 dollars. The decline in these revenues has led the Superfund program to rely increasingly on appropriations from the general fund to supplement its trust fund, with general fund supplements growing overall—in constant 2002 dollars—from \$283 million in fiscal year 1995 to \$676 million in fiscal year 2002. While the program's funding sources have changed, annual program expenditures, in constant 2002 dollars, have remained between \$1.3 and \$1.7 billion. As the balance of the trust fund available for future appropriations declines, EPA continues to place hazardous waste sites on the NPL. EPA added 283 sites to the NPL from fiscal years 1993 through 2002; the NPL contained 1,233 sites by the end of fiscal year 2002. Of these 1,233 NPL sites, 21 percent were in the study and design stage, 31 percent had construction activities under way, and 47 percent had completed the construction of any required cleanup facility at the site. After construction of the facility is completed, a site can remain on the NPL for many years while the actual cleanup takes place.

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EPA uses its Hazard Ranking System, a numerical scoring system that assesses the hazards a site poses to human health and the environment, as the principal mechanism for determining which sites are eligible for placement on the NPL. After a site's eligibility is established, EPA regions then consider many other factors in selecting the sites to submit to EPA headquarters for proposal to the NPL. The most prominent of these factors are the availability of alternative federal or state programs that could be used to clean up the site, the status of responsible parties associated with the sites, and the cost and complexity of the cleanup. State cleanup programs serve as an alternative to the Superfund program and are the approach preferred by most of the state officials that we interviewed, many of whom believed state cleanups are faster. However, because of resource limitations, state cleanup programs generally present a viable alternative only when a party responsible for the contamination can be identified and is ready, willing, and able to fund and perform the cleanup.

The Superfund program's need for federal cleanup funds to address sites that lack alternative sources of cleanup funds may grow in the future, while the program's funding from sources other than general fund appropriations dwindles. A 2001 study by an environmental research group estimated that the cost of implementing the program under then-current law would average \$1.5 billion annually through fiscal year 2009. The number of sites whose cleanup cannot be funded by responsible parties or states could increase because an increase in bankruptcies would lead to more sites without viable responsible parties, and states face budget problems that will curtail their already limited ability to pay for cleanups at sites that lack viable responsible parties. Without responsible parties to fund remediation costs at hazardous waste sites and with states' capacity curtailed, federal funding would likely be sought to perform any cleanup that EPA may propose to do. However, according to EPA, the balance of the Superfund trust fund available for future appropriations will be depleted at the end of fiscal year 2003. EPA has recently asked the National Advisory Council for Environmental Policy and Technology for guidance on several issues affecting the Superfund program's future. For example, because Superfund lacks indicators to fully measure the outcomes of the program's cleanup efforts, EPA has asked the advisory council to develop criteria by which to measure the program's progress. However, it is unclear whether the advisory council will reach consensus on its recommendations, and its findings are not expected until December 2003, at the earliest. In light of the uncertainty about whether the advisory council will develop outcome measures for EPA's consideration, this report makes a recommendation that EPA develop indicators that can be used to measure program



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performance so that changes to the program to address future challenges associated with the Superfund program's fiscal uncertainty can be more fully considered.

We provided EPA with a draft of this report for review and comment. While EPA generally agreed with this report's findings and recommendation, it provided a number of comments and clarifications, which we have incorporated into this report as appropriate. EPA pointed out that it is actively working on indicators to fully measure program performance concurrent with the National Advisory Council for Environmental Policy and Technology process. We acknowledge that EPA is actively working in this area concurrent with the advisory council process, and we have revised this report to include the agency's recent implementation of two new environmental indicators.

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## Background

The Superfund cleanup process begins with site discovery or notification to EPA of possible releases of hazardous substances posing a threat to human health or the environment. Sites are discovered by various parties, including citizens, state agencies, and EPA regional offices. Once discovered, sites are entered into the Comprehensive Environmental Response, Compensation, and Liability Information System, EPA's computerized inventory of potential hazardous substance release sites. EPA then evaluates the potential for a release of hazardous substances from the site to determine and implement the appropriate response to the threats posed by the releases of hazardous substances.

The Superfund program addresses two basic types of cleanups: (1) remedial actions—generally long-term cleanup actions at NPL sites—and (2) removal actions—generally cleanups needed to mitigate more immediate threats at both NPL and non-NPL sites. Remedial actions are generally designed to provide a permanent remedy and thus can take a considerable amount of time and money, depending on the nature of the contamination. EPA's regulations provide that a site must be on the NPL to receive Superfund trust fund financing for the remedial action. Cleanups at NPL sites progress through several steps: investigation and study, remedy selection and design, and the remedial action. Often the construction of cleanup remedies also requires subsequent operation and maintenance activities to ensure that the remedy continues to protect human health and the environment. In addition, the Superfund program conducts removal actions, which are usually short-term cleanups for sites that pose immediate threats to human health or the environment. Examples of

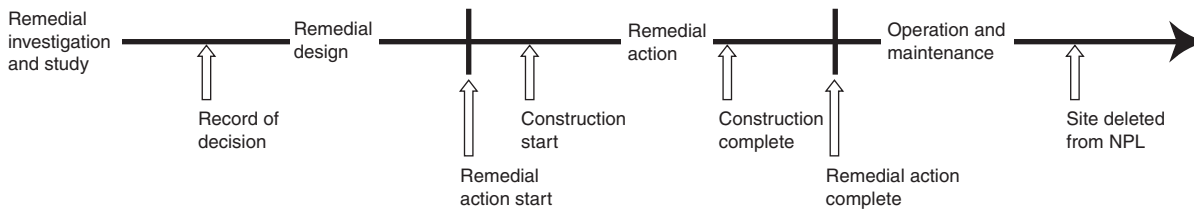
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removal actions include excavating contaminated soil, erecting a security fence, stabilizing a dike or impoundment, or taking abandoned drums to a proper disposal facility to prevent the release of hazardous substances into the environment. Typically, removals are limited to a 1-year effort and \$2 million in expenditures. While EPA expended an average of about \$220 million on removal actions in each of the past 10 fiscal years—in constant 2002 dollars—it generally spent at least twice this amount on remedial actions, which constitute the largest portion of annual Superfund program expenditures.

The NPL is EPA's list of the nation's most contaminated sites. EPA regions use a ranking system to assess the potential of sites to pose a threat to human health or the environment, then choose from the sites that qualify for the NPL which sites to submit to EPA headquarters for proposal to the NPL. Once approved by the EPA Assistant Administrator for Solid Waste and Emergency Response, the sites are proposed for listing in the *Federal Register*. After a comment period, most proposed sites are finalized on the NPL. A majority of sites on the NPL at the end of fiscal year 2002 were manufacturing or waste management sites, while other types of sites listed included recycling, mining, and contaminated sediment sites.

The first stages of the remedial process are the remedial investigation and feasibility study phases, during which the site is investigated further and remedial options are studied. The culmination of these initial phases is a record of decision, which identifies EPA's selected remedy for addressing the site's contamination. The selected remedy is then designed in the remedial design phase and implemented in the remedial action phase, when actual cleanup of the site begins. When physical construction of all cleanup actions is complete, all immediate threats have been addressed, and all long-term threats are under control, a site is generally deemed to be "construction complete." Most sites then enter into the operation and maintenance phase, when the responsible party or the state ensures that the remedy continues to be protective of human health and the environment. Eventually, when EPA and the state determine that no further remedial activities at the site are appropriate, EPA deletes the site from the NPL.

**Figure 1: Stages of the Remedial Process at NPL Sites**



Source: GAO analysis based upon EPA data.

The Superfund program has over 3,000 full time equivalent staff (FTE). In fiscal year 2002, EPA used about 2,500 FTEs for program staff in its regional offices, and used the remaining 644 FTEs in its headquarters. The headquarters' FTEs are spread across numerous offices, the majority in the Office of Solid Waste and Emergency Response (OSWER), the Office of Enforcement and Compliance Assurance, and the Office of Administration and Resources Management. OSWER provides policy, guidance, and direction for the Superfund program; the Office of Enforcement and Compliance Assurance assists with enforcement aspects of the Superfund program; and the Office of Administration and Resources Management assists in many aspects of managing the Superfund program, such as human resources and grants and contract management.

## The Superfund Program's Historical Revenue Source Is Dwindling While EPA Continues to Add Sites to the NPL

The balance of the Superfund trust fund available for future appropriations has decreased significantly since 1996, while EPA has continued to add sites to the NPL. The Superfund trust fund revenues from taxes, cost recoveries, interest, fines, and penalties have decreased from over \$2 billion in fiscal year 1995 to less than \$370 million in fiscal year 2002, when presented in constant 2002 dollars. Since fiscal year 2000, the Superfund program has increasingly relied on revenue from the general fund appropriations to supplement its trust fund, with general fund supplements generally growing in constant 2002 dollars from \$283 million in fiscal year 1995 to \$676 million in fiscal year 2002. Annual program expenditures, expressed in constant 2002 dollars, have remained between \$1.3 and \$1.7 billion from fiscal years 1993 to 2002. From these expenditures, remedial actions at sites on the NPL have consistently received the largest share. EPA continues to place hazardous waste sites on the NPL, adding 283 sites to the NPL from fiscal years 1993 through 2002. At the end of fiscal year 2002, there were 1,233 sites on the NPL, 265 sites had been deleted, and 62

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sites were proposed to the NPL. Of the 1,233 sites on the NPL, 21 percent were in the preconstruction stage, which is primarily study and design, 31 percent had construction activities under way, and 47 percent had completed the construction of the cleanup facility at the site. After construction of the facility is completed, a site can remain on the NPL for many years while the actual cleanup takes place. In fiscal year 2002, EPA funded more investigations and studies at NPL sites than responsible parties, while responsible parties paid for, and sometimes also performed, about half of actions related to the sites' cleanup design, construction, and maintenance of remedies.

