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# HAZARDOUS WASTE

## Remediation Waste Requirements Can Increase the Time and Cost of Cleanups



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**Resources, Community, and  
Economic Development Division**

B-278002

October 6, 1997

The Honorable Trent Lott  
Majority Leader  
United States Senate

The Honorable John H. Chafee  
Chairman, Committee on Environment  
and Public Works  
United States Senate

The Honorable Robert C. Smith  
Chairman, Subcommittee on Superfund,  
Waste Control and Risk Assessment  
Committee on Environment  
and Public Works  
United States Senate

In the United States today, tens of thousands of sites are contaminated with hazardous waste from past and current industrial activities. The Environmental Protection Agency (EPA) has estimated that the nation will spend hundreds of billions of dollars to clean up these sites. In the late 1980s, EPA discovered that certain requirements imposed by the Resource Conservation and Recovery Act may be increasing the costs and delaying the progress of some hazardous waste cleanups. Both the Congress and the administration have developed proposals to reduce these impediments.

To help the Congress evaluate these proposals, you asked us to provide information on (1) the ways, according to EPA and selected state program managers and industry representatives, that the Resource Conservation and Recovery Act's requirements, when applied to waste from cleanups (often referred to as remediation waste), affect cleanups and (2) the actions EPA has taken to address any impediments.

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## Results in Brief

Three key requirements under the Resource Conservation and Recovery Act that govern hazardous waste management—land disposal restrictions, minimum technological requirements, and requirements for permits—can have negative effects when they are applied to waste from cleanups. The requirements have been successful at preventing further contamination from ongoing industrial operations, according to EPA cleanup managers.

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However, when the requirements are applied to remediation waste, which includes sludge, debris, and contaminated soil or groundwater that is excavated or moved during a cleanup, they can pose barriers to cleanups. Because much remediation waste does not pose a significant threat to human health and the environment, subjecting it to these three requirements in particular can compel parties to perform cleanups that are more stringent than EPA, the states, industry, or national environmental groups believe are necessary to address the level of risk, increasing the time and cost of cleanups. Consequently, EPA and state program managers and industry representatives maintain, parties often try to avoid triggering the requirements by containing waste in place or by abandoning cleanups entirely.

In the late 1980s, when establishing national Superfund<sup>1</sup> guidance, EPA recognized that these three requirements would make some cleanups more difficult. Accordingly, it began developing policy and regulatory alternatives to give parties more flexibility in dealing with the requirements. However, these alternatives do not address all of the impediments to cleanups, and some state cleanup managers were not always aware of or did not fully understand the alternatives, while others found them cumbersome to use and inefficient. Industry representatives were also concerned that because of the ways that some states are using these alternatives, EPA or a third party may challenge whether the cleanup fully meets the Resource Conservation and Recovery Act's requirements, necessitating further cleanup action at some sites. To allay these concerns, in 1996, EPA proposed a new rule to comprehensively reform remediation waste requirements. The rule included a range of options to exempt some or all remediation waste from federal hazardous waste management requirements and to give the states more waste management authority. EPA had estimated that these options could save up to \$2.1 billion a year in cleanup costs. However, EPA recently decided that because stakeholders disagree over whether the agency can exempt remediation waste from the requirements under current law, the agency would face a prolonged legal battle over the new rule. Anticipating that, among other things, such a battle would be time-consuming and resource-intensive, further delaying cleanups, the agency has recently announced its intention to abandon its attempts to revise the requirements. Although areas of disagreement may

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<sup>1</sup>The Congress established the Superfund program under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended. The Superfund program is directed primarily at addressing contamination resulting from past activities at inactive or abandoned sites or from spills that require emergency action. The Corrective Action Program, under the Resource Conservation and Recovery Act, primarily addresses contamination at operating industrial facilities.

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still need to be addressed, EPA has concluded that the best way to achieve comprehensive reform is to change the underlying cleanup law.

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## Background

The Resource Conservation and Recovery Act (RCRA), passed in 1976 and substantially amended in 1984, establishes a national policy that hazardous waste be generated, treated, stored, and disposed of so as to minimize present and future threats to human health and the environment. RCRA, among other things, governs the management of hazardous waste from its generation to its final disposal so as to prevent future contamination. According to many stakeholders, the law has accomplished this purpose.

RCRA also contains provisions governing the identification and listing of hazardous waste. Under these provisions, EPA has established criteria for identifying waste that should be classified as hazardous. For example, EPA has listed in its regulations specific types of waste that are to be considered hazardous. Some types are listed by their source, that is, by the specific industrial processes that produce the waste, such as electroplating, which generates sludge from wastewater treatment. Other types are defined by certain characteristics that make the waste hazardous, such as whether it ignites easily.

