

GAO

Testimony

Before the Committee on  
Environment and Public Works  
U.S. Senate

---

Hearing Held at 10 a.m. EDT  
April 24, 1996  
Statement Submitted  
May 1, 1996

SUPERFUND

Implications of Key  
Reauthorization Issues

Statement for the Record by  
Peter F. Guerrero,  
Director, Environmental Protection Issues,  
Resources, Community, and Economic  
Development Division



---

---

---

Mr. Chairman and Members of the Committee:

We are pleased to present our views, as requested, on the Accelerated Cleanup and Environmental Restoration Act of 1996 (S. 1285), which would reauthorize and significantly change the Superfund program. Under the current Superfund law, relatively few of the nation's worst hazardous waste sites have been completely cleaned up. Moreover, the estimated costs of the cleanups have risen at a time when the government's resources are limited. The Environmental Protection Agency (EPA) has initiated a number of administrative reforms to improve the program's effectiveness, but more fundamental legislative reforms are needed.

Our views on some of the proposed bill's potential implications for the Superfund program are based on our recent work assessing how well EPA and other federal agencies are implementing the current program. We will comment on six major changes that S. 1285 would make to that program. Specifically, it would (1) increase the role of risk in decisions about whether and how to clean up waste sites, (2) expand the range of alternatives available to address wastes at sites, (3) transfer some of the federal government's authority for cleanups to the states, (4) reduce legal costs, (5) limit claims for damages to natural resources caused by contamination, and (6) foster the wider use of cost-effective technologies for cleaning up federal facilities.

In summary, our primary observations are as follows:

- Several provisions in S. 1285 would elevate the role of risk and site-specific risk assessments in deciding whether and how extensively to clean up a site. Over the past few years, we have endorsed the use of risk to manage cleanups and the Superfund program. We have reported that basing cleanup decisions on environmental standards and generic assumptions rather than actual data about how sites will be used in the future can lead to more extensive cleanups than the risks at sites would warrant. We have also reported that using risk as a criterion for setting cleanup priorities would help to ensure that the sites posing the greatest risks to human health or the environment would be addressed first.
- To help cut cleanup costs, S. 1285 would eliminate the preference in the current Superfund law for remedies that permanently treat contamination at sites. As a result, less costly remedies, such as erecting fences around contaminated soil to prevent human contact, could be implemented. We found that these remedies may require substantial spending on longer-term operations, maintenance, and monitoring to ensure that they

---

remain protective of human health. The bill would also raise the dollar and time limits for using certain removal actions, thereby giving EPA more flexibility to use such actions, which we have reported can save time and money and more quickly address health and environmental risks.

- Several provisions in S. 1285 would increase the responsibility of the states in cleanups. For example, S. 1285 would provide assistance for the states to establish and expand programs that encourage private parties to voluntarily clean up sites, including abandoned urban sites known as brownfields. Our work shows that this assistance would help to allay the concerns of private parties about their liability and costs for cleaning up sites. The bill would also delegate some of EPA's cleanup responsibilities to qualified states. Our recent work shows that some states were concerned about the financial resources they would have available to conduct additional cleanups at seriously contaminated sites.
- Last year, we reported that the legal expenses for parties to resolve their liability for contamination at a site and to allocate the cleanup costs among all the parties involved can be a substantial portion of their overall cleanup costs. For example, we found that legal expenses constituted an average of one-third of the total Superfund expenses for large corporate parties. The bill would seek to limit these expenses by establishing a nonbinding allocation process to determine each party's portion of the site's cleanup costs.
- The bill would also limit parties' liability for natural resource damages at hazardous waste sites. Our work has shown that in the past, natural resource damages have been assessed at only a small percentage of the Superfund sites. The number of future claims most likely will also be limited, although some of these claims could be quite large. We believe the bill's natural resource damage provisions are likely to affect a relatively small number of parties that could have been exposed to major damage claims.
- The bill would authorize the wider use of innovative technologies at federal facilities, such as bioremediation, which uses microorganisms to ingest certain contaminants in soil. Our work and the work of others has shown that while this approach could reduce cleanup costs, such technologies have not been widely used at these sites.

