



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

Resources, Community, and
Economic Development Division

B-282683

June 11, 1999

The Honorable Sherwood L. Boehlert
Chairman, Subcommittee on Water Resources
and Environment
Committee on Transportation
and Infrastructure
House of Representatives

Dear Mr. Chairman:

Subject: Hazardous Waste: Time and Costs to Clean Up Superfund Sites Are Uncertain

The Superfund program is the Environmental Protection Agency's (EPA) effort to clean up hazardous waste sites that threaten human health and the environment. EPA places the most seriously contaminated sites that need long-term cleanups under the program on the National Priorities List. Almost 1,400 sites had been placed on the list as of the end of March 1999. Once listed, the sites are further studied to assess their risks, and cleanup remedies (referred to as cleanup facilities in this report) are designed and constructed. In March 1999, cleanup facilities had been constructed at more than 40 percent of the sites on the National Priorities List. Since 1980, EPA has spent well over \$14 billion to address the potential health and environmental threats from listed sites. Information about the costs to construct cleanup facilities at the sites on the National Priorities List and the length of time required to complete this process is important for determining the Superfund program's future funding needs.

You asked us to provide information on (1) how long it will take to complete the construction of cleanup facilities at hazardous waste sites on the National Priorities List as of early 1999 and (2) how much it will cost.¹

In summary, we found the following:

- As of March 1999, cleanup facilities had been constructed at 599 sites on the National Priorities List. EPA's goal is to complete, by the end of 2005, the construction of cleanup facilities at about 85 percent of the almost 1,400 sites that have been placed on the National Priorities List. To achieve this goal, EPA expects cleanup facilities to be constructed at about 595 additional sites between early 1999 and the end of 2005,

¹This report addresses only the time and EPA's costs through the construction of the cleanup facilities, referred to by EPA as remedial construction completion.

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at an average rate of 85 sites each year. EPA believes that completing construction at some of the remaining 15 percent of the sites, including some federal facilities, could take well beyond 2005.

- EPA could not provide a reliable estimate of the costs to construct cleanup facilities at existing Superfund sites. EPA has not released updated estimates of future Superfund program costs since 1994. Although EPA is in the process of revising these cost estimates, they were not yet final as of May 1999. EPA requested \$593 million to construct cleanup facilities at Superfund sites for fiscal year 2000; this funding level would amount to about \$3.6 billion for fiscal years 2000 through 2005, assuming the same annual funding.

Background

In 1980, the Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which created the Superfund program to clean up highly contaminated hazardous waste sites. Cleanup actions under the program fall into two broad categories: removal actions and remedial actions. Removal actions are usually short-term actions designed to stabilize or clean up the hazardous sites that pose an immediate threat to human health or the environment. Remedial actions are usually longer-term and more costly actions aimed at permanently cleaning up a site.

CERCLA requires EPA to develop and maintain a list of hazardous sites, known as the National Priorities List, that the agency considers to present the most serious threats to human health and the environment. CERCLA authorizes EPA to compel the parties responsible for the contaminated sites to clean them up. The law also allows EPA to pay for cleanups and seek reimbursement from the parties. Although EPA may take emergency or partial cleanup actions at contaminated sites not on the National Priorities List, EPA's regulations stipulate that only the sites placed on the list are eligible for remedial actions financed by EPA under the trust fund established by CERCLA.

EPA Estimates That Cleanup Facilities Will Be Constructed at 85 Percent of the Superfund Sites by the End of 2005

By the end of 2005, EPA plans to complete the construction of cleanup facilities at 1,180 (85 percent) of the almost 1,400 sites on the National Priorities List.² As of the end of March 1999, according to EPA, cleanup facility construction had been completed at 599 National Priorities List sites and was under way at 460 sites. EPA expects that the construction of cleanup facilities will be completed at a total of more than 650 sites by the end of fiscal year 1999. EPA developed these estimates by assuming that construction

²Statement of EPA's Acting Assistant Administrator for Solid Waste and Emergency Response before the Subcommittee on Finance and Hazardous Materials, House Committee on Commerce (Mar. 23, 1999).

will be completed at an average of 85 sites a year—the current completion rate—through 2005.³

EPA has not estimated the time required to construct cleanup facilities at the remaining 15 percent of the sites on the list as of early 1999 or any sites that may be added to the list in the future.⁴ EPA officials believe that constructing cleanup facilities at some of the remaining sites—which include some federal sites—could take well beyond 2005. Furthermore, EPA officials have said that they do not know how many more sites will need to be listed on the National Priorities List. EPA plans to focus its listing activities on sites proposed by states, sites involving potentially responsible parties that are recalcitrant, or sites where cleanup is needed but is not occurring satisfactorily. EPA officials do not expect to list more than 40 new sites in fiscal year 1999.

In addition, once the construction of the cleanup facilities is completed at existing and future sites, EPA will continue to be responsible for post-construction activities under the Superfund program. These activities include (1) conducting 5-year reviews of ongoing cleanup actions and (2) overseeing the pumping and treatment of groundwater and long-term operations and maintenance activities conducted by potentially responsible parties.