RCRA's regulations govern all hazardous waste, regardless of where or how it is generated. Waste from both current and past industrial operations is regulated. The requirements apply to any waste that EPA has identified as hazardous or, under its "contained-in" policy, to any environmental medium, such as soil or groundwater, that has been mingled with an identified hazardous waste until the medium no longer contains the waste. As a result, waste associated with cleanups (often referred to as remediation waste) must be managed under RCRA if it contains a hazardous component. Thus, waste generated at a wide variety of cleanups, including those under RCRA, Superfund, and state enforcement and voluntary programs, must generally be managed under RCRA's stringent requirements.<sup>2</sup>

Both the Congress and EPA have considered proposals to amend the application of RCRA's requirements to remediation waste. Since 1995,

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<sup>2</sup>The states have created their own laws and programs, similar to the federal Superfund program, under which they may require parties that caused contamination to clean it up. Many states have also created programs that offer property owners or potential purchasers and developers incentives, such as relief from liability and a less burdensome cleanup process, if they voluntarily clean up a site. For more information on voluntary cleanup programs, see Superfund: State Voluntary Programs Provide Incentives to Encourage Cleanups ([GAO/RCED-97-66](#), Apr. 9, 1997).

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several legislative proposals have been introduced that would exempt certain types of remediation waste from these requirements and give the states the authority to establish their own requirements for managing this waste. Likewise, in 1995, the administration, as part of its effort to reinvent government, tasked EPA with identifying for statutory reform any RCRA provision whose implementation incurred costs that far outweighed the environmental benefits achieved. Through meetings with stakeholders, EPA identified RCRA remediation waste as a key area. In April 1996, EPA proposed a comprehensive rule that would have provided alternative ways of managing remediation waste. However, in September 1997, the agency announced plans to withdraw its proposed rule because, among other things, stakeholders disagreed on many remediation waste issues. Instead, the agency plans to issue regulations covering four specific elements affecting remediation waste.

To respond to this report's objectives, we reviewed pertinent laws and regulations and EPA's policies, guidance documents, and proposed regulations that discuss the application of RCRA's requirements to the management of remediation waste during cleanups. We interviewed EPA headquarters managers responsible for both developing and implementing RCRA policy. We also interviewed officials in nine states who are responsible for administering the federal RCRA and Superfund programs and their own state enforcement or voluntary cleanup programs. We selected five of these states because they have the largest cleanup workloads and four additional states to achieve geographic diversity. Finally, we discussed the current requirements for managing remediation waste with various industry and environmental associations. (See app. I for a more detailed statement of our scope and methodology.)

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## **RCRA's Hazardous Waste Management Requirements Can Have Negative Effects on Cleanups**

While many of RCRA's requirements can negatively affect cleanups, according to EPA, cleanup managers most often cited three requirements as creating disincentives for industry to clean up previously contaminated sites. They believe that these requirements increase the cost and time of some cleanups and lead parties to select cleanup remedies that can be either too stringent or not stringent enough, given the health and environmental risks posed by the waste. Ultimately, these requirements can discourage the cleanup of some sites, particularly of sites being managed under state voluntary programs.

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## Three Key RCRA Requirements Can Unnecessarily Increase the Cost and Time of Cleanups and Negatively Affect the Choice of Remedy

Most of the cleanup managers we contacted identified land disposal restrictions, minimum technological requirements, and requirements for permits as the three most significant requirements under RCRA that unnecessarily add cost and time to some cleanups. The land disposal restrictions and minimum technological requirements primarily add costs because they set stringent standards for treating and disposing of hazardous waste, forcing parties to try to reduce contamination to concentrations that they believe are lower than necessary to be protective or to use cleanup technologies that were not designed to manage remediation waste. The requirements for permits can add time—months or even years—and costs to some cleanups. For example, one EPA estimate suggests that exempting contaminated soil at a Superfund site from these requirements could reduce the treatment costs by nearly 80 percent, from an average of about \$341 per ton to an average of about \$73 per ton. This exemption could reduce the overall treatment and disposal costs for such a site from about \$12.2 million to about \$4.1 million.<sup>3</sup> Ultimately, applying the three requirements to remediation waste has led parties to base their choice of some cleanup remedies not on the risks posed by the waste, but on considerations of how to meet, minimize, or avoid the requirements, according to EPA and state cleanup officials. As a result, they pointed out, parties often choose less aggressive remedies, such as leaving remediation waste in place rather than managing or treating it.

### Land Disposal Restrictions

The 1984 RCRA amendments created land disposal restrictions that largely prohibit parties from disposing of hazardous waste on land (e.g., in a landfill<sup>4</sup> unless they have treated the waste to minimize threats to human health and the environment. The law also requires EPA to establish treatment standards for hazardous waste that has been restricted from land disposal. Once EPA has set a treatment standard, parties must meet it for hazardous waste that they subsequently dispose of on land. Parties do not have to meet the treatment standard for hazardous waste placed on land before EPA established the standard unless they remove the waste and dispose of it again—for example, during a cleanup action.

Complying with the land disposal restrictions and their associated treatment standards can be costly and complex for several reasons. First, the restrictions are costly to implement because they require that waste be

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<sup>3</sup>The EPA program managers pointed out that these savings would result from exempting only contaminated soil from RCRA's requirements. Additional savings could be realized if waste at the site, such as sludge, were also exempted.

<sup>4</sup>Land disposal includes any placement of hazardous waste into a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave.