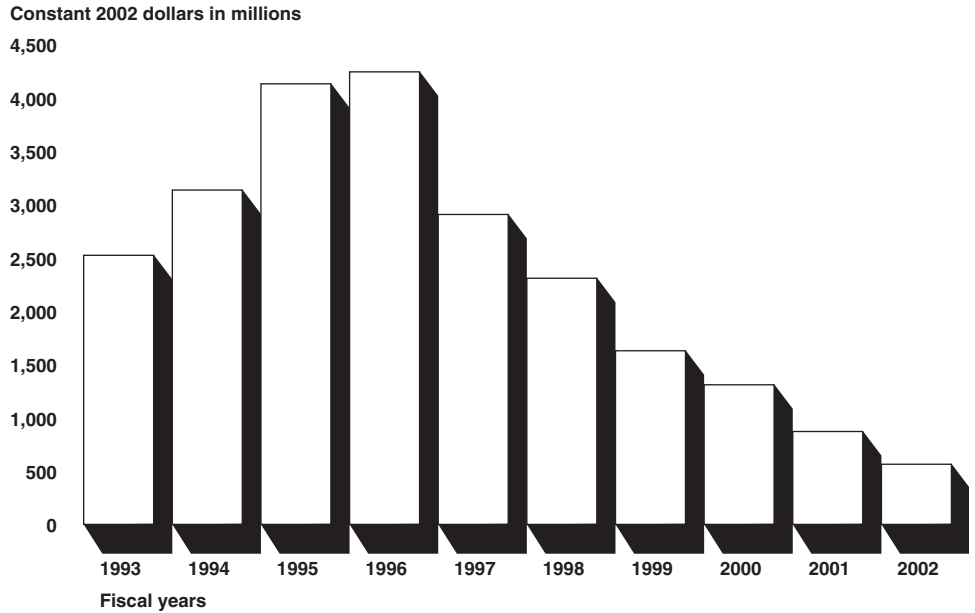
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### The Balance of the Superfund Trust Fund Available for Future Appropriations Has Decreased Significantly in Recent Years

The balance of the Superfund trust fund available for future appropriations has significantly decreased since fiscal year 1996 and at the end of fiscal year 2002 stood at \$564 million. Further, revenues into the Superfund trust fund from taxes, cost recoveries, fines, penalties, and interest have steadily decreased, from over \$2 billion in fiscal year 1995 to less than \$370 million in fiscal year 2002, when presented in constant 2002 dollars. The Superfund program's total annual appropriations from the trust fund, in constant 2002 dollars, have decreased overall from almost \$1.9 billion in fiscal year 1993 to about \$1.3 billion in fiscal year 2002. Since fiscal year 2000, the Superfund program has increasingly relied on the revenues from general fund appropriations to supplement the Superfund trust fund, with general fund supplements growing overall—in constant 2002 dollars—from \$283 million in fiscal year 1995 to \$676 million in fiscal year 2002. In addition to appropriations from the trust fund, EPA uses moneys collected from other sources to help pay for cleanups, such as funds collected in advance from responsible parties for cleanups at designated sites.

The balance of the Superfund trust fund available for future appropriations, presented in constant 2002 dollars, has decreased significantly from a high of \$4.2 billion in fiscal year 1996 to \$564 million in fiscal year 2002. Figure 2 shows the decline in this balance.

**Figure 2: The Balance of the Superfund Trust Fund Available for Future Appropriations, Fiscal Years 1993 through 2002**



Source: The President's Budget Appendix, Fiscal Years 1995 through 2004.

As discussed above, before 1995, the Superfund trust fund was largely funded by certain taxes, including excise taxes on crude oil and petroleum products and sales of certain chemicals, and an environmental tax on corporations. The trust fund continues to receive revenue from other sources, including cost recoveries, interest from investments, fines, and penalties. Table 1 shows the Superfund trust fund revenue sources, excluding general fund appropriations, from fiscal years 1993 through 2002.

**Table 1: Revenue into the Superfund Trust Fund, Fiscal Years 1993 through 2002**

Constant 2002 dollars in millions

Revenue source	Fiscal year									
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Taxes	\$2,019	\$1,685	\$1,672	\$705	\$82	\$85	\$22	\$5	\$6	\$7
Cost recoveries	214	231	285	276	341	343	338	239	205	248
Interest on unexpended balance	165	202	359	388	359	313	233	245	223	111
Fines and penalties	4	3	3	4	3	5	4	1	2	1
<b>Total</b>	<b>\$2,403</b>	<b>\$2,121</b>	<b>\$2,318</b>	<b>\$1,372</b>	<b>\$785</b>	<b>\$745</b>	<b>\$597</b>	<b>\$490</b>	<b>\$437</b>	<b>\$368</b>

Source: EPA and U.S. Department of Treasury.

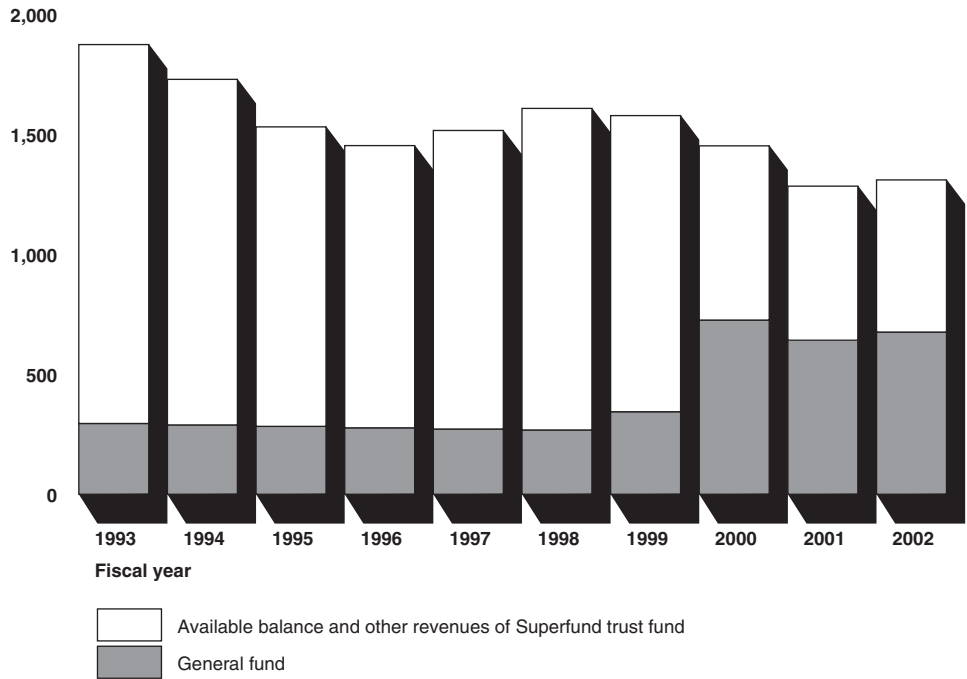
Notes: Table does not include revenues from general fund appropriations. Revenues reflected are presented on an accrual basis and may differ from the numbers presented in the President's Budget Appendix, which presents revenues on a cash basis. Totals presented in this table do not add up due to rounding.

While revenues from the taxes provided the majority of resources through fiscal year 1996, revenues from cost recoveries and interest have provided the greatest portion of the income to the Superfund trust fund since that time, excluding revenues from general fund appropriations. Cost recoveries represent amounts that EPA recovered through legal settlements with responsible parties for site cleanup costs it incurred. Interest revenues stem from the investment of the unexpended balance of the Superfund trust fund, which stood at \$3.4 billion at the end of fiscal year 2002. As shown in table 1, the trust fund continues to receive a small amount of revenue from the excise and corporate taxes that expired in 1995 as the Internal Revenue Service processes amended tax returns or settles litigation with private companies.

Each year EPA receives appropriations from the Superfund trust fund, which is supplemented by appropriations from the general fund. Until fiscal year 2000, the balance of the Superfund trust fund available for appropriations and annual revenues from taxes, cost recoveries, interest, fines, and penalties remained the primary source of appropriations for the Superfund program. Since fiscal year 2000, appropriations from the general fund have been about equal to the amount from the program's historical primary source of appropriations. Overall, general fund appropriations—in constant 2002 dollars—generally grew from \$283 million in fiscal year 1995 to \$676 million in fiscal year 2002. (See fig. 3.)

**Figure 3: Total Appropriations to the Superfund Program, Fiscal Years 1993 through 2002**

Constant 2002 dollars in millions



Source: The President's Budget Appendix, Fiscal Years 1995 through 2004.