Information on Estimated Costs of Completing Cleanup Facility Construction at Existing Superfund Sites Is Limited

EPA has not released updated estimates of the costs to construct cleanup facilities at existing National Priorities List sites since 1994. As of May 1999, EPA was preparing revised estimates of future program costs; therefore, at that time, these officials could not provide us with a reliable estimate of the costs to construct cleanup facilities at existing sites.

EPA's fiscal year 2000 budget request may provide some indication of future costs to clean up Superfund sites. EPA requested \$593 million for constructing cleanup facilities at Superfund sites for fiscal year 2000.⁵ Assuming steady annual funding, this would amount to about \$3.6 billion⁶ to construct cleanup facilities at these sites through 2005, the year that EPA expects construction to be completed at 85 percent of the existing National Priorities List sites. An unknown amount of additional costs for site assessments and removal actions would also be incurred.

³EPA's Comprehensive Environmental Response, Compensation, and Liability Information System data base includes estimates of completion dates for remedial action for each site. Although these estimates might be used to project when Superfund site cleanups are likely to be completed, EPA officials do not consider these dates to be reliable for predicting future cleanup activities beyond 5 to 7 years.

⁴EPA maintains that the time required to clean up sites has been reduced to an average of 8 years; however, as we stated in our January 1998 report entitled Superfund: Response to EPA's Letter Concerning Recent GAO Reports, (GAO/RCED-98-55R), EPA did not present data to adequately support this assertion.

⁵This amount includes contractor cleanup costs, EPA headquarters and regional office costs, and cooperative agreements with states for the oversight of cleanups.

⁶This amount is in undiscounted 1998 dollars.

Besides using EPA's budget request data, we also looked at two alternative techniques for forecasting future costs to construct cleanup facilities. In the past, EPA has used a statistical model, the Outyear Liability Model, to calculate future Superfund program costs. However, EPA officials told us that, as of May 1999, the agency was unable to use the model to develop cost estimates because of changes in in-house and contractor personnel.

Another possible approach to estimating future costs to construct cleanup facilities would be for EPA to use Record of Decision (ROD) cost estimates in its data bases. RODs are documents prepared at the completion of the assessment process that include preliminary estimates of the costs to implement the selected method for cleaning up a site or portion of a site. However, the extent to which the ROD cost estimates in the data bases accurately reflect the actual costs of cleanup facilities is uncertain. First, the data often include operation and maintenance costs—which are not paid from Superfund—as well as construction costs. Second, many RODs are amended after the initial cost estimates are made, and an EPA official told us that many of these revisions may not be included in the data. Third, the ROD cost estimates in the data bases typically are present values using different discount rates; to add these would require first normalizing all these estimates using a common discount rate. Finally, the ROD cost estimates do not always employ the same estimation methodologies and assumptions, thus making it difficult to derive an overall estimate for all sites. Calculating the future costs of cleanup facilities using estimates from the ROD documents themselves would require a review of several hundred individual RODs and would involve many of the same limitations found in using the estimates in EPA's data bases.

Agency Comments

We provided a draft of this report to EPA for its review and comment. We met with the Director of the Planning Analysis and Resources Management Center within EPA's Office of Emergency and Remedial Response to discuss the agency's comments. He said that the report is balanced and accurately portrays the information that the agency has available on the time and costs required to clean up existing Superfund sites. This official also provided technical and clarifying comments that we have incorporated in the report as appropriate.

To obtain information on the time that will be required to complete the construction of cleanup facilities at current Superfund sites, we relied on EPA's most recent estimates included in the March 23, 1999, statement of EPA's Acting Assistant Administrator for Solid Waste and Emergency Response during a hearing before the Subcommittee on Finance and Hazardous Materials, House Committee on Commerce. We also discussed alternative approaches for calculating construction completion dates from available data with the Director of the Planning Analysis and Resources Management Center within EPA's Office of Emergency and Remedial Response. To obtain information on the cost of completing the construction of cleanup facilities at sites currently on the National Priorities List, we discussed available data and alternative methods for estimating future

cleanup costs with the Director of the Planning Analysis and Resources Management Center.

We conducted our work between February and May 1999 in accordance with generally accepted government auditing standards.

Unless you announce its contents earlier, we plan no further distribution of this report until 10 days after the date of this letter. At that time, we will send copies of this report to Senator John Chafee, Chairman, and Senator Max Baucus, Ranking Minority Member, Senate Committee on Environment and Public Works; Representative Thomas J. Bliley, Jr., Chairman, and Representative John D. Dingell, Ranking Minority Member, House Committee on Commerce; Representative Bud Shuster, Chairman, and Representative James L. Oberstar, Ranking Minority Member, House Committee on Transportation and Infrastructure; Representative Robert A. Borski, Ranking Minority Member, Subcommittee on Water Resources and Environment, House Committee on Transportation and Infrastructure; the Honorable Carol M. Browner, Administrator, EPA; and the Honorable Jacob J. Lew, Director, Office of Management and Budget. We will also make copies available to others upon request. Please contact me at (202) 512-6111 if you or your staff have any questions. Major contributors to this report included James F. Donaghy, Vincent P. Price, and Joseph H. Cook.

Sincerely yours,



for Peter F. Guerrero
Director, Environmental
Protection Issues



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