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treated to specific, stringent standards. Such treatment is especially costly for cleanups involving large volumes of waste. Treatment to meet these stringent standards may be appropriate when relatively high-risk materials, such as concentrated hazardous waste from old lagoons and landfills, are found during cleanups. However, much remediation waste is lightly contaminated. When relatively low-risk media are found, treatment to meet the standards may be more stringent than necessary to protect human health and the environment, according to EPA. EPA estimated that exempting relatively low-risk contaminated media from the treatment standards under the land disposal restrictions could reduce by about 80 percent the volume of contaminated media subject to these requirements, from about 8.1 to about 1.8 million tons per year. The agency also estimated that exempting relatively low-risk contaminated media could decrease cleanup costs nationwide by 50 percent, or about \$1.2 billion per year, without sacrificing human health or environmental protection.<sup>5</sup>

Second, land disposal restrictions may drive some parties to use cleanup technologies that are more stringent and therefore more costly than necessary to be protective. Under RCRA, EPA is required to set treatment standards for hazardous waste that minimize any threats to human health and the environment. EPA has generally set its treatment standards at the concentration levels that could be attained if the best demonstrated available technology were used to treat the contamination. As a result, for some hazardous waste, the only way to achieve the standard is by incineration, even though other technologies, such as soil washing or bioremediation, can result in protective cleanups at a much lower cost.<sup>6</sup> For example, incineration, which can typically address all the hazardous waste at a site, can cost as much as \$1,200 per ton, according to EPA's estimates. If the waste at a site can be treated to meet RCRA's standards through a combination of other technologies, such as bioremediation, soil washing, and immobilization, each of which is effective for certain contaminants, the final cost is likely to be no more than about \$300 per ton, according to EPA—much less than the cost of incineration.

Finally, the land disposal restrictions and their associated treatment standards are costly because contamination may have come from a variety

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<sup>5</sup>Economic Assessment of the Proposed Hazardous Waste Identification Rule for Contaminated Media, EPA (Apr. 1996). Unless otherwise stated, the dollar amounts mentioned in our report are expressed in 1994 dollars, as estimated by EPA in this 1996 document. EPA program managers pointed out that additional savings could be realized by exempting sludge generated during cleanups. According to the agency's estimates, between 1.5 and 4 million tons of sludge are generated each year.

<sup>6</sup>Soil washing uses water or another washing solution and mechanical processes to scrub excavated soils and remove the hazardous contaminants. Bioremediation uses microorganisms to break down contaminants into less harmful or harmless substances.



of sources or industrial processes that occurred at the site over time, and parties may have to use several treatment technologies to comply with all of the applicable standards. According to EPA, this issue is particularly relevant at sites with a long history of contamination. The issue was also raised by a cleanup manager from New Jersey, one of the five states with the largest volume of remediation waste. He said that remediation waste frequently contains mixtures of many types of waste and parties find it difficult to design treatment methods that will satisfy all of the applicable standards under the land disposal restrictions.

EPA has acknowledged that its treatment standards under RCRA are not generally appropriate for much of the contaminated soil typically found at cleanups. However, even though EPA believes that in most cases, such soil would be more appropriately treated using other technologies, such as bioremediation, it does not have the research to demonstrate that these technologies can attain the stringent treatment levels required by RCRA. Some of the state cleanup managers we interviewed also discussed the problems they had encountered in treating soil to achieve the standards. New York officials, for example, told us that the owners of a site with soil contaminated with metals wanted to use a cleanup technology at the site that would have achieved 98 percent of the concentration level specified by the pertinent RCRA treatment standards. However, because the technology did not fully comply with the treatment standards, the owners instead had to excavate the waste and send it to a hazardous waste facility for treatment and disposal.

Alternatively, efforts to avoid triggering the treatment standards under the land disposal restrictions can drive parties to use less aggressive and perhaps less effective cleanup methods, such as leaving contaminated soil in place and placing a waterproof cover over it rather than treating it. While most cleanup programs allow such remedies on a case-by-case basis, EPA believes they are not as protective over the long term as more aggressive remedies, such as excavating the waste to treat it.

## Minimum Technological Requirements

RCRA also establishes design and operating specifications, known as minimum technological requirements, for facilities, such as incinerators and landfills, that either treat or dispose of hazardous waste. For example, a hazardous waste landfill or surface impoundment<sup>7</sup> must have (1) two or more liners, (2) a leachate collection system,<sup>8</sup> and (3) a monitoring system

<sup>7</sup>A surface impoundment is an area, such as a pond or a pit, where liquid or semisolid hazardous waste is treated, stored, or disposed of.

<sup>8</sup>This system collects any liquid that has percolated through or drained from the hazardous waste.

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to ensure that contamination is not moving into the groundwater. Complying with these requirements can be expensive. For example, one facility we visited spent \$750,000 in 1987 to meet the minimum technological requirements for a 2.5-acre surface impoundment.

Because these technological requirements were designed for facilities that manage waste from ongoing industrial operations (called process waste), they may be more stringent than necessary for some remediation waste, according to EPA and the majority of the state cleanup managers we interviewed. For example, a temporary waste pile must meet the same requirements as a pile where hazardous waste will be treated or stored for many years. As a result, these requirements can be counterproductive for some cleanups and unnecessarily increase their costs, according to EPA, most state officials, and the industry representatives we interviewed.