Note: These appropriations do not include spending authority for offsetting collections.

Apart from the annual appropriation from the Superfund trust fund, EPA collects funds from other sources to pay for the activities of the Superfund program. These funds, called offsetting collections, are deposited into the trust fund but are not subject to the annual appropriation process. The largest source of these collections is payments by responsible parties as part of settlement agreements to fund response actions at specific sites. These responsible parties typically are unable or unwilling to perform the response action. EPA uses these funds to help finance site cleanups in accordance with the terms of the settlement agreements. In fiscal year 2002, EPA collected about \$130 million from this source. Other sources of offsetting collections include states, which pay a small portion of the cleanup costs at sites, and other federal agencies, which pay for services provided by EPA. The total amount collected from these additional sources in fiscal year 2002 was about \$40 million.

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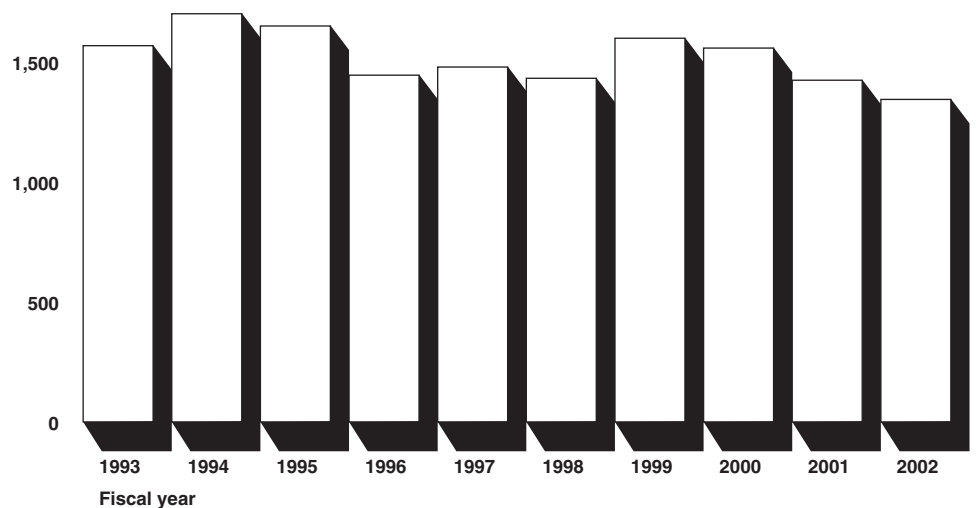
## Actions at NPL Sites Consume the Largest Share of Program Expenditures

During fiscal years 1993 through 2002, in constant 2002 dollars, EPA's annual program expenditures remained between \$1.3 and \$1.7 billion.<sup>2</sup> However, EPA's Superfund program expenditures steadily decreased by \$255 million from fiscal years 1999 through 2002. In responding to this report, EPA noted that this decrease followed a \$100 million reduction to the Superfund enacted appropriation during fiscal year 2000 and subsequent years.

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**Figure 4: EPA's Superfund Program Expenditures, Fiscal Years 1993 through 2002**

Constant 2002 dollars in millions  
2,000



Source: EPA data.

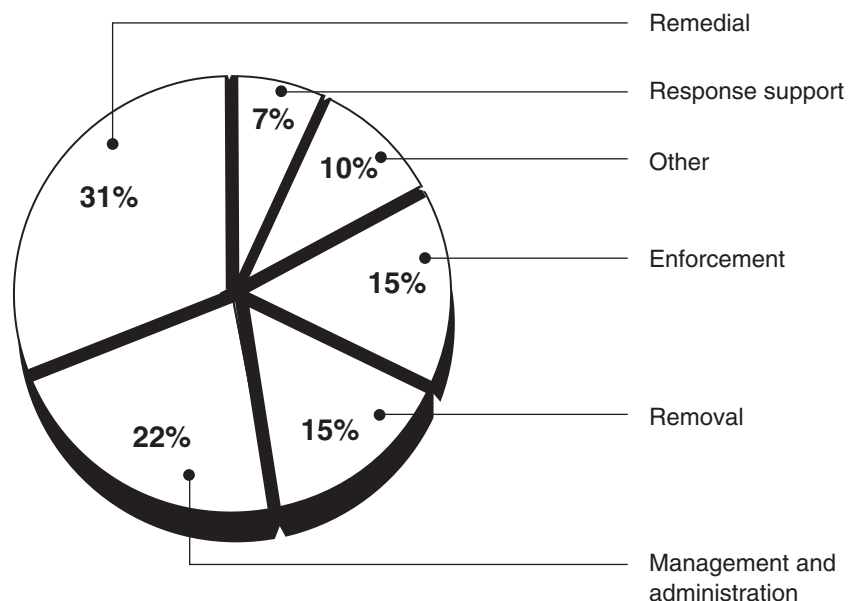
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<sup>2</sup>Program expenditures do not include transfers to the Agency for Toxic Substances and Disease Registry (ATSDR), the National Institute for Environmental Health Science (NIEHS), and EPA's Inspector General and Office of Research and Development (ORD). In fiscal year 2002, ATSDR, an agency of the Department of Health and Human Services, received \$85 million to assist in assessments or consultations at hazardous waste sites. NIEHS has not received an allocation from the Superfund program since fiscal year 2000. EPA transferred approximately \$49 million to the Inspector General and ORD combined in fiscal year 2002.



During fiscal years 1993 through 2002, remedial actions consumed the largest share of program expenditures. Remedial actions are generally costly, long-term projects that are designed to provide a permanent remedy at a complex and highly contaminated site. Management and administration expenditures consumed the second largest share of program expenditures. Figure 5 shows the percentages of EPA's Superfund program expenditures in fiscal year 2002.

**Figure 5: EPA's Superfund Program Expenditures, Fiscal Year 2002**



Source: GAO, based upon EPA's analysis of program expenditure data.

Notes: EPA's total program expenditures were \$1.34 billion in fiscal year 2002. EPA determined which activities to include under each expenditure category. "Remedial" expenditures include related activities such as investigations, remedy design, community involvement, construction, post-construction, and oversight of responsible parties. "Removal" expenditures include costs relating to removal assessments, investigations, removal construction, and oversight. "Response support" expenditures include site-specific costs related to technical assistance, technology innovation, contracts management, records management, and general support, as well as costs provided to other organizations through grants, interagency or cooperative agreements. "Management and administration" expenditures include non-site-specific costs, such as program management and budget, policy development and implementation, emergency preparedness activity, contract and information management, training, and general support. "Enforcement" expenditures include activities such as searching for and negotiating agreements with responsible parties. "Other" includes site assessment, federal facilities, and Brownfields expenditures. The Brownfields program is no longer funded by the Superfund appropriation.

## More Than 1,200 NPL Sites Require Further Cleanup Activities

Of the 1,233 sites on the NPL at the end of fiscal year 2002, 21 percent were in the preconstruction phase that largely consists of sites in study and design, 31 percent had construction activities under way, and 47 percent were in the “construction complete” stage.<sup>3</sup> The number of construction completions serves as the program’s key measure of progress for sites on the NPL. EPA continues to add sites to the NPL, adding 283 new sites during fiscal years 1993 through 2002. During that same time frame, EPA deleted 221 sites from the NPL because no further cleanup response was necessary. In fiscal year 2002, EPA funded more investigations and studies at NPL sites than responsible parties, while responsible parties paid for, and sometimes also performed, about half of the actions related to the sites’ cleanup design, construction, and maintenance of remedies.

As shown in table 2, at the end of fiscal year 2002, there were 1,233 sites on the NPL, 265 sites had been deleted, and 62 sites were proposed to the NPL.

**Table 2: Cleanup Status of Proposed, Final, and Deleted NPL Sites at the End of Fiscal Year 2002**

NPL status	Study and design phase				Construction under way	Construction completed	Deferred to another authority	Total
	Awaiting study	Study under way	Remedy selected	Design under way				
Proposed	14	30	6		11		1	62
Final	19	155	29	58	387	585		1,233
Deleted						261	4	265
<b>Total</b>	<b>33</b>	<b>185</b>	<b>35</b>	<b>58</b>	<b>398</b>	<b>846</b>	<b>5</b>	<b>1,560</b>

Source: GAO analysis of EPA data.

Of the total 1,233 NPL sites at the end of fiscal year 2002, 158 were federal facilities, sites owned or operated by a federal agency. Through fiscal year 2002, 265 NPL sites had been deleted because no further cleanup response is appropriate. According to EPA regional officials, about one fourth of the 62 sites proposed for placement on the NPL were expected to become final, while most of the cleanups at other sites continue under other authorities or agreements.

<sup>3</sup>EPA defines a construction complete site as a site where physical construction of all cleanup actions is complete, all immediate threats have been addressed, and all long-term threats are under control.