---

## Background

When the Congress passed the Comprehensive Environmental Response and Compensation Act (CERCLA), commonly known as the Superfund law, in 1980, it established a trust fund (Superfund), financed primarily by taxes on crude oil and certain chemicals, for cleaning up highly contaminated hazardous waste sites. It also required EPA to develop a list of priorities for

---

cleaning up the most hazardous waste sites, called the National Priorities List (NPL). In 1986, the Congress reauthorized Superfund and required EPA to meet certain cleanup schedules and to give preference to methods that permanently decontaminate sites. In 1990, the Congress again reauthorized Superfund, adding \$5.1 billion to the program. In total, \$15.2 billion has been authorized for the program.

As of September 30, 1995, EPA had listed or proposed to list about 1,290 sites on the NPL, completed construction at about 304 sites, and deleted 84 sites from the list. The agency estimates that the average cost of cleaning up an NPL site, to the federal government or responsible parties, is \$26 million.

The Senate bill contains numerous provisions designed to address cleanup costs. We would now like to discuss some of the implications of the bill's provisions.

---

## Risk Assessments Can Provide for Cleanups That Are Better Tailored to Conditions at Sites

Several provisions in S. 1285 would elevate the role of risk and site-specific risk assessments in decisions about whether and how extensively a site should be cleaned up. We have reported that basing these decisions on environmental standards and generic assumptions about such things as the projected future use of a site, rather than actual data from the site, can lead to extensive and costly cleanups. EPA has recently introduced reforms to resolve some of these issues, but S. 1285 would take more extensive measures.

---

## Altering the Use of Environmental Standards as the Basis for Cleanups Could Change the Extent of Some Actions

One criticism of the current Superfund law is that it has resulted in some cleanups that were more extensive and costlier than were warranted by the health risks at sites. Such results may occur, in part, because the 1986 Superfund amendments require that cleanups comply with all "applicable" or "relevant and appropriate" standards set in other federal and state environmental laws, including certain standards set under the Safe Drinking Water Act and the Clean Water Act where relevant and appropriate. The Senate bill would require compliance only with "applicable" standards, that is, with those that directly pertain to hazardous waste cleanups, and it would eliminate the reference to the specific acts. The bill would also provide opportunities for the states to define their own applicable standards. The proposed legislation would allow EPA to waive the standards if reaching them, among other things, is technically infeasible or unreasonably costly.

---

The extent to which this change affects cleanups will depend, in large part, on whether states establish their own cleanup standards and whether these standards differ significantly from those that have been used at cleanups to date. In a recent survey of states, we found that 21 of the 33 states we contacted had already set standards for groundwater or soil cleanups, or for both types, that specify numeric limits on acceptable concentrations of chemicals.<sup>1</sup> Additionally, some states have general policies about cleanup, such as requirements that chemicals be limited to the levels that occur naturally in the immediate environment. For groundwater, 20 of the states had set numeric standards that were similar to the federal drinking water standards, although most of these states had set more stringent standards for a few chemicals. For soil, which has few federal standards, 13 of the 20 states had set their own cleanup standards. We did find, however, that the states were flexible in allowing exceptions to the cleanup levels required under the standards in order to account for conditions making it difficult or unnecessary to reach the standards.

In states that have not established their own standards, site-specific risk assessments would play a more important role in determining the extent of Superfund cleanups. When we reviewed EPA's data for 225 Superfund sites, we found that having used risk assessments instead of standards to determine the need for cleanups would not significantly have changed the number of sites cleaned up<sup>2</sup> but would sometimes have changed the extent of the cleanups. To comply with the law, EPA had used federal and state standards rather than risk assessments to determine the extent of the cleanups at about three-fourths of the 139 sites in the database for which information on the basis for cleanup was available. If EPA had relied more on risk assessments, as S. 1285 would require, some of these cleanups might have been less extensive—and less expensive. This is because, as EPA program officials acknowledged, standards tend to require more stringent cleanups than risk assessments.