Disposing of remediation waste, particularly lower-risk waste, in accordance with the minimum technological requirements may add unnecessary costs. For example, parties that want to dispose of waste that has already been treated to meet land disposal requirements must still use a landfill that meets the minimum technological requirements. EPA and several state cleanup officials we interviewed were doubtful that compliance with these requirements would be worth the cost, given the low level of risk that treated remediation waste poses. According to EPA, disposing of waste in a hazardous waste landfill can cost \$200 per ton, compared with \$50 per ton to dispose of it in a municipal or industrial landfill. Thus, for the average Superfund site with 34,000 tons of contaminated soil, it would cost about \$6.8 million to dispose of the treated soil in a landfill that meets these technological requirements, compared with about \$1.7 million to dispose of it in a municipal or industrial landfill.

## Requirements for Permits

RCRA generally prohibits the treatment, storage, or disposal of hazardous waste without a permit. Because the process of obtaining a permit involves a step-by-step approach with substantial requirements for documentation and review, obtaining a permit can increase cleanup costs and cause delays. In addition, under RCRA, facilities that require a permit in order to clean up a portion of a site must also address cleanup requirements for the entire site. Consequently, parties may try to avoid triggering the permit requirement.

The administrative cost of obtaining a RCRA permit can range from \$80,000 for an on-site treatment unit, such as a tank, to \$400,000 for an on-site

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incinerator, and up to \$1 million for a landfill, according to EPA's estimates. In addition to these costs, a party may incur other costs for tasks needed to obtain a permit, such as assessing a site's conditions in order to design a groundwater monitoring system or conducting emissions testing and trial burns for an incinerator. The time required to obtain a permit can also be extensive, according to almost all of the state cleanup managers we interviewed. For example, Texas managers said that getting a permit can take 7 to 9 months for a simple treatment unit, such as a tank, and an additional 5 to 6 years for a more complicated unit, such as a landfill. Industry representatives we spoke with also estimated that getting a RCRA permit typically takes 5 to 6 years. In a 1990 analysis of RCRA, EPA reported that the permit process is cumbersome and causes significant delays.<sup>9</sup>

EPA and several state cleanup managers indicated that these costs, delays, and administrative issues are particularly significant for facilities that are not in the business of transporting, storing, or disposing of hazardous waste. Such facilities would not need a RCRA permit were it not for their cleanup activities. Even facilities that already have a RCRA permit to operate encounter costs and delays when trying to get EPA or the state to modify their permit to conduct cleanup activities. EPA's most recent estimate (1992) of the cost to modify an existing permit is about \$80,000. Washington State cleanup managers said that they have been working on a permit modification for one site for 2 years. They find that under RCRA, facilities have to request a permit modification for every technical change, whereas under other programs, such as their state enforcement program, the regulators and cleanup parties can meet and negotiate changes to cleanup plans.

To avoid these problems, parties sometimes opt to send their remediation waste off-site to a commercial facility that already has a RCRA permit to treat, store, or dispose of hazardous waste; however, this option can be prohibitively expensive, according to EPA and some state cleanup managers. For example, Maine does not have any such commercial facilities; therefore, parties that want to send their waste off-site have to pay high transportation costs to ship it to another state that does.

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## **RCRA's Requirements Can Discourage Cleanups Altogether**

To avoid triggering RCRA's requirements, property owners whose sites are not under a federal or state cleanup order may choose to let the waste remain in place without treatment and purchase land elsewhere for their

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<sup>9</sup>EPA managers from the Office of Enforcement added that the agency can impose specific requirements for some cleanups under an administrative order, which can help decrease the time and costs involved in obtaining a permit.

plant expansion or other needs, according to EPA, as well as many state cleanup officials and industry representatives. EPA managers told us that leaving waste in place—especially “old waste,” such as sludge, that may still have relatively high concentrations of hazardous substances—may pose health or environmental risks. Furthermore, some state cleanup managers noted, the contaminated land is not placed back into productive use. Although cleaning up a site may offer economic benefits, such as relief from liability for contamination and increased property values, industry sometimes concludes that the costs of complying with RCRA can outweigh these benefits, according to EPA’s analysis.

Cleanup program managers from several states echoed these concerns. For example, cleanup managers from Missouri believe that less restrictive requirements for remediation waste would lead to more voluntary cleanups. Officials from Pennsylvania concurred, saying that they believe RCRA’s requirements discourage parties from voluntarily stepping forward to clean sites, such as former steel mill sites near Pittsburgh. Likewise, cleanup managers from New York believe that economic factors are key to determining whether a voluntary cleanup will occur. If a property’s sale price or redevelopment value does not allow a party to recoup the expenses of complying with RCRA, such a cleanup will not take place, they contend. Illinois cleanup managers expressed similar concerns, saying that potential buyers are likely to lose interest in purchasing a property once they find out that it may be subject to RCRA’s requirements, especially the treatment standards under the land disposal restrictions.

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## EPA Has Tried to Solve Remediation Waste Issues but Has Had Limited Success

Since the late 1980s, EPA has incrementally modified RCRA’s application to remediation waste through an assortment of policy statements and regulatory alternatives, which have lessened but not solved the adverse effects identified. The state managers we interviewed have had varied experience in using these alternatives; some have found them burdensome and overly complicated. Furthermore, industry representatives were concerned that using the alternatives may result in cleanups that do not meet RCRA’s requirements and will thus require further action. To allay these concerns, in 1996, EPA proposed new rules to more comprehensively reform RCRA’s requirements as they apply to remediation waste. However, because technical and legal issues associated with the proposed rule remain unresolved, the reform of RCRA’s requirements that impede cleanups can best be addressed through legislation, according to EPA.

