OFFICE OF INSPECTOR GENERAL

Catalyst for Improving the Environment

Evaluation Report

Some States Cannot Address Assessment Needs and Face Limitations in Meeting Future Superfund Cleanup Requirements

Report No. 2004-P-00027

September 1, 2004

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Abbreviations

ARARs	Applicable, or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
FTEs	Full-Time Equivalents
GAO	General Accounting Office
GSI	Ground Water/Surface Water Interface
LTRA	Long-term Response Action
MCL	Maximum Contaminant Level
MCLGs	Maximum Contaminant Level Goals
NCP	National Contingency Plan
NPL	National Priority List
O&M	Operation and Maintenance
OIG	Office of Inspector General
OSWER	Office of Solid Waste and Emergency Response

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
INSPECTOR GENERAL

September 1, 2004

MEMORANDUM

SUBJECT: Evaluation Report
Some States Cannot Address Assessment Needs and Face Limitations in Meeting Future Superfund Cleanup Requirements
Report No. 2004-P-00027

FROM: Carolyn Copper /s/
Director of Program Evaluation: Hazardous Waste Issues
Office of Program Evaluation

TO: Thomas P. Dunne
Acting Assistant Administrator
Office of Solid Waste and Emergency Response

Attached is our report entitled *Some States Cannot Address Assessment Needs and Face Limitations in Meeting Future Superfund Cleanup Requirements.* Our review evaluated the effectiveness of States' hazardous waste site cleanup programs, including those related to Superfund projects, and their capacity to undertake future actions at sites that are either eligible for or listed on the National Priorities List. We focused on cleanup programs in five States – New Jersey, Michigan, Kansas, Pennsylvania, and Washington – and the extent to which they had processes in place to identify, assess, and prioritize hazardous waste sites and use standard-based cleanup remedies that provide long-term protection. Because States have a future responsibility to assume operation and maintenance responsibilities for long-term response actions at National Priorities List sites, we also evaluated the States' capacity to undertake these actions.

The report contains findings and recommendations that describe problems the Office of Inspector General (OIG) has identified and the corrective actions the OIG recommends. This report represents the opinion of the OIG and the findings contained in this report do not necessarily represent the final EPA position. Final determinations on matters in this report will be made by EPA managers in accordance with established audit resolution procedures.

On July 28, 2004, the OIG issued a draft report to Office of Solid Waste and Emergency Response (OSWER) and the States for review and comment. We received responses to the draft report from OSWER and the five States reviewed, and they all generally agreed with the findings and recommendations.

Action Required

In accordance with EPA Manual 2750, you are required to provide this office with a written response within 90 days of the final report date. The response should address all recommendations. For corrective actions planned but not completed by the response date, please describe the actions that are ongoing and provide a timetable for completion. Reference to specific milestones for these actions will assist in deciding whether to close this report in the assignment tracking system.

We have no objection to the further release of this report to the public. Should you or your staff have any questions regarding this report, please contact me at (202) 566-0829 or Michael Owen, the assignment manager, at (206) 553-2542.

Executive Summary

Purpose

The Environmental Protection Agency (EPA) is currently considering the future direction of the Superfund program. This consideration includes Superfund's relationship to State hazardous waste site cleanup programs and how the Nation's waste programs can work together in a more effective and unified fashion. Our review evaluated the effectiveness of State hazardous waste site cleanup programs, including those related to Superfund projects, and their capacity to undertake future cleanup actions at sites that are either eligible for or listed on the National Priorities List (NPL). We focused on cleanup programs in five States – New Jersey, Michigan, Kansas, Pennsylvania, and Washington – and the extent to which they had processes in place to identify, assess, and prioritize hazardous waste sites and use standard-based cleanup remedies that provide long-term protection. We addressed the following questions:

- Have the States established processes that identify, assess, and prioritize cleanups to ensure that sites with the greatest threats to public health and the environment are being addressed promptly?

- Are cleanup standards and remedies used by the States based on risk and sound science and do they provide long-term protection for public health and the environment?

Because States have a future responsibility to assume operation and maintenance (O&M) responsibilities for long-term response actions (LTRAs) at NPL sites, we also evaluated the States' capacity to undertake these actions.

This work is intended to assist EPA with decisions concerning whether the States should play a greater role in the Superfund program.