---

## Risk Analyses Would Be Based More on Site Data Than on Generic Assumptions

Using risk assessments to determine cleanup levels without changing the risk assessment process itself could still result in more extensive cleanups than might be warranted at some sites. When EPA lacks specific data about a site, it makes assumptions in its estimates of risk about both the quantity

---

<sup>1</sup>For information on the use of state standards for Superfund cleanups, see *Superfund: How States Establish and Apply Environmental Standards When Cleaning Up Sites* (GAO/RCED-96-70FS, Mar. 20, 1996), and *State Cleanup Standards* (GAO/RCED-96-98R, Apr. 24, 1996).

<sup>2</sup>Superfund: EPA's Use of Risk Assessments in Cleanup Decisions (GAO/T-RCED-95-231, June 22, 1995).

---

of contaminants that will reach people and the toxicity of these contaminants. EPA tends to make relatively conservative assumptions, justifying this tendency on the basis that it has a mandate from the Congress to protect all individuals around Superfund sites. Critics argue that these assumptions are not realistic for all sites.

The Senate proposal calls for the use of site-specific data and “realistic and plausible” assumptions about the risks posed by contaminants. For example, the bill calls for considering data about a site when deciding how the land at a site may be used in the future. Determining a site’s future use is key to estimating people’s future exposure to contaminants at the site, which, in turn, helps to determine the level of cleanup required for the site. We found that when EPA lacked specific data on a site’s future use, it adopted the assumptions that would be the most protective of human health, namely, that the land would be used for residential rather than commercial or industrial purposes.<sup>3</sup> Assuming future residential use can lead to estimates of health risks that warrant cleaning up a site immediately. In reviewing EPA’s data for 225 Superfund sites, we found that at about half of the 190 sites where EPA had decided cleanup was necessary, the health risks were ranked as high not because of the land’s current use but because EPA had assumed the land’s use would change in the future.<sup>4</sup> EPA recognizes that this assumption leads to costlier cleanups, and last year the agency decided to use more site-specific data when deciding what assumptions to make about a site’s future uses. The proposed legislation would go farther to incorporate the assumptions about future land use in cleanup decisions.

---

## Incorporating Risk in Setting Cleanup Priorities Would Help Achieve the Most Protection

Given that both the government and private industry have spent billions of dollars to date on the Superfund program but significant numbers of sites remain to be cleaned up, it is important to achieve the maximum amount of environmental protection from the available federal resources. We reported in 1994 that although EPA had adopted a policy of addressing the worst sites first, its regional offices had set priorities using such factors as the amount of work needed to evaluate a site instead of considering the site’s health and environmental risks.<sup>5</sup> Recently, in response to expected budget reductions, EPA convened a panel to help rank NPL sites nationwide

---

<sup>3</sup>Superfund: Improved Reviews and Guidance Could Reduce Inconsistencies in Risk Assessments (GAO/RCED-94-220, Aug. 10, 1994).

<sup>4</sup>Superfund: Information on Current Health Risks (GAO/RCED-95-205, July 19, 1995).

<sup>5</sup>Relative Risk in Superfund (GAO/RCED-94-233R, June 17, 1994), and Superfund: Reauthorization and Risk Prioritization Issues (GAO/T-RCED-94-250, June 24, 1994).

---

on the basis of risk and other factors. In the past, EPA has taken similar actions when resources have been limited, but its efforts have been short-term.

We have also reported that national risk-based priority-setting systems have not been fully implemented at the Departments of Defense and Energy.<sup>6</sup> Of the hundreds of federally owned hazardous waste sites, only eight have been cleaned up so far. Although most of the work remains to be done, agencies' budgets for the federal cleanup and compliance effort, whose costs may ultimately total \$400 billion, have been declining. By basing cleanup priorities largely on the relative risks of sites, agencies could ensure that funds are effectively allocated.