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## Policies and Regulatory Alternatives Are Limited

The states have most frequently used six policy and regulatory alternatives that EPA has issued. Each alternative varies, however, in the degree to which it helps to solve the problems posed by RCRA's requirements.

### Contained-In/Contained-Out Policies

EPA originally designed the "contained-in" policy in 1986 to clarify that the scope of the waste managed under RCRA includes any medium—for example, groundwater or soils—that contained a listed waste. In the 1990s, recognizing that at some concentration levels, contaminated media no longer pose a hazard to health or the environment, EPA has allowed its regions and states to exclude, or "contain out," such media from RCRA's regulation, on a case-by-case basis. EPA has not established definitive guidance on the specific concentration levels that justify a "contained-out" decision, but it has stated that the decision should be based on the risk posed to human health. Hence, according to EPA, this policy allows regulatory agencies to make their own decisions about when contaminated media no longer contain hazardous waste and therefore no longer need to be managed under RCRA. However, EPA has also reported that while the contained-out policy has increased flexibility and reduced cleanup delays, it has not been consistently applied throughout the nation. In addition, the policy applies only to contaminated media—soil and groundwater—and not to all remediation waste, such as sludge. Furthermore, in some cases, not all waste that has been contained out is exempt from all of RCRA's requirements. For example, contaminated soil may still be subject to land disposal requirements if it was excavated and tested in order to obtain the contained-out decision. Finally, managers from one state told us they are reluctant to use this policy because EPA has not set national standards for making a contained-out decision.

### On-Site Permit Waivers

A 1986 amendment to the Superfund law exempts on-site cleanups from the requirement to obtain a RCRA permit because these cleanups receive close federal and state oversight. Some states have likewise adopted this waiver for the on-site cleanups they oversee under their own enforcement programs. Nevertheless, these cleanups must continue to meet RCRA's other requirements, including the land disposal restrictions and minimum technological requirements. Permit waivers do not apply to RCRA or state voluntary cleanups.

### Site-Specific Land Disposal Treatment Variances

In 1988, EPA issued a regulation to help address problems in meeting the land disposal treatment standards for specific types of waste, such as contaminated soils. The regulation allows EPA to issue a site-specific variance from a given land disposal treatment standard under certain circumstances, such as when a given waste cannot be treated to the

applicable concentration level. However, according to the Superfund program managers, the lengthy approval process, which includes obtaining public comments, discourages requests for these variances. Nonetheless, EPA has recently encouraged the regions to make greater use of the variances.

#### Source of Contamination Presumption

In 1990, EPA established this policy for Superfund cleanups, and the states have extended it to cleanups in other programs. When beginning a cleanup, a party must make a good-faith effort to determine the source of the waste identified at the site. The source often determines whether the waste is a listed hazardous waste and, therefore, subject to RCRA's requirements. The Superfund guidance provides that when no records exist to document the exact source of the waste—a common occurrence for older, abandoned Superfund sites—the lead regulatory agency can presume that the waste is not a listed hazardous waste and is therefore not subject to RCRA's requirements. However, the parties conducting the cleanups are at risk if they have not taken adequate steps to identify the source of the waste. If additional information becomes available to prove that, because of its source, a waste is a listed hazardous waste, the responsible party could be forced by EPA to perform additional cleanup activities at the site in accordance with RCRA's requirements. In this case, the responsible party could face liability for improperly managing and disposing of hazardous waste.

#### Area of Contamination Policy

Also originating within Superfund in 1990, this interpretation of the scope of land disposal restrictions allows cleanup managers to consolidate some remediation waste and treat it or leave it in place and cap it without triggering the treatment standards under the land disposal restrictions. However, the waste can be consolidated only if it lies within contiguous areas of contamination. In addition, cleanup managers must comply with all of RCRA's requirements if the waste is moved from one area of contamination to another or is removed, treated, and then placed back into the area of contamination.

#### Corrective Action Management Unit Rule

In 1993, EPA issued the corrective action management unit (CAMU) rule that significantly expands upon the area of contamination policy. According to EPA officials, under this rule, parties conducting cleanups can dig up or move waste or can permanently treat, store, or dispose of it within a strictly defined area on-site if certain site-specific design and operating requirements are met. However, the waste would not be subject to RCRA's land disposal restrictions or minimum technological requirements. Moreover, parties must obtain EPA's approval to use a CAMU—usually by

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obtaining a permit. The use of CAMUS has been somewhat limited because in 1993, some stakeholders, including the Environmental Defense Fund (EDF), filed a lawsuit questioning, among other things, whether EPA has the authority to exempt hazardous waste disposed of in CAMUS from the land disposal restrictions and the minimum technological requirements.<sup>10</sup> This legal question has not yet been resolved.

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**Although Alternatives  
Provide Some Relief From  
RCRA's Requirements,  
Managers Found Them  
Burdensome and  
Inefficient to Use**

While most of the state managers we interviewed described these alternatives, such as the CAMU rule, as useful during cleanups, some managers were not aware of or did not understand all of the alternatives, questioned whether they were legally defensible, or found them burdensome and inefficient. EPA is considering how to address these problems.