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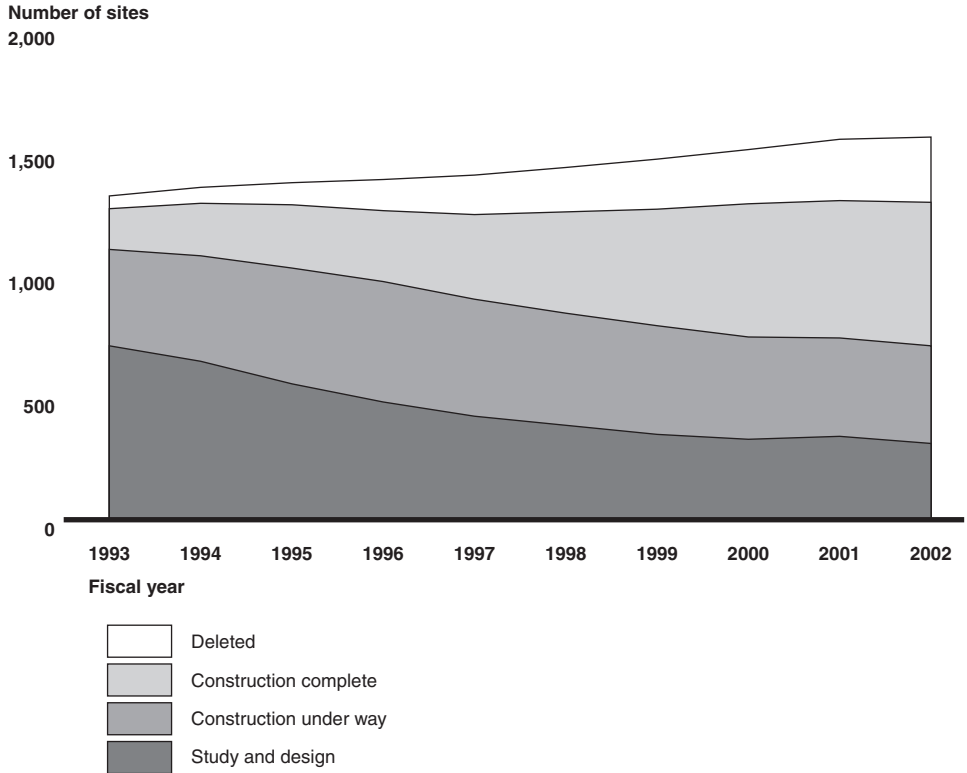
A majority of NPL sites are in the construction complete phase. However, depending on the remedy, work may continue at a site for many years after a site is deemed construction complete. A common example of this is a groundwater restoration project, where the treatment of the groundwater begins after the facility is completed. For these cleanups at sites that are financed by the Superfund program, EPA operates and maintains the cleanup facility for up to 10 years, with the state paying 10 percent of the cost, after which the site is turned over to the state to continue operation and maintenance activities.<sup>4</sup>

EPA typically adds new sites to the NPL each year and finalized 283 sites from fiscal years 1993 through 2002. During this time period, EPA deleted 221 sites when no further response was appropriate. Although more sites have been finalized on the NPL than deleted throughout these fiscal years, the overall number of sites on the NPL remained relatively steady. While the number of sites reaching the construction complete phase grew, and the number of sites in study and design decreased, the number of sites in the construction underway phase remained relatively steady. At the end of fiscal year 2002, approximately half of the NPL sites were still in study and design or had construction under way. Figure 6 demonstrates the overall growth in the NPL and the number of sites that have reached the construction complete phase.

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<sup>4</sup>For funding purposes, CERCLA classifies activities during this 10-year period, which EPA calls "long-term response actions," as part of the cleanup, not as operation and maintenance.

**Figure 6: Cleanup Status of Proposed, Final, and Deleted NPL Sites, Fiscal Years 1993 through 2002**



Source: GAO analysis of EPA data.

Notes: We verified and corrected data only for fiscal year 2002. Deleted sites include sites deferred to another authority. Study and design sites include sites that are awaiting study, have study under way, have had a remedy selected, or have design under way.

In responding to this report, EPA noted that figure 6 does not reflect a backlog of unfunded projects that are ready to begin construction. EPA also responded that, in their opinion, projects currently in or about to enter construction tend to be larger, more complex, and more expensive than those of 5 to 10 years ago. According to EPA, these factors led to the Administration's decision to request a \$150 million increase for Superfund construction in the fiscal year 2004 President's budget request.

Although the law allows EPA to pay for the cleanup at a site and use enforcement actions to recover the cleanup costs, responsible parties frequently cooperate with EPA and conduct the cleanup under EPA oversight. In such cases, the responsible party pays for all or part of the cleanup. According to EPA, responsible party involvement in the program remains strong, and the total value of responsible party commitments since the inception of the program exceeds \$20 billion.<sup>5</sup> The actual dollar amount that responsible parties expend for site cleanups is unknown because the parties are not required to publicly report either the cleanup or any related transaction costs they incur. However, EPA tracks the participant—EPA, the responsible party, a federal agency, or in some limited cases, the state—leading a cleanup action at a site and indicates whether the participant is providing a majority of the funding for the action. For example, if a remedial action is identified as a Superfund lead action, EPA uses annual Superfund appropriations to conduct the work and pay for the remedial action. Over the course of a cleanup, however, a variety of participants may take the lead on different actions. Table 3 demonstrates the percentage of actions led by EPA, a responsible party, or another participant.

**Table 3: Percentage of Ongoing Actions at NPL Sites Led by Various Entities, Fiscal Year 2002**

Entity leading action	Preconstruction		Construction	Post-construction	
	Site inspection	Remedial investigation and study	Remedial design	Remedial action	Operation and maintenance <sup>a</sup>
EPA - Superfund	100	27	36	22	18
Responsible party	0	17	39	45	67
Other federal agency	0	54	24	31	10
Other	0	2	0	2	5

Source: GAO analysis of EPA data.

Notes: This presentation of lead data includes all actions that were ongoing at some point during fiscal year 2002. EPA typically presents lead data as a percentage of remedial actions that start in a

<sup>5</sup>Commitments include the value of cost recoveries and EPA's estimate of the value of the cleanup work that responsible parties have agreed to perform.

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designated fiscal year. In addition, EPA includes actions at Superfund alternative sites but does not include actions at federal facility sites in the percentages.

<sup>a</sup>Operation and maintenance activities protect the integrity of the selected remedy for a site. According to an EPA official, all operation and maintenance should be led by the responsible party or state and any operation and maintenance activity identified as led by EPA is most likely an error.

In fiscal year 2002, EPA took the lead on more actions than responsible parties in the earlier stages of the cleanup process, whereas responsible parties took the lead more often in the later stages of the cleanup, specifically on remedial actions and during operation and maintenance. However, EPA still pays for oversight of the responsible party's cleanup activities when the responsible party primarily finances an action; and in some limited cases EPA reimburses the responsible party for some or all of the cleanup work. Other lead participants include a responsible party leading an action under a state program; EPA, a state, or tribe conducting a cleanup using a responsible party's funds; or a state with a state cleanup program that does not use Superfund dollars.

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## EPA Considers Many Factors in Selecting Sites for the NPL

EPA uses its Hazard Ranking System to assess the hazards that a site poses to human health and the environment to determine a site's eligibility for placement on the NPL. After a site's eligibility is determined, EPA regions then consider many other factors in selecting the sites to submit to EPA headquarters for proposal to the NPL. The more prominent of these factors considered are the availability of alternative federal or state programs that could be used to clean up the site, the status of responsible parties associated with the sites, and the cost and complexity of the cleanup. State cleanup programs serve as an alternative to the Superfund program and are the approach preferred by most of the state officials that we interviewed, many of whom believed state cleanups are faster. However, state cleanup programs generally present a feasible alternative only when a viable and cooperative responsible party has been identified to fund and perform the cleanup. According to EPA regional officials, at least 42 of the 54 sites proposed to the NPL in fiscal years 2001 and 2002 either did not have a viable and cooperative responsible party or were too costly or complex for states to address.

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## EPA Uses Its Hazard Ranking System as the Principal Mechanism for Listing Sites

EPA uses the Hazard Ranking System as its principal mechanism for determining the eligibility of sites for placement on the NPL, accounting for 1,506 of the 1,560 sites that were proposed or finalized on the NPL through fiscal year 2002. The ranking system is a numerically based screening system that uses information from initial, limited investigations to assess

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the relative potential of sites to pose a threat to human health or the environment. Using a structured analysis approach to scoring sites, the ranking system assigns numerical values to factors that relate to risk-based conditions at the site. The factors considered are grouped into three categories: (1) the likelihood that a site has released or has the potential to release hazardous substances into the environment; (2) the characteristics of the waste; and (3) the people or sensitive environments affected by the release. The site inspection provides the data necessary to score the site according to the Hazard Ranking System. Sites that score at least 28.5 on the ranking system are eligible for listing on the NPL. Because the ranking system scores are based on initial, limited investigations, they are only used to determine the eligibility of sites for listing on the NPL. Scores are not used to prioritize among sites that qualify for the NPL and do not determine priority in funding cleanup actions. More detailed studies, following the listing, are needed to determine the extent of the contamination and the appropriate response for particular sites.