---

## Changes in the Cleanup Methods Selected Will Affect Costs

Both the Congress and EPA are concerned about the high costs of cleanups and are trying to curb these costs. The current law's requirements that cleanup remedies comply with federal and state environmental standards and permanently treat waste have limited the alternatives available to cut costs. EPA now plans to review any remedies that exceed certain cost thresholds to determine whether lower-cost alternatives are available. The agency is also evaluating the results of a 1992 initiative that uses EPA's emergency response, or removal, authority to clean up portions of sites more quickly and at less cost. The Senate bill would also address costs by eliminating the preference for permanent treatments of waste, thereby allowing for greater consideration of remedies that rely on the containment of waste than exists under current law. The bill would also increase the current law's dollar and time limits on federally funded removals. These changes would facilitate EPA's use, where appropriate, of removal actions, which are faster and less costly than EPA's traditional cleanup processes.

---

## New Provisions Allow for Less Costly Cleanups

After the 1986 amendments to CERCLA established a preference for permanently treating wastes, EPA increasingly selected permanent measures, such as incinerating contaminated soil, rather than containment measures, such as fencing it off from human contact. This preference, in turn, increased shorter-term cleanup costs because constructing treatment technologies is more expensive than installing containment measures. Currently, about half of all cleanup plans include permanent treatments. The bill would eliminate the preference for permanence, thereby allowing

---

<sup>6</sup>Department of Energy: National Priorities Needed for Meeting Environmental Agreements (GAO/RCED-95-1, Mar. 3, 1995) and Environmental Cleanup: Too Many High Priority Sites Impede DOD's Program (GAO/NSIAD-94-133, Apr. 21, 1994).



---

the expanded use of containment options. Such options include implementing lower-cost engineering controls (like waterproof covers to contain rather than clean up waste) and institutional controls (like land-use restrictions), as long as they protect human health and the environment.

However, while the costs to implement these remedies might be lower, they would require long-term monitoring and maintenance to ensure that they remain protective. We estimate that the average cost of operating and maintaining a site with contained waste could be \$5 million over 30 years. We also estimate that during this period, overall operation and maintenance costs to the federal government, states, and responsible parties could be \$5 billion, \$8 billion, and \$18 billion, respectively. We recently reported EPA had identified several sites where alternatives to treatment had been used and problems had developed, requiring additional work.<sup>7</sup>

---

## Relaxing the Legal Limits on Federally Funded Removals Would Make It Easier for EPA to Use Them at More Sites

In response to criticism that cleanups were costing too much and taking too long, EPA implemented its Superfund Accelerated Cleanup Model in 1992. One of the model's initiatives was for EPA to expand its use of non-time-critical removals—actions the agency typically uses to clean up portions of sites requiring urgent, but not emergency, treatment. These non-time-critical removals result in quicker cleanups than actions taken under EPA's traditional remedial program because they streamline the steps used to study a site's contamination and design a cleanup method. The Senate bill would raise the current law's dollar and time limits on federally funded removal actions.

We recently reported that EPA could potentially use these removals at portions of the 1,000 sites currently awaiting cleanup on the NPL, as well as at portions of the estimated 2,000 additional sites that could be listed.<sup>8</sup> Typically, for these portions, EPA is more certain of the types of contamination present and the appropriate methods to address it, and the agency does not need to conduct extensive studies and designs before taking action. EPA site managers estimate that the non-time-critical removals conducted to date have reduced cleanup time—from 4 years to 2

---

<sup>7</sup>Superfund: Operations and Maintenance Activities Will Require Billions of Dollars (GAO/RCED-95-259, Sept. 29, 1995).

<sup>8</sup>A Superfund Tool for More Efficient Cleanups (GAO/RCED-96-134R, Apr. 15, 1996) and Superfund: Non-Time-Critical Removals as a Tool for Faster and Less Costly Cleanups (GAO/T-RCED-96-137, Apr. 17, 1996).

---

years, on average—and saved money—cutting \$500,000 from an average total cleanup cost of \$4.1 million per site. By addressing contamination sooner, these actions also can reduce risks to public health and prevent contamination from spreading farther in the environment. However, the current legal time and dollar limits on these actions constrain the use of these removals at federally funded sites. Raising the limits from 12 months to 24 months and from \$2 million to \$4 million, as S. 1285 provides, would allow EPA to use these removals more easily at portions of many Superfund sites.