Cleanup managers from all but one of the states we selected told us that they had used EPA's alternatives for minimizing the impact of RCRA's requirements on remediation waste cleanups. Generally, the state and other managers believed that the alternatives brought needed flexibility to RCRA's rigid requirements. For example, the Department of Defense's Deputy Under Secretary for Environmental Security attributed savings of between \$500 million and \$1 billion in cleanup costs to the use of a CAMU at the Department's Rocky Mountain Arsenal site.<sup>11</sup>

However, those managers who had used the alternatives more extensively also said that they spend considerable time and resources to determine which alternatives to use and how to use them to work around the problems presented by RCRA's requirements. They found that the alternatives were difficult to use and did not solve all of the problems at a particular site.

In some instances, we found that cleanup managers were unfamiliar with some of the alternatives or were concerned about using them. For example, cleanup managers from one state told us that they were not familiar with EPA's policy that provides for waivers to the administrative requirements for obtaining a permit. Managers from another state told us that they were reluctant to make use of the contained-out policy because EPA had not issued specific guidance on such determinations. Industry

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<sup>10</sup>The Environmental Defense Fund is one of the primary environmental organizations that has taken an active position on the various proposals to reform RCRA's requirements for remediation waste.

<sup>11</sup>Federal agencies are generally responsible for cleanups of their own facilities.

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managers told us they were hesitant to propose new CAMUS because of the rule's uncertain future.

Several industry and state cleanup managers acknowledged that they are somewhat uncomfortable applying these alternatives for fear that EPA or a third party may view the cleanup as not being in full compliance with RCRA's requirements and may initiate a legal challenge. For example, managers in one state were somewhat uncomfortable that they take full advantage of the flexibility provided by the source of contamination presumption. In the managers' view, the state may not be requiring an extensive enough search to determine the source of the waste.

Several EPA headquarters managers said that they are not surprised that state cleanup managers are unaware of or are inconsistently applying the alternative policies because the policies are difficult to understand and have been implemented piecemeal over the years. The EPA managers acknowledged that they may need to take additional steps to help the regions and states better use these options.

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### **EPA Believes That Comprehensive Reform Can Best Be Achieved Through Legislation**

Recognizing the need for more comprehensive reform of RCRA's requirements for managing remediation waste, EPA in 1993 established a formal advisory committee of key stakeholders that developed the framework for a new regulatory approach that EPA proposed in April 1996, the Hazardous Waste Identification Rule for Contaminated Media (HWIR-Media). This proposal laid out several options that range from exempting some remediation waste from RCRA's current requirements to exempting all such waste and giving the states the authority to define how to manage it. EPA estimated that these options could save parties conducting cleanups up to \$2.1 billion in cleanup costs a year over the next few years. However, stakeholders still have significant disagreements over legal and technical issues. Therefore, EPA anticipates that any approach to comprehensive regulatory reform would result in prolonged legal battles that would delay cleanups. As result, the agency announced plans to withdraw its proposed rule and focus on four more narrow regulatory changes. EPA concluded that comprehensive reform can best be achieved by revising RCRA itself.

EPA's proposed rule laid out alternatives for waste management, ranging from the "bright line" to the "unitary" approach. The first was limited to making only contaminated media eligible for an exemption from RCRA's stringent requirements while maintaining the requirements for more highly



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contaminated hazardous waste. To determine which media could be exempt, EPA would establish a concentration level, or “bright line,” for various contaminants.<sup>12</sup> If the contaminants in a medium fall below the bright line, the medium would be eligible for an exemption from RCRA’s current hazardous waste management requirements and EPA and authorized states would have the authority to set site-specific waste management requirements. EPA estimates that about 80 percent of all contaminated media would be eligible for a RCRA exemption under this approach, saving \$1.2 billion a year in cleanup costs over the next few years.

In contrast, the unitary approach would exempt all remediation waste, including debris and sludge, from RCRA’s hazardous waste management requirements. Remediation waste would then be managed under a site-specific remediation plan which would be subject to public review and comment and approval by EPA or an authorized state. EPA estimated that this approach could save approximately \$2.1 billion a year in cleanup costs over the next few years.

According to the Association of State and Territorial Waste Management Officials, most states would prefer an approach that includes all remediation waste—similar to the unitary approach—because it would allow for efficient cleanups. Representatives from the departments of Defense and Energy, industry, and several associations that we contacted also said they would generally prefer the unitary approach for the same reason. Industry groups, in their comments on EPA’s proposal, raised concerns about the bright-line approach, particularly about the extent to which they would have to test and sample waste to determine whether each contaminant at a facility exceeds the line, potentially making some cleanups cost-prohibitive. Some of EPA’s program managers also said that if all remediation waste is not exempted from RCRA’s current requirements, the incentives to avoid cleanups or select less aggressive remedies will continue.

Other stakeholders, including representatives of EDF, would generally prefer an approach that is conceptually similar to the bright-line approach. For example, EDF, in its comments on EPA’s proposed rule, stated that it strongly objects to any rule that does not provide national treatment standards for highly contaminated media. EDF contends that, in most cases, this material is as toxic as the process waste that is subject to RCRA’s

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<sup>12</sup>For example, under the bright-line option, a concentration of a hazardous constituent that is determined to increase the lifetime risk of cancer in more than 1 person in 1,000 would be classified as hazardous and would be retained under RCRA’s current system for managing hazardous waste.