Hazardous waste sites can also qualify for the NPL by means of state or territorial designation or by meeting a set of three criteria. Each state and U.S. territory is permitted a one-time opportunity to designate a site for placement on the NPL. Through fiscal year 2002, 37 states and four territories had designated sites for addition to the NPL. A site may also be added to the NPL when it meets three criteria: (1) the Department of Health and Human Services' Agency for Toxic Substances and Disease Registry has issued a health advisory that recommends individuals leave the area of the site, (2) EPA determines the site poses a significant threat to public health, and (3) EPA anticipates that using its remedial authority will be more cost-effective than using its removal authority. Only 13 sites have been added to the NPL through this mechanism.

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### EPA Considers Alternative Programs, Availability of Responsible Parties, and the Cost and Complexity of the Sites

Achieving the minimum hazard ranking score of 28.5 to qualify for the NPL does not guarantee a site placement on the list. EPA regions consider many factors before deciding to submit a site to EPA headquarters for proposal to the NPL. EPA and state officials told us that they consider a variety of additional factors, the most common of which are determinations of whether (1) other federal or state programs are available to cleanup the site, (2) a viable responsible party has been identified to clean up the site, and (3) the cost or complexity of the cleanup effort is likely to require federal assistance through the Superfund program.

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Many of the EPA regional and state officials we interviewed considered the NPL a “last resort” for sites that cannot be addressed under other state or federal programs. Officials of one EPA region told us, for example, that programs other than Superfund are covering about 98 percent of the hazardous waste sites discovered in that region. In response to this report, EPA headquarters officials stated that the NPL is one of a number of options for cleaning up sites and that the regions should evaluate all reasonable options and select the one that best meets the objectives for the site. EPA defers NPL listing for sites that can be cleaned up under other federal programs or authorities. For example,

- The Resource Conservation and Recovery Act (RCRA), Subtitle C, which regulates hazardous waste management. Under this program, EPA requires RCRA-regulated facilities to investigate and clean up releases of hazardous waste to the environment; and
- EPA’s Brownfields program, which is designed to assist in the assessment and cleanup of abandoned, idled, or underused industrial and commercial facilities where expansion of redevelopment is complicated by real or perceived environmental contamination.

Two EPA policies also defer NPL listing for sites that can be cleaned up under state programs. EPA’s state deferral policy establishes formal agreements between EPA and states through which EPA defers consideration of NPL listing of sites, while the state compels and oversees responsible parties’ response actions. Under this policy, response actions should be substantially similar to a response required under CERCLA. EPA’s voluntary cleanup program policy establishes agreements with states that, for sites that are cleaned up under state programs, EPA will generally assume that state activities are sufficient and the agency will not take separate removal or remedial action at sites in the state program. Both of these policies allow states to handle the cleanup of sites that may otherwise be proposed to the NPL. Hazardous waste cleanup officials in 6 of the 10 states that we interviewed indicated a preference for cleaning up hazardous waste sites under their state programs.

EPA has also established the Superfund alternative sites policy within the Superfund program that provides a framework for the agency to suspend the NPL listing process for sites that might otherwise be listed on the NPL. This policy gives the responsible parties an opportunity to enter into an agreement that commits them to clean up the site in the same manner as if it were listed on the NPL. Because less time is spent on the site-listing



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process, according to EPA, this policy helps to expedite the process of entering into settlements with responsible parties and the eventual cleanup.

In addition to performing cleanups under their own state programs, states play an important role in the cleanup of hazardous waste sites through their agreements with EPA. Many states are involved in the early phases of the cleanup process, such as preliminary assessment and site investigation. Many of these states have entered into cooperative agreements with EPA to perform this work. Appropriations laws for fiscal years 1995 and 1996 required the concurrence of the governor of the applicable state before EPA could propose a site for inclusion on the NPL. Although no longer required by appropriations language, as a matter of policy, EPA continues to request state support on the listing of sites onto the NPL. According to EPA, since 1995 EPA has proposed 203 sites to the NPL; among them, only one site was proposed over state opposition.<sup>6</sup>

EPA regional officials stated that the lack of cooperation by the party responsible for a site was a factor in 36 of the 54 sites proposed to the NPL in the last 2 fiscal years. The burden on states of funding the cleanup effort when they are unable to obtain responsible party cooperation often drives state support for listing such sites on the NPL. In some cases, site cleanup responsibility cannot be assigned to a specific party because the party is no longer in existence or is unable to pay. Cleaning up such “orphan” sites would require government funding; these cleanups may be too expensive for states to perform. In other cases, responsible parties may have been identified, but they are uncooperative or unwilling to fund the cleanup. While all states have some form of enforcement authority to compel responsible parties to fund cleanups, EPA’s enforcement powers are sometimes more compelling or applicable to the situation. For example, officials in several states stated that they had experienced difficulty when pursuing enforcement actions at sites with numerous responsible parties. Some sites, such as hazardous waste dumps, may have hundreds or even thousands of responsible parties because CERCLA defines responsible parties as the generators and transporters of hazardous waste, in addition to the owners and operators of the site.

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<sup>6</sup>The Fox River site in Wisconsin was proposed to the NPL in July 1998 but has not been finalized.

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Officials in most of the regions and states pointed to the strength of EPA's enforcement powers to compel responsible parties to cooperate with state authorities. Several officials told us that they had used the threat of NPL listing to persuade responsible parties to cooperate earlier in the process. EPA's enforcement powers include the ability to seek financial penalties against responsible parties for noncompliance, the ability to issue formal orders to the responsible parties to perform cleanups, and the liability scheme by which EPA can force one responsible party to fund the entire cleanup at a site, even if it is unclear how much of the contamination it caused. EPA's enforcement powers are sometimes referred to as a "gorilla in the closet"—states can threaten to unleash the EPA "gorilla" on recalcitrant responsible parties. A few states pointed to the value of maintaining strong EPA enforcement powers because they encourage responsible parties to cooperate with states.

Officials in many of the regions told us that the complexity and cost of sites were factors that helped them determine whether sites should be submitted to EPA headquarters for proposal to the NPL. Of the 54 sites proposed in the last 2 fiscal years, regional officials described 25 percent of them as either complex or costly, or both. Officials in one region described a site where contamination had leaked about 500 feet out into a major river and spread through approximately 15 feet of sediment, making cleanup of the site complex. According to a recent study, while 48 states and Puerto Rico have funds that can be used for the cleanup of hazardous waste sites, 31 of the 41 states that provided data had relatively small fund balances (under \$25 million), making it difficult for states to clean up expensive sites.<sup>7</sup> In addition, the study found that states' cleanup fund balances have been declining since 1990. Without adequate funding to cleanup the more expensive sites, state cleanup programs generally present a feasible alternative to NPL listing only when a viable and cooperative responsible party has been identified to fund or perform the cleanup.

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<sup>7</sup>Environmental Law Institute, *An Analysis of State Superfund Programs: 50-State Study, 2001 Update*, (Washington, D.C.: 2002). Data is current as of the end of the state's 2000 fiscal year (June 30, 2000, for most states).

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## The Superfund Program Faces Numerous Future Fiscal Challenges

The need for federal cleanup funds to address sites without alternative funding sources may grow in coming years, even as EPA predicts the program's historical source of funding will be depleted at the end of fiscal year 2003. A 2001 study estimated that the cost of implementing the program under then-current law would total \$15 billion for the 10 years ending in fiscal year 2009. The number of sites whose cleanup cannot be funded by responsible parties or states could increase because an increase in bankruptcies would lead to more sites without viable responsible parties and states face budget problems that will curtail their already limited ability to pay for cleanups at sites that lack viable responsible parties. Without responsible parties to fund remediation costs at hazardous waste sites and with states' capacity curtailed, federal funding would likely be sought to perform any cleanup that EPA proposed to do. However, EPA officials expect that the balance of the Superfund trust fund available for future appropriations will be depleted at the end of fiscal year 2003. EPA has recently asked an advisory council for guidance on several issues affecting the Superfund program's future. Because Superfund lacks indicators to fully measure the outcomes of the program's cleanup efforts, EPA has asked the advisory council to develop criteria by which to measure the program's progress. However, it is unclear whether the advisory council will reach consensus on its recommendations; and its findings are not expected until December 2003, at the earliest.

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## The Number of Sites Without Responsible Parties or States to Fund Their Cleanup Is Expected to Rise

The number of sites that have no identifiable nonfederal source to fund their cleanup is growing, and several factors indicate the potential for additional growth in the future. Responsible parties and EPA lead most actions at NPL sites. According to EPA, responsible parties have funded about 70 percent of the remedial actions begun at sites other than federal facilities in the last 3 fiscal years.<sup>8</sup> Officials in 7 of the 10 EPA regions, however, have either observed an increase in the number of sites without viable responsible parties, or expect such an increase in the future. Officials in one region, for example, told us that the proportion of responsible party-led remedial actions in their region had decreased over the last 10 years, from about 70 percent to about 50 percent currently. Officials in all regions pointed out factors that could lead to an increase in

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<sup>8</sup>EPA tracks lead statistics based on new starts of remedial actions at sites other than federal facilities by fiscal year. Federal facilities, sites whose cleanup is led by federal agencies, make up about 13 percent of NPL sites.

