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Resources, Community, and
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June 17, 1994

The Honorable Mike Synar
Chairman, Environment, Energy, and Natural
Resources Subcommittee
Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

In 1980, the Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), authorizing the Superfund program to clean up the nation's hazardous waste sites. Since then, the number of sites on the National Priorities List (NPL)--intended to be the nation's most severely contaminated properties--has grown from about 400 to a projected 4,500. As a result, what was once envisioned as a $1.6 billion cleanup program is now estimated to cost an additional $75 billion.[1]

Given the magnitude of the cleanup task ahead, Members of Congress and others have emphasized the importance of ranking hazardous waste sites by their relative health risks and allocating resources accordingly. One alternative to the administration's proposal for reauthorizing the Superfund program, currently under consideration in the Congress, would require the Environmental Protection Agency (EPA) to adopt such a strategy.

In a letter dated February 23, 1994, you asked us to review the role that risk plays in the Superfund program, both in setting priorities and in determining cleanup remedies. After debate over the program's reauthorization began, you asked us to focus initially on the first of these two

[1]The $1.6 billion is in nominal dollars, unadjusted for inflation. The $75 billion is in discounted present-worth dollars. The Total Costs of Cleaning Up Nonfederal Superfund Sites, Congressional Budget Office (Washington, D.C.: Jan. 1994).

issues. You requested that we provide, by the end of June, preliminary information on whether EPA prioritizes hazardous waste sites by their risks--specifically, in deciding which sites in its inventory to evaluate first for the NPL and which sites on the NPL to begin cleaning up first. You also wanted information on whether EPA's inventory of hazardous waste sites includes those that pose the most risk to human health and the environment. Given the time constraints, we restricted our investigation to reviewing studies conducted by EPA and others and interviewing officials from EPA headquarters, one EPA region (Region 5), and two states (Michigan and Minnesota). We will report later on the second issue referred to in your letter--the extent to which risk determines cleanup remedies at Superfund sites.

In brief, we found the following:

Although one of EPA's key policy objectives is to address the "worst sites first," relative risk plays little role in the agency's determination of priorities. EPA headquarters leaves the task of setting priorities to the regions, yet the regions do not rank sites by risk.

- In deciding which sites to evaluate first for the NPL--that is, which sites to score first under EPA's Hazard Ranking System (HRS), which was designed for ranking the relative hazards of sites and determining their eligibility for inclusion on the NPL--regions let such factors as how much work it would take to evaluate the site determine their priorities.

- Similarly, in deciding which sites on the NPL to begin cleaning up first, regions do not use risk as a criterion. Although EPA could use the HRS to help set priorities on the basis of risk, it currently uses the HRS only as a screening tool. Thus, regions may evaluate sites only as far as is necessary to determine whether they score high enough to be included on the NPL. As a consequence, HRS scores are often incomplete and cannot be used to prioritize remedial work.

In addition, the Superfund program does not necessarily include the worst sites. EPA depends on states to notify the agency of hazardous waste properties, but states may clean up the most contaminated sites under their own legislative authorities without informing EPA. According

to state officials, one reason they do so is to avoid the delays inherent in the federal Superfund program.

BACKGROUND

In enacting CERCLA 14 years ago, the Congress authorized $1.6 billion to clean up the nation's worst hazardous waste sites. The program was extended twice, in 1986 and 1990, and its spending authority now totals $15.2 billion.[2] The act is due for reauthorization this year.

EPA maintains an inventory of hazardous waste sites in the United States, which it has compiled from a variety of sources. Originally, EPA obtained most of its information from the owners and operators of abandoned or active hazardous waste facilities, who were required to report to EPA under CERCLA. Now, however, EPA relies largely on states to notify it of sites where hazardous waste has at any time been stored or disposed of, although industry and private citizens may also bring sites to EPA's attention.