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requirements and therefore should be managed rigorously. EDF also asserts that EPA lacks any technical basis for setting different treatment standards for sludge managed during cleanups. EDF believes that there is no evidence that the sludge managed during a cleanup is physically or chemically different from process waste. Therefore, EDF is opposed to relaxing RCRA's requirements for managing sludge. EDF was also critical of EPA's methodology for establishing bright lines, stating that the agency did not adequately consider potential exposure to contaminated groundwater.

Stakeholders also disagree on the extent to which the states should be authorized to manage remediation waste. Some stakeholders expressed concern that the states, if authorized, could set different standards for managing such waste, potentially creating problems with interstate transfer and disposal. Cleanup managers in one state were particularly concerned about whether they would have adequate resources to determine the hazard posed by waste shipped to their state from states with less stringent standards.

Disagreements also arose on the process that should be used to determine whether a state has adequate laws, standards, and programs to manage exempted waste. Some stakeholders argue that the states have already demonstrated their ability to manage remediation waste through their state cleanup programs and should be allowed to certify themselves as authorized to do so. EDF, on the other hand, points out that since a large portion of remediation waste would be exempt from RCRA's hazardous waste management requirements, the states could use their own systems for managing nonhazardous waste, such as municipal and industrial landfills, for remediation waste. EDF argues that some evaluations have raised questions about the adequacy of these state systems. EPA enforcement managers also added that community groups have expressed similar concerns. If EPA is to implement a state authorization process, all stakeholders seem to agree that the agency should not duplicate the process EPA uses to authorize states to implement RCRA because it is cumbersome and time-consuming. However, the stakeholders disagree on how to streamline the process so that EPA retains meaningful oversight and the public has adequate opportunities to participate in cleanup decisions and activities.

EPA concluded that resolving all the technical and legal issues, including how to distinguish what waste poses a significant threat to human health and the environment and whether EPA can exempt this waste from RCRA's land disposal restrictions, would be time-consuming and

resource-intensive. The agency expected the resulting drawn out litigation and uncertainty would further discourage cleanups. Subsequently, the agency announced on September 11, 1997, that it plans to withdraw the HWIR-Media rule and, instead, pursue final rulemaking on four more narrow portions of the proposal by June 1998.<sup>13</sup> The agency acknowledges that while these changes would help improve remediation waste management, they would not provide the needed flexibility to exempt such waste from RCRA's rules. Therefore, EPA further concluded that comprehensive reform of the remediation waste issue can be best addressed through the legislative process. In anticipation that legislative proposals to address the issue could be reintroduced, EPA, in conjunction with the Council on Environmental Quality, hosted three meetings during the past year to assess stakeholders' views on outstanding remediation waste issues and determine possible ways to address them.<sup>14</sup>

## Conclusion

Three of RCRA's hazardous waste management requirements, in particular—land disposal restrictions, minimum technological requirements, and requirements for permits—may be unduly stringent for a significant portion of the remediation waste that poses a lesser risk to human health and the environment. While stakeholders generally agree that comprehensive reform of remediation waste management is necessary, not everyone agrees on how to achieve this reform. EPA's efforts to provide alternative policies to mitigate the impact of these requirements have resulted in confusion over the applicability of the policies to cleanups and some, such as the CAMU rule, have been legally challenged. EPA has concluded that because stakeholders disagree on the extent to which waste should be exempt from RCRA's requirements, as well as on EPA's legal authority under current law to exempt waste from the requirements, the agency could not easily achieve comprehensive reform through the regulatory process. It believes that such reform can best be achieved by revising the underlying law governing remediation waste management. EPA's plan to withdraw proposed comprehensive regulatory reform increases the need for a legislative solution.

## Recommendation

We recommend that until comprehensive legislative reform is achieved to address RCRA's disincentives to cleanups, the Administrator, EPA, take steps

<sup>13</sup>The elements that EPA plans to focus on are alternative land disposal treatment standards for hazardous contaminated soil; streamlined processes for obtaining permits for cleanup sites; options for remediation piles; and an exclusion from RCRA's requirements for dredged materials.

<sup>14</sup>The Council on Environmental Quality, in the Executive Office of the President, is responsible for coordinating the development and implementation of environmental policies throughout the federal government.

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to ensure that regulators overseeing cleanups have a more consistent understanding of how to apply EPA's existing policy and regulatory alternatives to RCRA's requirements for managing remediation waste. These steps could include, for example, consolidating the policy and regulatory alternatives into one guidance document, training all cleanup managers in its appropriate use, and providing follow-up legal assistance for site-specific implementation questions.