Results

The five States have established hazardous waste site cleanup programs that address contaminated sites posing human health and environmental risks ranging from low to high. Over 5,400 hazardous waste sites are being addressed by these programs, including more than 1,700 sites that could be considered NPL-caliber (hazardous waste sites that were not included on the NPL but appeared to be eligible). However, the States' abilities to meet current and/or future responsibilities for the Superfund program as well as their own cleanup programs are limited. Specifically, we found that States have backlogs in addressing hazardous waste sites, use flexible remedy decision processes that are not equivalent to Superfund's process, and appear to be significantly challenged in their ability to meet their required, and impending obligations at current Superfund sites.

States Need to Address Backlogs in Site Assessments and Scoring

All five States reviewed have implemented processes for identifying, assessing, investigating, and prioritizing hazardous waste sites which are similar to EPA's remedial process for the Superfund program. However, three of the States had a combined backlog of at least 423 sites that were awaiting site assessment, and one of these States may also have a backlog in scoring sites. Although one of the remaining two States also appeared to have a backlog, there was insufficient data for determining whether a backlog exists. According to State officials, the backlogs were primarily attributable to limitations in Federal and State funding. Until these backlogs are eliminated, the States cannot assure that sites posing the greatest threat to human health and the environment are being addressed promptly, and the backlog may limit the States' capacity to address future hazardous waste sites, including sites on the NPL.

States Apply Remedy Decision Processes That Are More Flexible Than Superfund's Process

The States have developed cleanup standards that are based on risk and sound science and are intended to be protective of human health and the environment. Additionally, processes used by the States to characterize contamination, assess risks, and make remedy decisions generally incorporate sound scientific analysis and are similar, but not equivalent, to EPA's remedy decision process for Superfund. The States generally use streamlined decision processes that do not include the Superfund equivalent baseline risk assessments established by EPA. However, we found that the States' decision processes for NPL-caliber sites generally provide remedies that are designed to be protective to human health and the environment. Therefore, if EPA wants the States to assume a larger role in addressing NPL sites, it should consider giving the States greater flexibility in their remedy selection processes.

States May Not Be Able to Support Impending Operation and Maintenance Responsibilities

We also found that four of the five States reviewed may not have the resources to undertake their future O&M LTRA obligations because of declining budgets. Further, the States are concerned that they may be required to assume O&M responsibilities for ineffective and/or inefficiently performing LTRAs. They are concerned about the performance of the LTRAs because EPA may not conduct optimization studies on all of the systems. Consequently, States may not be able to maintain the integrity of remedies and ensure protection to human health and the environment, and assuming inadequate LTRAs can result in the States incurring unanticipated costs.

Recommendations

If EPA desires States to assume greater responsibilities in Superfund remedy decision processes or actions, we recommend that the Agency work with States to determine the key

reasons for the backlogs in completing site assessments, and consider streamlining the Superfund remediation process to provide States more flexibility in the application of baseline risk assessments. We also recommend that EPA work with the States to explore viable funding and staffing options to support their O&M responsibilities for LTRAs at NPL sites, and complete guidance on optimization of LTRAs at NPL sites.

Agency and State Comments and OIG Evaluation

OSWER agreed with the findings and recommendations and generally noted that the OIG's focused recommendations will assist them in enhancing the role of States as co-implementers of the Superfund program. Additionally, OSWER identified plans to implement the report recommendations and did not identify any factual inaccuracies in the information presented.

The five States generally agreed with the findings. New Jersey, Michigan, and Kansas also generally agreed with the recommendations; however, Pennsylvania and Washington did not comment on them. Additionally each of the States provided comments to clarify its respective portions of the report content, and we have incorporated these comments in the report as appropriate. Although the States generally agreed with the report, Michigan, Kansas, and Washington expressed concern over the title of the report. Kansas and Washington also commented that their backlog consisted of lower risk sites. We made a minor revision to the report's title in response to the States' concerns. With regard to the States' comments on their backlog, Kansas and Washington made their risk determination based on incomplete site characterization information. As discussed in Chapter 2 of this report, the States cannot be assured of the full risk that these sites pose to human health and the environment until the assessments are completed.