Once included in the inventory, sites undergo a series of increasingly detailed assessments to determine whether they are eligible for inclusion on the NPL (see fig. 1). In the preliminary assessment, EPA (or the state) reviews readily available information to determine the nature of the threat. If further action is indicated, the agency conducts a site inspection, collecting samples to determine the extent of the contamination and the potential for its release. At each step, sites may be referred back to the states if EPA determines that the contamination is not serious enough to warrant including the properties on the NPL.[3]

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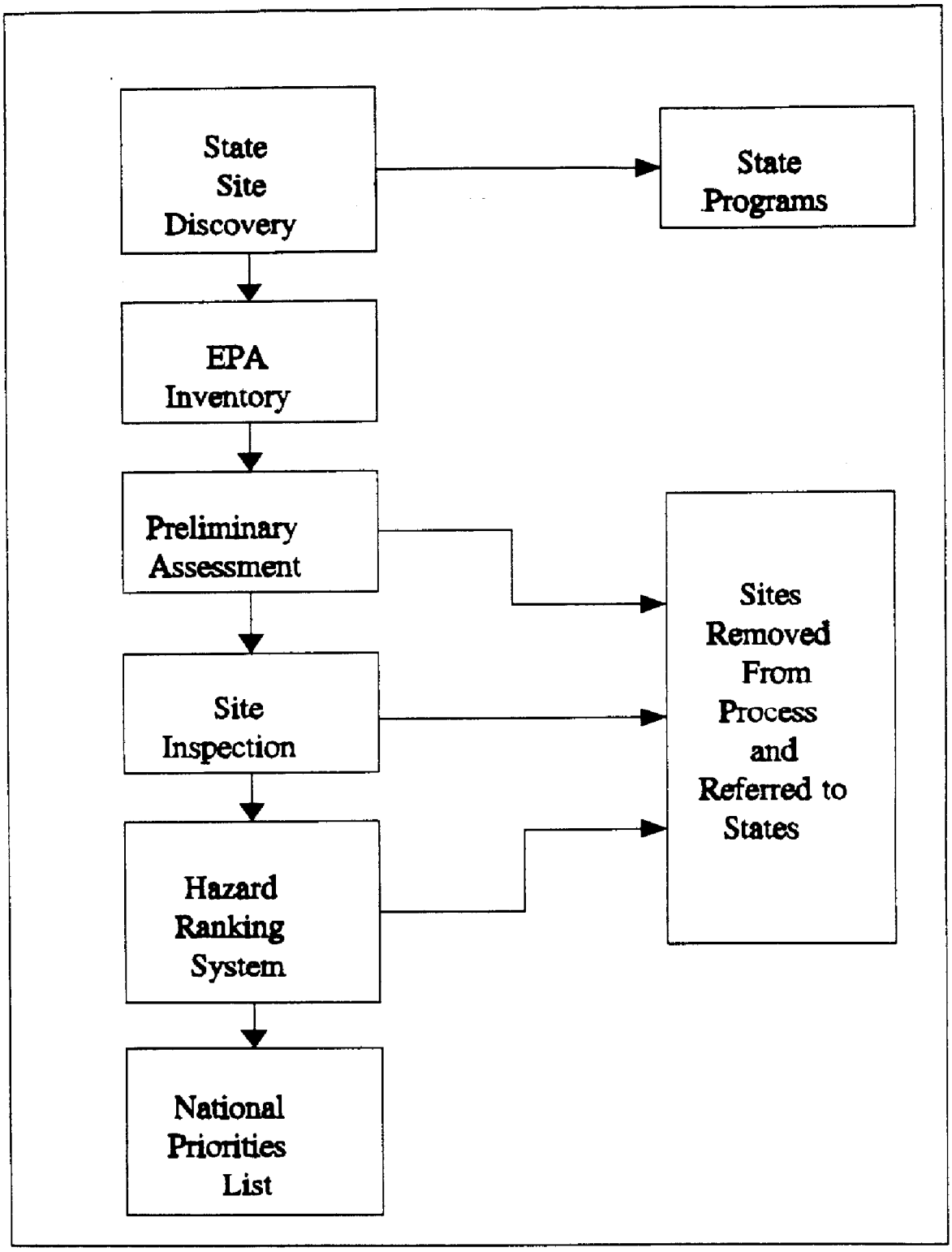
[2]The $15.2 billion is in nominal dollars, unadjusted for inflation.