---

## States Would Take on More Cleanup Responsibilities, and Their Costs Could Change

Although EPA has assessed and cleaned up some NPL sites, thousands of other sites need to be addressed. The bill would authorize EPA to delegate some of its responsibilities for cleanups at NPL sites to qualified states.

---

## The Bill Supports State Cleanup Innovations

To promote faster and less costly cleanups, the bill would provide financial and technical assistance to states to set up programs through which private parties would voluntarily clean up sites under a state's supervision. At this Committee's request, we are currently reviewing several programs from among the 31 states with such programs to identify their best practices, including streamlining cleanups, creating financial incentives for redevelopment, and protecting property owners from further liability for contamination.

In other work for this Committee, we are addressing the redevelopment of abandoned or underutilized contaminated urban properties, known as brownfields. Our work shows that the bill—in limiting the liability of lenders, property owners, and prospective purchasers—would help to remove barriers to the properties' redevelopment. In addition, the loans that would be provided under the bill to municipalities would cover the up-front costs at most brownfield sites of assessing the sites for contamination and cleaning them up. These measures would help reduce the uncertainty that currently makes these sites unattractive to developers.

---

## The Bill Shifts Costs Between the Federal and State Governments

Whether states have sufficient resources to implement the Superfund program is an issue in transferring the federal government's responsibility for the program to them. For example, one provision in the bill would

---

allow only 125 more sites to be added to the NPL. Our recent work shows that under this limit, the states could acquire responsibility for the 1,400 to 2,300 potential NPL sites whose cleanups could otherwise have been funded out of the Superfund trust fund, at a potential cost of \$8 billion to \$20 billion.<sup>9</sup> Seven of the eight states whose programs we studied were concerned about their financial ability to manage these additional cleanups, given their current level of funding for environmental restoration. The additional cleanup costs they could face under a capped NPL would depend on whether and how quickly they decided to address the additional sites.

---

## The Bill Would Relieve Responsible Parties of Some Legal Expenses

We have previously reported that parties involved at Superfund sites incur high legal expenses to resolve their liability for contamination and allocate cleanup expenses among one another. The Senate bill would change the current liability rules and establish a nonbinding process to allocate costs at some sites. Our work in this area has documented the extent and causes of responsible parties' legal expenses.

Our 1994 survey of the Superfund legal expenses of Fortune 500 Industrial and Service corporations<sup>10</sup> showed that about half of the respondents had been involved at Superfund sites and had spent a median of \$1.5 million at each site. One-third of their Superfund costs were legal expenses, incurred primarily in allocating the responsibility for cleanup costs among the responsible parties. For de minimis parties, that is, those responsible for minor contamination at a site, legal expenses constituted almost half of the total Superfund costs.<sup>11</sup>

The corporations attributed their high legal expenses to EPA's not identifying all responsible parties or taking action against all parties that had been identified. When parties identified by EPA believe that others are also responsible but have not been pursued by EPA, they will often sue these other parties themselves for a contribution to the cleanup costs. The defendants in these contribution suits are sometimes responsible for only small amounts of waste at sites. Seventy-one percent of the respondents to our survey said that they were parties to these contribution suits.

---

<sup>9</sup>Impact on States of Capping Superfund Sites (GAO/RCED-96-106R, Mar. 18, 1996).

<sup>10</sup>Superfund: Legal Expenses for Cleanup-Related Activities of Major U.S. Corporations (GAO/RCED-95-46, Dec. 23, 1994).

<sup>11</sup>In Superfund: Number of Potentially Responsible Parties at Superfund Sites Is Difficult to Determine (GAO/RCED-96-75, Mar. 27, 1996), we reported that there were a minimum of 8,500 to 25,000 de minimis parties at 175 Superfund sites.

---

Provisions in S. 1285 would address these issues. The bill's allocation process would allow parties to submit information to EPA about others they believe should share in the costs. De minimis parties, defined as those who contributed relatively small amounts of hazardous waste at a site, would be exempt from liability. In addition, certain civic or charitable organizations would have limited liability. Under the bill's allocation process, the government would cover the costs attributed to parties that cannot pay or are exempt from liability, as well as other costs.

