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## Testimony

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# SUPERFUND

## More Emphasis Needed on Risk Reduction

Statement of Stanley J. Czerwinski,  
Associate Director, Environmental Protection Issues,  
Resources, Community, and Economic  
Development Division



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Mr. Chairman and Members of the Subcommittee,

We are pleased to present our views on improving the effectiveness of the Superfund program. The size and cost of the program have expanded significantly over the years. Today, there are almost 1,300 Superfund sites, and by some estimates, as many as 3,200 more sites could enter the program in the future. The estimated cost of cleaning up the nation's hazardous waste problem has also grown—to \$75 billion for nonfederal sites and up to \$400 billion for federal facilities. In the face of such staggering costs and increasingly constrained governmental resources, the Congress faces a major challenge in finding a way to improve the Superfund program's cost-effectiveness while protecting public health and the environment. A key to meeting this challenge is managing the Superfund program to reduce human health and environmental risks to the greatest possible extent within the available resources. Much of our recent work has focused on how the program has dealt with risk reduction issues.

In summary, our work has shown that the cost-effective reduction of risks has not received adequate emphasis in several aspects of the program, including the following:

- The selection of sites for cleanup and the order established for their cleanup have not been driven sufficiently by the risks at sites. Even though EPA has a policy of addressing the “worst sites first,” its regional offices set priorities using other factors, such as the amount of work required to clean up a site.
- EPA's decisions on whether and how much to clean up a site are affected by the agency's forecasts of how the site will be used in the future. EPA has been criticized for assuming too often that sites will be used for residential purposes, thereby driving up the costs of cleanup unnecessarily. Our work has shown how important land-use assumptions are. EPA judged that half of the sites in a group we reviewed needed cleanup only because the agency assumed the sites' uses would change, increasing human exposure to contaminants in the future.
- EPA can reduce the risks at sites more quickly and economically by using its accelerated cleanup procedures, where appropriate, instead of its more expensive and time-consuming traditional techniques. If the accelerated techniques were used more consistently, we estimate that the federal government's and private sector's Superfund costs could be reduced by as much as \$1.7 billion over the life of the program.

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In 1995, EPA began to address these concerns. For example, EPA (1) created a system to establish national cleanup priorities based on the risks at sites and other factors; (2) instructed its Superfund project managers to gather more data and meet with local officials and other interested parties when predicting future land uses; and (3) made organizational changes to facilitate the use of accelerated cleanup procedures. It is too early to tell whether these procedural and organizational changes will result in permanent improvements to the program. Our past reviews have shown that without management follow-through, initiatives like these can be short-lived.

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## Background

The Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, in 1980 authorizing EPA to clean up hazardous waste sites that pose a threat to human health and the environment and to order responsible parties to clean up these sites. The act created a \$1.6 billion trust fund, financed primarily by taxes on crude oil and certain chemicals, for EPA to implement the program and pay for cleanups. Also, EPA can hold the parties responsible for the contamination liable for cleanup costs. The program was extended twice, in 1986 and 1990, and its spending authority now totals \$15.2 billion.

EPA maintains an inventory of hazardous waste sites awaiting evaluation for possible inclusion on the National Priorities List (NPL), the list of the most highly contaminated sites. After a site is placed on the NPL, EPA conducts an investigation to determine more fully the nature and extent of the contamination and the appropriate way to clean it up. One component of this investigation is a baseline risk assessment that evaluates the health risks the site would pose if no cleanup occurred. At each site, EPA assesses the risk of cancer and other adverse health effects posed by the contaminants in different media (e.g. groundwater, soil, air) to determine if these risks warrant cleanup.<sup>1</sup> EPA evaluates these health risks under both current and alternate future land-use conditions to account for possible changes in the site's use.

EPA responds to hazardous contamination at Superfund sites through "removal" and "remedial" actions. Removal actions are generally shorter-term (less than 1 year), lower-cost (under \$2 million) measures

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<sup>1</sup>In general, EPA decides to clean up a site if the risk of cancer is greater than 1 in 10,000, if the site poses a risk of other serious forms of illness, or if there is some environmental risk, such as a threat to wetlands.

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intended to address actual or potential releases of hazardous substances that pose a threat to human health or the environment.<sup>2</sup> By contrast, remedial actions are longer-term and generally more expensive measures to implement final cleanup plans at sites. Removals derive many of their advantages, in terms of both time and cost, from their abbreviated planning and design phases.

As of April 1996, EPA had placed 1,284 sites on the NPL and removed 98 sites that no longer threaten human health and the environment. In addition, cleanup remedies, such as groundwater pumps, are in place and operating at 346 sites.