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## Agency Comments

We provided copies of a draft of this report to EPA for its review and comment. We met with agency officials, including the Acting Director, Permits and State Programs Division, Office of Solid Waste, the division with responsibility for developing policies and procedures for managing remediation waste under RCRA. The agency generally agreed with the report's findings. EPA suggested some technical revisions to the report, which we incorporated. The agency also identified two issues it believed needed further clarification. First, EPA agreed that we identified the three specific requirements under RCRA that, when applied to remediation waste, pose the most significant barriers to cleanups. However, the agency noted that reforming these individual requirements would not remove all of the barriers; RCRA's entire hazardous waste management process, as it applies to remediation waste, poses problems and needs comprehensive reform. Second, the agency wanted to make sure that the report clearly indicated that RCRA's requirements affect all remediation waste, including sludge, debris, and contaminated soil. EPA believes that reform must apply to all remediation waste. We made several changes in the report where appropriate to address these issues.

Finally, while agreeing that our recommendation will help parties manage cleanups under RCRA's current requirements, EPA believes that the benefits may be limited because the requirements will continue to pose barriers to cleanups until comprehensive reform is achieved. We reemphasized that reform, while necessary, may take some time to implement. Meanwhile, parties will have to accomplish cleanups under RCRA's current requirements and should be able to take advantage of the policy and regulatory alternatives EPA has provided. However, given the concerns that state and industry cleanup managers have expressed about using these alternatives, we believe it is important that EPA take steps to ensure the alternatives are implemented correctly.

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The scope and methodology used for our work is discussed in appendix I. We performed our work from April through September 1997 in accordance with generally accepted government auditing standards.

As arranged with your offices, 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 to the appropriate congressional committees; the Administrator, EPA; and other interested parties. We will also make copies available to others on request.

We hope this information will assist you as you consider legislation to reform RCRA as it applies to remediation waste. If you have any further questions, please call me at (202) 512-6111. Major contributors to this report are listed in appendix II.

A handwritten signature in black ink, reading "Lawrence J. Dyckman". The signature is fluid and cursive, with the first name "Lawrence" and last name "Dyckman" clearly legible.

Lawrence J. Dyckman  
Associate Director, Environmental  
Protection Issues

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# Contents

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Letter	1
Appendixes	
Appendix I: Scope and Methodology	22
Appendix II: Major Contributors to This Report	24

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## Abbreviations

CAMU	corrective action management unit
EDF	Environmental Defense Fund
EPA	Environmental Protection Agency
HWIR-Media	Hazardous Waste Identification Rule for Contaminated Media
RCRA	Resource Conservation and Recovery Act

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# Scope and Methodology

To provide information on the requirements of the Resource Conservation and Recovery Act (RCRA) that pose barriers to managing remediation waste and the policies that the Environmental Protection Agency (EPA) has developed to mitigate those barriers, we reviewed applicable laws and numerous EPA documents, policies, and regulations. We also interviewed managers in charge of hazardous waste cleanup programs in EPA, nine states, and industry to obtain their views both on RCRA’s requirements and on the actions EPA has taken to mitigate barriers presented by the requirements. We attended all three meetings co-sponsored by EPA and the Council on Environmental Quality to assess stakeholders’ concerns with reforming RCRA’s requirements for remediation waste; these meetings were held on June 5, August 6, and September 5, 1997. Additionally, we spoke with cleanup program managers in several other federal agencies and representatives of the primary environmental association involved in remediation waste issues to learn about their experiences and perspectives. Finally, we visited a hazardous waste facility at Cytec Industries’ Willow Island plant near Parkersburg, West Virginia. The officials and representatives we interviewed include the following:

EPA	<ul style="list-style-type: none"><li>• The Acting Director and environmental specialists from the Permits and State Programs Division, Office of Solid Waste. This division is responsible for developing environmental remediation policies and procedures under RCRA.</li><li>• Environmental specialists from the Office of Site Remediation Enforcement who oversee EPA’s enforcement of RCRA.</li><li>• Representatives from the Superfund program who specialize in complying with RCRA’s applicable requirements.</li><li>• Region III officials who manage hazardous waste activities at Cytec Industries’ Willow Island plant near Parkersburg, West Virginia.</li></ul>
Other Federal Agencies	<ul style="list-style-type: none"><li>• Program managers responsible for overseeing hazardous waste cleanups at the departments of Defense, Energy, and the Interior.</li></ul>
States	<ul style="list-style-type: none"><li>• A policy director from the Association of State and Territorial Solid Waste Management Officials.</li><li>• Managers of Superfund, RCRA, state enforcement, and voluntary cleanup programs in nine states. We selected five of these states—California, Illinois, New Jersey, New York, and Pennsylvania—because, according to EPA, they collectively generate, each year, about 35 percent of the nation’s</li></ul>



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contaminated environmental media managed off-site. We selected the four remaining states—Maine, Missouri, Texas, and Washington—for geographic diversity.

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**Industry**

- Attorneys and consultants representing major corporate members of the National Environmental Development Association and the RCRA Corrective Action Project. These groups were organized to promote the reform of RCRA.
- Attorneys from the Environmental Technology Council. This group represents private waste managers.
- A spokesperson for the Solid Waste Association of North America. This group represents municipal landfill operators.
- Facility and corporate headquarters managers from Cytec Industries in charge of hazardous waste management activities at the Willow Island plant near Parkersburg, West Virginia.

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**Environmental Group**

- Attorneys from the Environmental Defense Fund. This organization is one of the primary environmental organizations taking an active position on various proposals to reform RCRA's requirements for managing remediation waste.

We performed our work from April through September 1997 in accordance with generally accepted government auditing standards.

# Major Contributors to This Report

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