---

## Some Future Natural Resource Damage Claims Could Be Substantial

In addition to their cleanup obligations, responsible parties are liable for damages to natural resources caused by contamination. The bill would limit natural resource damage claims under CERCLA. At this Committee's request, we have determined the amount of past federal damage settlements and estimated the potential for future federal claims.<sup>12</sup>

We reported that settlements to date and estimated future claims have been or are likely to be limited to a relatively small number of sites. However, some future claims could be large. Through April 1995, the Department of the Interior and the National Oceanic and Atmospheric Administration, the principal federal agencies with trustee responsibility for natural resources, together had reached 98 settlements, about half of which involved cash payments to these agencies by responsible parties totaling \$106 million. The median amount of the settlements requiring payment was \$200,000—a small figure compared with the current average cost to clean up a site of about \$26 million. Eleven settlements required payments of over \$1 million.

Officials from the two agencies estimate that the claims for up to 20 of their pending and future cases may eventually exceed \$50 million each and that the claims for up to another 40 cases may range between \$5 million and \$50 million each. According to Department of Justice officials involved in these claims, the number of future cases is likely to be limited by a shortage of enforcement resources and the difficulty of establishing responsibility for damages.

---

<sup>12</sup>Superfund: Natural Resource Damage Claims (GAO/T-RCED-95-182, May 11, 1995) and Superfund: Outlook for and Experience With Natural Resource Damage Settlements (GAO/RCED-96-71, Apr. 16, 1996).

---

## More Cost-Effective Technologies Are Needed

The Senate bill would authorize the use of new, potentially cost-reducing technologies at certain federally owned hazardous waste sites. The bill would authorize the President to designate specific federal facilities as sites for testing innovative technologies and authorize the EPA Administrator to approve their use at these sites. Our reports have shown that although EPA and the Departments of Defense and Energy have spent substantial sums to develop waste cleanup technologies, few such technologies have been used in cleanups. Even when a new technology has been successfully demonstrated, we found, agencies are often reluctant to try it because of its unfamiliarity or other reasons.<sup>13</sup> This new authority may help to overcome the resistance we found to these technologies.

---

<sup>13</sup>Superfund: EPA Needs to Better Focus Cleanup Technology Development (GAO/T-RCED-92-92, Apr. 28, 1993), Environmental Protection: Challenges in Defense Environmental Program Management (GAO/T-NSIAD-95-121, Mar. 24, 1995), and Department of Energy: Management Changes Needed to Expand Use of Innovative Cleanup Technologies (GAO/RCED-94-205, Aug. 10, 1994).

---

### Ordering Information

The first copy of each GAO report and testimony is free. Additional copies are \$2 each. Orders should be sent to the following address, accompanied by a check or money order made out to the Superintendent of Documents, when necessary. VISA and MasterCard credit cards are accepted, also. Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.

#### Orders by mail:

U.S. General Accounting Office  
P.O. Box 6015  
Gaithersburg, MD 20884-6015

#### or visit:

Room 1100  
700 4th St. NW (corner of 4th and G Sts. NW)  
U.S. General Accounting Office  
Washington, DC

Orders may also be placed by calling (202) 512-6000  
or by using fax number (301) 258-4066, or TDD (301) 413-0006.

Each day, GAO issues a list of newly available reports and testimony. To receive facsimile copies of the daily list or any list from the past 30 days, please call (202) 512-6000 using a touchtone phone. A recorded menu will provide information on how to obtain these lists.

For information on how to access GAO reports on the INTERNET, send an e-mail message with "info" in the body to:

[info@www.gao.gov](mailto:info@www.gao.gov)

or visit GAO's World Wide Web Home Page at:

<http://www.gao.gov>

---

**United States  
General Accounting Office  
Washington, D.C. 20548-0001**

**Bulk Rate  
Postage & Fees Paid  
GAO  
Permit No. G100**

**Official Business  
Penalty for Private Use \$300**

**Address Correction Requested**

---