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sites in the coming years whose cleanup cannot be funded by responsible parties or states, including (1) the states' preference to work directly with viable responsible parties, which leaves fewer sites with viable responsible parties eligible for proposal to the NPL; (2) an increase in sites that lack viable responsible parties due to bankruptcies; and (3) fiscal constraints on states' capacity to clean up sites on their own. For example, officials in one region mentioned that difficult economic times would likely contribute to an increase in bankrupt facilities at the same time that states are experiencing budget shortfalls. Without responsible parties to fund remediation costs at hazardous waste sites and with states' capacity curtailed, any cleanup at these sites would have to be funded with federal funds.

The states' preference to work directly with responsible parties makes sites with viable and cooperative responsible parties less likely to be listed on the NPL, increasing the potential need for federal funds if any of the remaining sites that are added to the NPL are to be cleaned up, since these sites may lack viable responsible parties. When Congress enacted the federal Superfund program in 1980 at least 21 states did not have cleanup statutes that provided them with enforcement authorities. As of 2001, all states had laws that provide them with some form of enforcement authority, and 48 states had statutory authority for conducting voluntary cleanup programs, according to a study by the Environmental Law Institute—an environmental research group.<sup>9</sup> Officials in most of the 10 states we contacted agreed that they preferred to work with viable and cooperative responsible parties under their state program, rather than turn the sites over to the EPA for NPL listing. They provided a variety of reasons for not supporting a site's listing on the NPL, including the state's ability to perform the cleanup faster, community or political opposition to listing, and a belief that the federal process leads to more expensive cleanups. For example, one state's officials believed the state could perform a site's cleanup more quickly than EPA because, in their opinion, EPA spent too much time in the inspection and design phases. Although states may sometimes need EPA's enforcement capacity to compel responsible parties to clean up sites, states prefer working with responsible parties under their own authority whenever the parties are available, viable, and cooperative. As a result, some sites that would have been led by the responsible party under the Superfund program are addressed using state enforcement. This

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<sup>9</sup>Environmental Law Institute, *An Analysis of State Superfund Programs: 50-State Study, 2001 Update*, (Washington, D.C.: 2002).

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has the potential to increase cleanup costs to the Superfund program for any of the remaining sites that are added to the NPL, since these sites may not have viable responsible parties.

The reported increase in sites without viable responsible parties could, if EPA proposes to address the cleanup of these sites, lead to EPA requesting an increased appropriation because states cannot handle many of these orphan sites on their own. Officials in 8 of the 10 EPA regions told us that they expect more responsible parties to declare bankruptcy in the future. Officials in one region, for example, believed that more of the small, marginal industries might go bankrupt because of difficult economic times. States, however, cannot pay to clean up more expensive orphan sites on their own. According to the recent study by the Environmental Law Institute, 48 states have established cleanup funds or provided a mechanism for the state agency to pay for one or more types of cleanup activities at non-NPL sites. Among the most common sources for these state cleanup funds are appropriations from the legislature, fees charged for hazardous waste or other activities, taxes, and cost recoveries. However, most of the states that have funds to pay for orphan sites can only afford to clean up sites with lower cleanup costs. Only 13 of the states with cleanup funds spent more than \$10 million on cleanups in fiscal year 2000, according to the report.<sup>10</sup> Even in a state that was among those that spent the most on cleanups in fiscal year 2000, the state usually funds the cleanup at sites where the overall cleanup costs less than \$5 million, leaving sites that cost over \$10 million to federal authorities, according to state officials.

The potential for current state budget shortfalls to affect states' capacity to clean up orphan sites is another factor that could result in EPA increasing its request for federal cleanup funds, if EPA proposes to address the clean up of these sites. The National Governor's Association estimated in February 2003 that states' budget shortfalls were mounting—\$30 billion for 2003 and about \$82 billion in 2004. Officials in 6 of the 10 EPA regions agreed that states in their region faced fiscal problems and anticipated that shortfalls could cause problems with states' future cleanup capabilities. According to the National Governor's Association, states must reduce spending or increase taxes to offset these shortfalls in the short run. Any reductions in the budgets of state cleanup programs might decrease the

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<sup>10</sup>Only 38 states reported expenditures for the Environmental Law Institute's report; in addition, several states did not disaggregate the amounts spent on NPL and non-NPL sites.

states' ability to fund further cleanups, raising the question of whether federal funds would be provided for any potential cleanup of affected orphan sites. Officials in one region, for example, suspected the region might be asked to fund cleanup at more sites as a result of state financial problems because two of its states were implementing across-the-board percentage cuts to all state programs, including their cleanup programs.

**EPA Officials Expect The Program's Primary Funding Source To Be Depleted by the End of Fiscal Year 2003, Increasing the Need for Alternative Funding Sources**

At the same time that many EPA regional officials expect the need for federal cleanup funds to address sites without alternative funding sources to grow, the balance of the Superfund trust fund available for future appropriations—historically the program's principal source of funding—is nearly exhausted. In previous years, funds remained in this balance to carry over into the next year. However, the balance has fallen consistently since fiscal year 1996. According to EPA officials, unless EPA receives additional funds from revenue sources such as cost recoveries, the balance of the trust fund available for future appropriations will be negative at the end of fiscal year 2003, as shown in table 4.

**Table 4: Projected Balance of the Superfund Trust Fund Available for Future Appropriations, Fiscal Year 2003**

Source	Fiscal year 2003 amount (in millions)
<b>Fiscal year 2002 (actual balance)</b>	<b>\$564.0</b>
Revenues into the trust fund:	
Environmental taxes	0.0
Cost recoveries	175.0
Interest	67.0
Fines and penalties	3.0
Tax adjustments	(99.4) <sup>a</sup>
Transfer from general fund	636.4
<b>Total projected annual revenues</b>	<b>782.0</b>
<b>Total (balance and revenues)</b>	<b>1,346.0</b>
<b>Fiscal year 2003 budget authority</b>	<b>1,350.3<sup>b</sup></b>
<b>End of fiscal year 2003 (estimated balance)</b>	<b>(\$4.3)</b>

Source: GAO analysis of EPA data.

<sup>a</sup>According to an Internal Revenue Service official, companies regularly file adjustments to their corporate income taxes; according to EPA officials, however, the size of this adjustment was unexpectedly large.

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<sup>b</sup>Includes a \$77.4 million transfer to the Agency for Toxic Substances and Disease Registry (ATSDR).

If the balance of the trust fund available for future appropriations dwindles as EPA projects, no funds would be left to carry over into fiscal year 2004. Annual revenues from sources other than general fund appropriations, such as cost recoveries and interest, will be insufficient to cover cleanup costs in fiscal year 2004. To offset this decline in funds, EPA is seeking a 73 percent increase in its fiscal year 2004 budget request for general revenues—from \$632 million in fiscal year 2003 to \$1.1 billion. If the budget request is approved, for the first time in the program's history the general fund would provide a vast majority—nearly 80 percent—of the Superfund program's funding.

As part of a fiscal year 2000 appropriations bill, Congress asked Resources for the Future, an environmental research group, to conduct an independent study to estimate how much money EPA would need to implement the Superfund program from fiscal year 2000 to fiscal year 2009. Specifically, Congress wanted researchers to examine the costs of cleaning up sites already on the NPL, cleaning up sites that would be added to the NPL through fiscal year 2009, conducting removal actions, performing 5-year reviews, implementing long-term response actions, and the various activities associated with administering the program. In its 2001 report, Resources for the Future estimated the future costs of implementing the program under then-current law.<sup>11</sup> Researchers estimated that annual program costs would most likely remain above the fiscal year 1999 level until fiscal year 2006, and would decrease 14 percent by fiscal year 2009. Resources for the Future concluded that the Superfund program would cost about \$15 billion over the 10 years ending in fiscal year 2009, according to the authors' best estimate of the likely future cost of the program under then-current law and policies, and would likely not experience a dramatic decrease in its annual costs.

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<sup>11</sup>Probst, Katherine N. and Konisky, David M., *Superfund's Future: What Will It Cost? A report to Congress*, Resources for the Future (Washington, D.C.: 2001). This study focused on costs and did not explicitly discuss cost-effectiveness or benefit considerations.

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## EPA Is Taking Steps to Address Program Challenges

EPA has taken steps to address several uncertainties surrounding the program's future viability. EPA has asked the National Advisory Council for Environmental Policy and Technology<sup>12</sup> to set up a subcommittee to address several Superfund programwide issues, including some that will affect the program's future. EPA charged the subcommittee, first convened in June 2002, with addressing questions related to the role of the NPL, the role of Superfund at so-called "mega sites,"<sup>13</sup> and measurements of program progress. According to the subcommittee's charge, the overall intent of this effort is to assist in identifying the future direction of the Superfund program in the context of other federal and state waste- and site-cleanup programs. EPA officials have stated that the results of the subcommittee's work will be important in setting the future course of the program. The subcommittee is scheduled to report its findings to the full advisory council for its consideration in December 2003, before issuing the report to EPA. While the subcommittee's findings are still uncertain, some of its members and EPA officials have stated that the subcommittee may not reach a consensus on specific recommendations, in which case it would present a discussion of the different opinions of subcommittee members.