[3]At any time during this process, EPA also may take action to reduce immediate threats through its emergency removal program.

Figure 1: How Sites Get on the NPL



EPA scores the remaining sites using the HRS. Revised in December 1990 and implemented in March 1991 in response to the Superfund Amendments and Reauthorization Act of 1986, the HRS assesses the relative risks posed by exposure to contamination at the site through four "pathways"--soil, groundwater, surface water, and air. Each site receives a score ranging from 0 to 100; any site that scores 28.50 and above is considered for inclusion on the NPL--and, hence, for further investigation and, usually, cleanup under the Superfund program. EPA set the 28.50 cutoff score to yield the required 400 sites when Superfund first became law. As of January 1994, 1,289 sites were on the NPL, and 5,525 sites were in EPA's inventory awaiting HRS scoring.

To deal with the large number of sites requiring evaluation and cleanup, EPA launched a new management strategy in 1989 called "worst sites first," by which it planned to allocate the agency's limited resources first to those sites that posed the most risk to public health and the environment. In line with that policy, EPA issued interim guidance in October 1992 and final guidance in August 1993 describing how the regions should prioritize the backlog of sites requiring scoring. The 1992 guidance specified criteria for ranking sites on the basis of risk--criteria such as whether contamination had already been documented, a large population was potentially threatened, or a sensitive environment was affected. Regions were to assign sites a high or low priority using these criteria. In 1990, EPA issued guidance on how to prioritize sites already on the NPL.

EPA DOES NOT USE RISK TO SET PRIORITIES

EPA's regions are delegated the task of setting priorities to determine which sites to assess and clean up first. But regions appear to have done little to implement EPA's policy of addressing the worst sites first. The level of effort required to evaluate sites and other considerations--not risk--determine which sites regions evaluate first for the NPL and which sites on the NPL they begin cleaning up first.

Factors Other Than Risk Determine Which Sites Regions Score First for the NPL

According to a 1994 study by EPA's Inspector General (IG),[4] "most regions [have] not . . . developed a worst sites first approach" in assessing the backlog of sites ready to be scored for the NPL. The IG reported that the only two regions that appeared to prioritize their sites did not do so according to risk but according to the level of effort required to evaluate the sites under the revised HRS. In addition, we found that three EPA regions do not use risk as a criterion; rather, they first deal with the oldest sites or the sites for which they have the most complete information. They said that they do not have the resources necessary to evaluate their backlog of sites and determine which pose the most risk.

Efforts are under way, though, to develop ranking criteria based on risk. For example, Region 5, which has the largest backlog of sites (1,431) ready for scoring, established a work group in November 1993 to develop procedures to implement guidance for screening and prioritizing both backlogged sites and new sites entering the program. The region believed that it needed more specific guidance because it had a large number of sites that required a more quantitative measure of risk. The region currently envisions a two-tiered approach: first, a general screening based on such criteria as whether the level of contamination exceeds standards and whether people are likely to be exposed to the contamination and, second, a more detailed evaluation that would include an assessment of the risks posed to human health and the environment. It is too early to determine how well this approach will work.

NPL Sites Are Not Prioritized by Risk

Relative risk also plays little role in regions' determination of which NPL sites to begin cleaning up first, according to a study conducted by the Center for Technology, Policy and Industrial Development at the

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[4]Program Enhancements Would Accelerate Superfund Site Assessment and Cleanup, Office of Inspector General, EPA (Washington, D.C.: Jan. 31, 1994).

Massachusetts Institute of Technology.[5] According to the study, all NPL sites are treated with essentially the same evaluation and operational framework, while site-specific issues, such as risk, cost, and technology, are given inadequate attention. In Region 5, for example, EPA officials told us they generally confer with states on where to begin cleanup work first and attempt to fund equal numbers of sites in each state; strong interest from the community or the Congress can also influence their decision. However, Region 5 has begun making plans to set priorities on the basis of risk so that it can evaluate and clean up the worst sites first.