Now I would like to discuss in more detail some problems affecting EPA's treatment of risk issues in the Superfund program.

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## EPA Has Not Emphasized Risk in Setting Priorities

The risks posed by sites have not played a large enough role in the selection of sites for the Superfund program or in the scheduling of their cleanups after they have been selected. Although EPA's policy since 1989 has called for addressing the "worst sites first," the agency's regional offices have not implemented this policy in a way that emphasizes the risks at sites.

First, factors other than risk primarily determine which sites EPA's regions evaluate first for placement on the NPL. We found that the regions typically evaluate the sites they have known about the longest or the sites for which they have the most complete information. EPA regional officials told us that they do not have the resources necessary to perform detailed studies to determine which sites being evaluated for inclusion on the NPL pose the greatest risks.

In addition, the risks that NPL sites pose relative to each other play little role in determining which of them are cleaned up first. According to a study conducted by the Center for Technology, Policy, and Industrial Development at the Massachusetts Institute of Technology,<sup>3</sup> evaluations of sites' risks are given little attention when setting priorities. For example, officials from one EPA region told us that they generally discuss with the states in the region which sites should be cleaned up first and attempt to

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<sup>2</sup>EPA classifies its removals as (1) "emergency removals" for threats requiring immediate action, (2) "time-critical removals" for threats requiring action within 6 months, and (3) "non-time-critical removals" for threats where action can be delayed for at least 6 months in order to adequately plan for cleanup.

<sup>3</sup>Breaking the Backlog: Improving Superfund Priority Setting (Cambridge, Mass.: Feb. 1992).

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fund equal numbers of sites in each state. In October 1995, EPA announced a set of administrative reforms that includes setting national risk-based priorities for funding cleanups at sites in accordance with the principle of cleaning up the worst sites first. Under the new procedures, a panel of EPA officials meets to identify the worst sites by applying five criteria: (1) risks to humans, (2) ecological risks, (3) the stability of contaminants, (4) the characteristics of contaminants, and (5) economic, social, and program management considerations. According to an EPA official, the panel has met and is emphasizing current risks and, to a lesser extent, potential risks in deciding which projects to fund.

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## Future Land-Use Assumptions Are Key to Cleanup Decisions

Our work has demonstrated the importance to cleanup decisions of assumptions about future land uses and the need to make these decisions in the most informed way possible. Forecasts of future land use are crucial in estimating the potential for human exposure to the contaminants at sites. Formerly, EPA often assumed in its risk assessments that land would be used in the future for residential rather than industrial purposes. Such assumptions led to calculations of greater exposure to contaminants in the future than in the present. EPA then selected a more stringent and costly cleanup method in accordance with this calculation of future risk.

We recently reported that about one-third (71) of the sites included in an EPA database of 225 nonfederal Superfund sites<sup>4</sup> posed health risks serious enough to justify their cleanup under the current land-use assumptions.<sup>5</sup> About one-half (119) of the sites in this database did not pose such health risks under the current land-use assumptions, but EPA estimated that they could pose such risks if they were used for alternative purposes in the future. For example, a site used exclusively for industrial purposes might not pose a threat to human health under its current classification but might be considered as posing a threat if EPA assumed the land would be used for residential purposes in the future.<sup>6</sup> EPA's risk assessment guidance recommends that personnel performing risk assessments assume that a site's future use will be residential even if no one lives at the site now.

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<sup>4</sup>These sites were contained in an EPA database on health risks from Superfund sites—the most comprehensive automated information available as of early 1995, when we did our work. These sites constitute most of the sites where EPA made cleanup decisions between 1991 and mid-1993.

<sup>5</sup>EPA usually took action, such as removing contaminants that presented an immediate threat to human health, at these sites.

<sup>6</sup>The remaining sites did not have a current or future human health risk high enough to justify cleanup on the basis of the risk assessment. However, these sites could be slated for cleanup to comply with other federal or state standards or to eliminate a threat to the environment, such as contamination endangering wetlands.

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Parties responsible for cleanups have complained that this policy results in unnecessarily expensive cleanups.

In addition, we found some apparent inconsistencies in the risk assessments' forecasts of future use. For example, our review of the risk assessments for three landfill sites demonstrates the potential for inconsistent judgments about future land uses. All three sites had similar conditions, including inadequate covering over the landfill. Although landfills seem unlikely sites for residential development, the risk assessments for the Hercules 009 Landfill in Georgia and the Woodstock Landfill in Illinois concluded that people would build homes on the sites in the future and the residents would, then, be exposed to contaminated soil and water. In contrast, the risk assessment for the Strasburg Landfill in Pennsylvania concluded that the site would not be developed but that occasional trespassers would come in contact with contamination at the site. While the risk assessments for the Hercules 009 and Woodstock landfills indicated a need for cleanup, the risk assessment at the Strasburg site did not.