EPA underscored the limitations of its current means of measuring program performance when it asked the National Advisory Council for Environmental Policy and Technology subcommittee to address measures of the Superfund program's progress. Since 1995, EPA has used construction completions as the program's key measure of progress for sites on the NPL. As EPA pointed out to the subcommittee, however, construction completions suffer from several shortcomings. Construction completions neither measure nor characterize the impacts of cleanup efforts on human health and the environment. In addition, construction completions do not correlate as milestones for non-NPL cleanups or with efforts at other hazardous waste cleanups. EPA implemented two new

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<sup>12</sup>EPA established the National Advisory Council for Environmental Policy and Technology in 1988 to provide independent advice to the EPA Administrator on a broad range of environmental policy, technology, and management issues. Council members include senior leaders and experts who represent academia, business and industry, community and environmental advocacy groups, environmental justice organizations, professional organizations, and state, local, and tribal governments.

<sup>13</sup>Defined by the Resources for the Future study as sites whose cleanup costs exceed \$50 million. The National Advisory Council for Environmental Policy and Technology subcommittee has broadened the definition of mega sites to include large, complex, and other types of sites.



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environmental indicators in fiscal year 2003 to measure human exposures under control and migration of contaminated ground water under control at NPL sites. However, EPA acknowledges that there are still few cross-program metrics to capture comprehensive program outcomes. As EPA states, this shortcoming prevents the agency from communicating the outcomes of its work at hazardous waste sites to the public, Congress, states, and the regulated community.

In 2002, EPA implemented a new process related to the addition of sites to the NPL designed to maintain a stable level of costs to the program by considering the costs, risk, urgency, and other aspects of new NPL listings. EPA's new process provided an additional layer of review to select among sites submitted for proposal to the NPL by EPA regions. As part of this process, EPA officials used two criteria—risk and urgency—to divide the 30 sites submitted for proposal by regions into five tiers. EPA also, for the first time at this stage in the listing process, considered the costs to clean up the sites and the timing of those costs, according to EPA officials. Officials used the regions' estimates of site costs to evaluate the overall costs of listing different groups of sites, with an understanding that these preliminary estimates are highly uncertain. In addition, EPA considered information on state, tribal, community, and congressional delegation support for listing the site; whether cleanup of the site was likely to be federally funded or funded by the responsible party; and whether any environmental justice or tribal issues were associated with the site. EPA staff also considered enforcement concerns in deciding which sites to recommend to the Assistant Administrator for Solid Waste and Emergency Response for proposal. Whereas EPA approved almost all sites that the regions submitted for proposed placement on the NPL in the past, the April 30, 2003, proposed rule included only 14 of the 30 sites submitted.<sup>14</sup> According to EPA, this new process was at least in part a response to concerns that EPA was listing sites without foreseeable funding to start the cleanup. EPA officials also told us that the program has carried a backlog of unfunded construction projects since fiscal year 2001. The process used to select this round of proposals has not yet been formalized and thus is subject to change before the next round of proposals expected in September 2003, according to EPA.

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<sup>14</sup>EPA officials emphasized that no final decision had been made on the 16 sites not proposed in this round.

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In 2002, EPA had also issued a draft directive to consider, among other things, the costs of sites before listing them, but decided not to formalize this guidance. Representatives of the Association of State and Territorial Solid Waste Management Officials objected to EPA's draft directive stating their belief that, if warranted, sites should be listed on the NPL regardless of the program's available funding. They further noted that listing only those sites that could be funded gave the false impression that all necessary site cleanups were under way. Although the process that EPA used in the most recent round of listings was driven by the same concerns as the draft directive, an EPA official told us that the process was not necessarily an outgrowth of the draft directive.

EPA officials are also concerned about two aspects of the long-term stewardship of sites: the burden that the operation and maintenance of sites has on states and the monitoring and enforcement of institutional controls. According to several EPA and state officials, states are increasingly concerned about the turnover of sites with federally funded remedial actions to the states for operation and maintenance. Current budget problems exacerbate these concerns, according to EPA. EPA regional officials reported that almost all states had met their obligations for the operation and maintenance of sites in the past. EPA regions predicted that 28 sites that have been in federally funded, long-term response action could be transferred to states for operation and maintenance by the end of 2005. Median annual costs for the operation and maintenance of these sites could reach \$172,500 per site, according to EPA regional officials' estimates. To address the issue of operation and maintenance, EPA is conducting an initiative to optimize the performance of federally funded groundwater treatment facilities at sites across the country. The goal of the initiative is to ensure that these treatment facilities are working as effectively as possible before they are turned over to states for operation and maintenance. The EPA Inspector General found that this study has produced valuable information on the cost and performance of these groundwater treatment facilities and has resulted in a number of recommendations.

EPA is also concerned about the monitoring and enforcement of institutional controls following a site's cleanup. According to EPA, institutional controls include administrative or legal controls to minimize the potential for human exposure to contamination by limiting land or resource use. For example, a local government could use a zoning restriction to prohibit residential development in an area of contamination. Other examples of institutional controls include easements, covenants,

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well-drilling prohibitions, and special building permit requirements. According to EPA, however, institutional controls have certain limitations. For example, the enforcement of institutional controls, such as local permits or groundwater use restrictions, depends on the willingness and capability of the local government entity to monitor compliance and take enforcement action. In addition, because institutional controls such as consent decrees are not binding on subsequent owners of sites, the transfer or sale of a site can lead to the erosion of these institutional controls. In response to concerns about maintaining institutional controls, EPA is developing an information network to centralize the tracking of institutional controls so that interested parties would be able to identify institutional controls at any site.

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## Conclusions

As the Superfund program continues to add sites to the NPL and funding sources shift toward general revenues, the effect of EPA's actions to address future program challenges remains uncertain. While the Superfund program has implemented indicators to gauge the impacts of its efforts on human health and the environment, EPA has acknowledged the limitations of its current means of measuring program performance and agrees that this shortcoming prevents the agency from communicating the outcomes of its work at hazardous waste sites to the public, Congress, states, and the regulated community. Although the National Advisory Council for Environmental Policy and Technology subcommittee is expected to recommend various policy alternatives to EPA regarding the Superfund program, the subcommittee is unlikely to complete its final report until December 2003, at the earliest. The group's findings, including how EPA should measure program performance, are as yet uncertain. Upon receipt of the advisory council's report, EPA will then have to decide what actions to take to address future program challenges. Given the program's limited funding, EPA could use performance indicators to help evaluate, prioritize, and serve as the basis for making funding decisions. If successfully implemented for the Superfund program, establishing these measures would also help EPA and the Congress make the difficult funding, policy, and program decisions that the current budget environment demands. In doing so, EPA will have an opportunity to make fundamental changes to improve the management of the Superfund program.

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## Recommendation for Executive Action

In considering changes to the program to address future challenges associated with the Superfund program's fiscal uncertainty, we recommend that the Administrator, EPA, develop indicators that can be used to measure program performance.

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## Agency Comments

We provided EPA with a draft of this report for review and comment. While EPA generally agreed with this report's findings and recommendation, it provided a number of comments and clarifications, which we have incorporated into this report as appropriate. EPA pointed out that it is actively working on indicators to fully measure program performance concurrent with the National Advisory Council for Environmental Policy and Technology process. The agency specifically mentioned two new Superfund environmental indicators implemented during fiscal year 2003: human exposure under control and migration of contaminated ground water under control. We acknowledge that the agency is actively working in this area concurrent with the advisory council process, and we have revised this report to include the agency's recent implementation of these environmental indicators. In responding to our draft, EPA also commented that, to date, annual appropriations for the program have remained relatively steady and have been largely independent of the trust fund balance. This report does not infer any connection between the Superfund trust fund balance and total annual appropriations for the program. EPA provided written comments, which appear in appendix II.

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As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution of it until 30 days from the date of this letter. At that time, we will send copies of this report to the appropriate congressional committees; the Administrator, EPA; and other interested parties. We will also make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

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If you or your staff have any questions, please call me at (202) 512-3841. Key contributors to this report were Barbara Johnson, Richard Johnson, Jerry Laudermilk, Jonathan S. McMurray, Judy Pagano, Peg Reese, Nico Sloss, Anne Stevens, and Tatiana Winger.

Sincerely yours,

A handwritten signature in black ink that reads "John B. Stephenson". The signature is written in a cursive style with a long horizontal flourish extending to the right.

John B. Stephenson  
Director, Natural Resources  
and Environment

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# Objectives, Scope, and Methodology

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The objectives of this review were to examine (1) the current status of the Superfund program, (2) the factors guiding the Environmental Protection Agency's (EPA) selection of sites to be placed on the National Priorities List (NPL), and (3) the program's future outlook. To address these objectives, we discussed the Superfund program with officials in EPA headquarters, the 10 EPA regions, and 10 states. In order to gain a balance of views from states, we selected a nonprobability sample of 10 states, consisting of the 5 states that had the most sites proposed to the NPL in the last 5 years (California, Florida, New Jersey, New York, and Texas) and the 5 states that had no sites proposed in the past 10 years (Arizona, Delaware, North Dakota, Nevada, and Wyoming). The 5 states that have had the most sites proposed to the NPL over the last 5 years accounted for about 44 percent of the 164 sites proposed during that time. In addition to the states' overall perspective on the Superfund program, we interviewed officials in states that had no sites proposed in 10 years to determine what issues, if any, states had with supporting the listing of sites on the NPL. We also discussed the Superfund program with officials in the Association of State and Territorial Solid Waste Management Officials, the American Chemistry Council, the American Petroleum Institute, Resources for the Future, and the Environmental Law Institute.