The HRS could potentially help regions prioritize sites by risk. Minnesota, for example, uses HRS scores for this purpose in its own hazardous waste program. Derived from data that vary from site to site in extent and quality, HRS scores are not ideal. Nevertheless, EPA headquarters officials believe that the HRS is a reasonable system for broadly ranking sites' relative risks. Indeed, as directed by the Congress, EPA revised the HRS in 1990 to better reflect risk. Consequently, the HRS now more accurately takes into account the routes of potential exposure to contamination, the nature and severity of the threat, and numerous other factors. It also incorporates some of the policy judgments inherent in weighing hazards (e.g., risks to the environment versus risks to human health).

However, EPA uses the HRS solely as a screening tool--to distinguish sites contaminated enough to belong on the NPL from those of lesser concern. To conserve resources and save time,[6] regions may assess only one or two pathways, stopping the scoring once the site has crossed the 28.50 threshold. As a consequence, HRS scores cannot be used to rank sites by their relative risks. A site with a score of

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[5]Breaking the Backlog: Improving Superfund Priority Setting, Center for Technology, Policy and Industrial Development, Massachusetts Institute of Technology, under a subcontract from Arthur D. Little, Inc. (Cambridge, Mass.: Feb. 1992).

[6]Under the Superfund Amendments and Reauthorization Act of 1986, EPA should score sites within 4 years of including them in the inventory. To save resources and time, some regions spend less than the $25,000 allocated for each HRS scoring on sites that are obviously eligible for the NPL.

28.50 may pose as severe a threat as one with a score of 90. Moreover, the HRS cutoff score of 28.50 does not reflect any determination of what level of risk is unacceptable. EPA acknowledges that the agency has never attached significance to the cutoff score as an indicator of a specific level of risk. Rather, the cutoff is solely a management tool, used to identify those sites that would qualify for inclusion on the NPL.

STATES DO NOT REFER ALL THE WORST SITES TO EPA

As we first reported in 1987, the Congress and the public need to be aware of the full extent of the nation's hazardous waste problem in order to make informed decisions about the Superfund program.[7] Yet despite EPA's emphasis on addressing the worst sites first, the agency's inventory of hazardous waste properties does not necessarily include the worst sites. EPA depends primarily on states to notify it of potential Superfund sites; however, states may clean up sites under their own remediation programs without EPA's knowledge. Yet the sites that states do not refer to EPA can pose threats to public health and the environment that are as serious as those presented by sites on the NPL. An official in Michigan told us, for example, that many sites under that state's cleanup program could qualify for inclusion on the NPL.

States address sites under their own cleanup programs primarily for two reasons, according to the state officials we contacted. First, they believe their own programs to be more efficient, provided funds are available for the cleanup. Second, they may deliberately keep sites off EPA's inventory as a tactic in negotiating with parties to clean up their sites, since private companies and municipalities often fear the stigma and consequence of having their sites listed on the NPL (property values may decline, banks may refuse business loans, etc.). When the responsible parties are not cooperative or are not financially viable, then states often refer the sites to EPA.

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[7] Superfund: Extent of Nation's Potential Hazardous Waste Problem Still Unknown (GAO/RCED-88-44, Dec. 1987).

In conducting this review, we interviewed several officials from EPA's Hazardous Site Evaluation Division, Office of Solid Waste and Emergency Response, and from Region 5, which we selected because it has the largest backlog of sites awaiting HRS scoring. In addition, we attended EPA's annual National Site Assessment Conference. We also interviewed officials from two states, Michigan and Minnesota. We chose these states because they have particularly active cleanup programs of their own. We conducted our review between February and May 1994 in accordance with generally accepted government auditing standards.

If you have any questions about the issues discussed above, please contact me at (202) 512-6111. Major contributors to this correspondence were Stanley J. Czerwinski, Paul J. Schmidt, Sharon E. Butler, and José Alfredo Gómez.

Sincerely yours,

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