In response to charges that its land-use assumptions were unrealistic, EPA in May 1995 instructed its risk assessment teams to consult with local communities on such issues as zoning and the use of adjacent land in making early determinations of future land uses. We have not assessed the effect of this new guidance on the selection of cleanup remedies.

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## EPA's Removal Authority Can Be Used for Faster, More Economical Risk Reduction

A cleanup method must reduce site risks to assure overall protection of human health and the environment. When choosing among methods that meet this goal, EPA balances several factors, including long-term effectiveness and cost, in arriving at a decision. In response to criticism that cleanups were too costly and too time-consuming, EPA in 1992 announced a program to streamline its Superfund procedures. One initiative was to make greater use of removal techniques to accomplish cleanups. Because removals require less extensive study and design, they can accomplish cleanups more quickly and less expensively than remedial actions. Traditionally, EPA used removal techniques to respond to emergency conditions. The 1992 initiative encouraged the use of removals at sites where cleanup problems can be managed through removals and circumstances permit EPA to spend at least 6 months planning the cleanups. These latter removals are called "non-time-critical" removals.

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EPA could use non-time-critical removals at appropriate segments of virtually all the 1,000 sites currently on the NPL awaiting cleanup as well as at sites that could be added in the future. Often at these site segments, EPA can readily determine the types of contamination present and decide on the appropriate cleanup methods without conducting extensive studies and designs. EPA estimates that the non-time-critical removals conducted to date have reduced the cleanup time from 2 years to 4 years, on average. In addition, they have saved approximately \$500,000 from an average total cleanup cost of \$4 million per site. For example, at a former industrial landfill in Cedar Rapids, Iowa, Rockwell International, the site owner, estimated that using a non-time-critical removal reduced cleanup costs by at least half (over \$2 million) while preventing groundwater contamination.

We believe that using non-time-critical removals rather than remedial actions could save the federal government and private parties from \$1.2 billion to \$1.7 billion over the life of the Superfund program. In addition, using both removals and remediation at entire sites can stop the spread of contamination more quickly than using remediation alone. The potential disadvantages of removals—that they can require more oversight from EPA and decrease the proportion of the cleanup costs states are required to cover—do not appear to outweigh the benefits.

However, limitations in CERCLA on the cost and time allowed for removal actions and inflexible funding arrangements are limiting EPA's use of non-time-critical removals. In addition, EPA's regions have varied widely in the extent to which they have used these actions. Some have used removals only once or twice. We will further discuss EPA's use of non-time-critical removals in a report to be issued later this year.

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## Conclusions

Mr. Chairman, on the basis of our work over the past few years, we believe the Superfund program could benefit from an increased emphasis on reducing the risks to human health and the environment more quickly and cost-effectively. In this time of fiscal constraint, we believe that EPA could achieve more cost-effective cleanups by basing its priorities for funding cleanups on the principle of risk reduction. Realistic land-use assumptions are also important for using Superfund resources to maximize the protection of public health and the environment. In addition, we believe that the increased use of EPA's removal authority could result in quicker, more cost-effective, and more focused actions at hazardous waste sites while better protecting human health and the environment. We applaud



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EPA's recent efforts to set priorities for the use of Superfund resources by emphasizing the health risks at sites and to develop realistic forecasts of sites' future uses. Sustained management attention and follow-through are needed to ensure that EPA's initiatives produce lasting changes.

That concludes my statement, Mr. Chairman. I will be glad to respond to any questions.

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# Related GAO Products

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State Cleanup Standards (GAO/RCED-96-98R, Apr. 24, 1996).

Superfund: Non-Time-Critical Removals as a Tool for Faster and Less Costly Cleanups (GAO/T-RCED-96-137, Apr. 17, 1996).

A Superfund Tool for More Efficient Cleanups (GAO/RCED-96-134R, Apr. 15, 1996).

Superfund: How States Establish and Apply Environmental Standards When Cleaning Up Sites (GAO/RCED-96-70FS, Mar. 20, 1996).

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

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

Superfund: Risk Assessment Assumptions and Issues (GAO/T-RCED-95-206, May 23, 1995).

Superfund: The Role of Risk in Setting Priorities (GAO/T-RCED-95-161, Apr. 5, 1995).

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

Superfund: Reauthorization and Risk Prioritization Issues (GAO/T-RCED-94-250, June 24, 1994).

Relative Risk in Superfund (GAO/RCED-94-233R, June 17, 1994).

Superfund: Risk Assessment Process and Issues (GAO/T-RCED-93-74, Sept. 30, 1993).

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