To examine the status of the Superfund program, we reviewed the status of the 1,560 hazardous waste sites that have been proposed and/or listed on the NPL since 1980, the program's historical funding and expenditure data, and EPA's use of human capital resources to administer the Superfund program. We obtained actual dollar figures for fiscal years 1993 through 2002 from EPA and the President's Budget Appendixes for fiscal years 1995 through 2004. All program funding and expenditure data are presented in constant 2002 dollars. In our review of cleanup actions, we focused on remedial actions, which are generally costly and can take a long time to complete.

To identify the current cleanup status of NPL sites, we obtained data from EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)—a computerized inventory of potential hazardous waste sites that contains national site assessment, removal, remedial, enforcement, and financial information for over 44,000 sites. CERCLIS is a relational database system that uses client-server architecture (each computer or process on the network is either a client or server), installed on separate local area networks at EPA headquarters and all 10 regional Superfund program offices, and is used by more than 1,900 EPA staff. A September 30, 2002, report issued by EPA Inspector General

found that over 40 percent of CERCLIS data they reviewed were inaccurate or not adequately supported. The Inspector General's review focused on site actions, which it defined as activities that have taken place at a site, such as site inspections, removals, studies, potentially responsible parties searches, records of decisions, and remedial actions. As a result of its review, the Inspector General concluded that CERCLIS could not be relied upon to provide error-free data to system users.

For our review, we verified CERCLIS data related to NPL sites and their overall cleanup status as of the end of fiscal year 2002, but did not verify detailed site action data for all sites in CERCLIS. To address the reliability of CERCLIS data used in our review, we met with Inspector General staff to review the nature of the errors discussed in their report. According to Inspector General staff, the reliability of CERCLIS data was more of a concern at the action level rather than the site level. They indicated that using data related only to NPL sites and their cleanup status would decrease concerns about data reliability, especially if we confirmed the data with EPA regions. As a result, we checked certain CERCLIS data fields for all 1,560 proposed, final, or deleted NPL sites with staff in each region, as appropriate, including the sites' NPL status (whether the site was currently proposed to the NPL, final on the NPL, or had been deleted) and the status of cleanup at the site (whether the site was in the study and design phase, construction was under way, or construction was complete). Regions found no errors with sites' NPL status, but found errors in the status of cleanup for approximately 1 percent of NPL sites. We corrected the CERCLIS site-level data that we used for our analysis to reflect regions' changes. After taking these additional steps, we determined that the CERCLIS site-level data were sufficiently reliable for the purposes of this report. To present information regarding which participants were leading cleanup actions at sites, we used action-level data provided by EPA without further verification.

For our analysis of the historical cleanup status of sites on the NPL from fiscal years 1993 to 2002, we relied on fiscal-year-end status data provided by EPA. In addition, to identify construction complete sites that had been deleted, we used data provided by EPA that showed the deletion dates for NPL sites. We asked regions to verify the dates that sites transitioned to deleted status to the extent possible. However, to minimize the burden on EPA regional staff, we did not ask that they check each date against source documents.

To assess the NPL listing process, we reviewed EPA's minimum eligibility criteria, policies, guidance, and recent practices, and examined the extent of EPA's coordination with states. We analyzed available data on state hazardous waste cleanup programs, focusing on the coordination between federal and state programs to address current and future Superfund sites. We also discussed the NPL listing process and factors guiding EPA's selection of sites to be placed on the NPL with officials in EPA headquarters, EPA regions, and states.

To assess the program's future fiscal outlook, we examined the effect of the expiration of the taxing authority, identified and reviewed estimates of future funding requirements and workload projections, and examined EPA's current efforts to address future program needs. In addition, we discussed issues likely to affect the Superfund program in the near future, such as program funding and NPL-listing trends, with officials from EPA, states, industry associations, and environmental research groups. We did not examine future challenges associated with benefits, health risks, or cleanup standards.

We conducted our work between August 2002 and July 2003 in accordance with generally accepted government auditing standards.



# Comments from the Environmental Protection Agency

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

JUL 18 2003

OFFICE OF  
SOLID WASTE AND EMERGENCY  
RESPONSE

John B. Stephenson  
Director, Natural Resources and Environment  
U.S. General Accounting Office  
Washington, D.C. 20548

Dear Mr. Stephenson:

Thank you for the opportunity to review and comment on the draft report entitled "Superfund Program - Current Status and Future Fiscal Challenges." We have reviewed the report and have the following comments.

- The conclusion of the report states that Superfund lacks indicators to fully measure program performance and implies that the Agency is waiting on the National Advisory Council for Environmental Policy and Technology (NACEPT) to suggest new measures. This conclusion is misleading, and in fact, EPA is actively working in this area concurrent with the NACEPT process. Two new Superfund environmental indicators were implemented during FY 2003: human exposures under control and migration of contaminated ground water under control. Baselines for these indicators were established during FY 2002 and targets were developed for FY 2003. The proposed draft of the Agency strategic plan for FY 2004 through 2008 includes new measures related to the redevelopment of Superfund sites following cleanup. We expect these measures to be in place during FY 2004. Finally, we are continuing to develop measures to assess human health and environmental exposure reduction progress at various points of the pipeline. The Agency has worked closely with the NACEPT subgroup, exchanging ideas and soliciting comments on proposed performance measures for the program.
- The GAO report discusses at length the potential impact on the program of the declining Superfund Trust Fund balance. To date however, annual appropriations for the program have remained in the \$1.3 to \$1.5 billion range, and have been largely independent of the Trust Fund balance. The report points to a decrease in annual program expenditures of \$255 million from fiscal years 1999 through 2002, but does not acknowledge that this followed a \$100 million reduction to the Superfund enacted appropriation during FY 2000 and subsequent years.
- The report speculates on a potential reduction in potential responsible party (PRP) involvement in funding or performing cleanups at National Priorities List (NPL) sites,

See comment 1.

See comment 2.

See comment 3.

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**Appendix II  
Comments from the Environmental  
Protection Agency**

and further speculates that this could lead to a request for additional resources to finance the program. To date, PRP involvement in the program remains strong. PRP's agreed to perform over 70% of the construction project starts during FY 2002. The total value of PRP commitments since the inception of the program exceeds \$20 billion.

Now on p. 16.

See comment 4.

- Figure 6 (page 17) of the report represents the number of sites at various stages of program activity from 1993 to the present. As the report points out, the number of sites in the construction underway phase remained relatively steady. The report text draws no conclusion regarding this measure; however, the reader could infer that the resource demand associated with construction also remains relatively stable. What is not reflected in the figure, but is an important fact in the status of the program, is the backlog of unfunded projects that are ready to begin construction, as well as the changing nature of the projects underway in FY 2003 versus FY 1993. The projects currently in, or about to enter, the construction phase of the program tend to be larger, more complex and more expensive than those of 5 to 10 years ago. This dynamic is creating a significant challenge for the program and led to the Administration's decision to request a \$150 million increase for Superfund construction in the FY 2004 President's Budget request.

Now on p. 20.

See comment 5.

- The comment on page 21 of the report -- that many of the EPA regional and State officials interviewed for the report considered the NPL a last resort for sites that cannot be addressed under other programs -- does not accurately reflect Agency policy. EPA believes that the NPL is one of a number of options for cleaning up sites and that the regions should evaluate all reasonable options and select the one which best meets the objectives for the site.

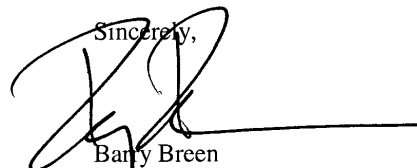
Now on p. 23.

See comment 6.

- The comment on page 25 of the report states that "Officials in one region, for example, told us that the proportion of responsible party-led remedial actions in their region had decreased over the last ten years from about 70 percent to about 50 percent currently." EPA, however, reports this percentage on a national rather than a Regional basis; so, a decrease in one Region may be offset by an increase in another Region.

If you have any questions about these comments, please contact Paul Nadeau at (703) 603-8794 or Johnsie Webster, OSWER Audit Liaison, at (202) 566-1912.

Sincerely,



Barry Breen  
Acting Assistant Administrator

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The following are GAO's comments on the EPA letter dated July 18, 2003.

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## GAO Comments

1. We revised this report to include the agency's recent implementation of environmental indicators.
2. This report presents total appropriations to the program from fiscal year 1993 to 2002 in constant 2002 dollars. This report draws no conclusions about connections between the Superfund trust fund balance and total annual appropriations.
3. We revised this report to include the agency's statement regarding the value of responsible party commitments since the inception of the program.
4. We included the agency's statements regarding the backlog of unfunded projects, the changing nature of the projects under way, and the increased request for Superfund construction funding in this report.
5. We revised this report to reflect EPA headquarters' position on the proper use of the NPL.
6. We acknowledge that EPA currently reports responsible party participation in cleanups on a national rather than a regional basis. As this report states, officials in 7 of the 10 EPA regions have either observed an increase in the number of sites without viable responsible parties or expect such an increase in the future. The comment indicated by EPA functions as an example in this report.

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