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Chapter 1
Introduction

Purpose

The Environmental Protection Agency (EPA) is currently considering the future direction of the Superfund program. This consideration includes Superfund's relationship to State hazardous waste cleanup programs and how the Nation's waste programs can work together in a more effective and unified fashion. This evaluation sought to assess the effectiveness of State hazardous waste site cleanup programs, including those related to Superfund projects, and their capacity to undertake future cleanup actions at sites that are either eligible for or listed on the National Priorities List (NPL). All the States currently have their own hazardous waste site cleanup programs that address sites not on the NPL. However, EPA has not conducted a formal study to assess how effective State programs have been in remediating sites eligible for the NPL and their capacity to undertake future cleanup actions for these sites. Therefore, we addressed the following questions:

- Have the States established processes that identify, assess, and prioritize cleanups to ensure that sites with the greatest threats to public health and the environment are being addressed promptly?

- Are cleanup standards and remedies used by the States based on risk and sound science and do they provide long-term protection for public health and the environment?

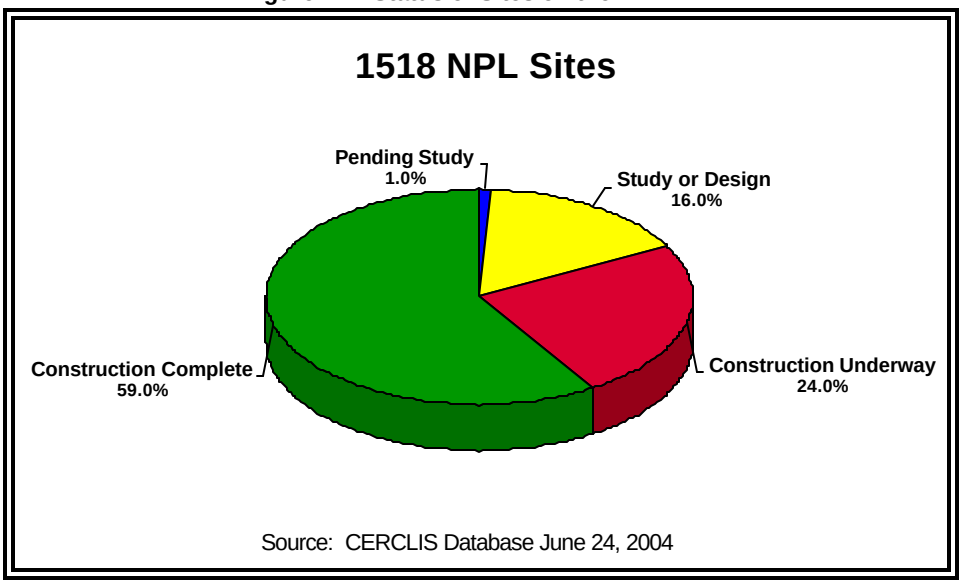
Because States have a future responsibility to assume operation and maintenance (O&M) responsibilities for long-term response actions (LTRAs) at NPL sites, we also evaluated the States' capacity to undertake these actions.

Background

In 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which established EPA's hazardous release reporting and cleanup program, known as Superfund. As required by section 105 of CERCLA, the National Contingency Plan (NCP), 40 Code of Federal Regulations Part 300, provides the organizational structure and procedures for preparing for and responding to discharges of oil and hazardous substances, pollutants, and contaminants. CERCLA and the NCP also authorize States to participate in the cleanup process.

EPA places the nation's most seriously contaminated sites on its NPL. As shown in Figure 1-1, there are currently 1,518 hazardous waste sites on the NPL in various stages.

Figure 1.1. Status of Sites on the NPL



States Have Hazardous Waste Cleanup Programs

States are actively involved in EPA's decision making process for NPL sites, although EPA is overseeing or undertaking remedial actions for the majority of the sites on the NPL. EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) shows that 28 States have assumed a lead regulatory role in overseeing or conducting remedial actions at 143 of the 1,258 sites (or approximately 10 percent) classified as "Construction Underway" or "Construction Complete." Although the States' remediation activities have been limited, CERCLIS shows that 47 States have conducted many of the initial site assessment activities for their respective NPL sites.

In addition to State-lead NPL activities, States have also assumed responsibility for hazardous waste sites that have been included in CERCLIS but have not been added to the NPL. Over the years, EPA has informally deferred approximately 1,700 sites identified in CERCLIS as "Other Cleanup Activity" sites. These sites are considered by EPA to be high priority sites because they received preliminary Hazard Ranking System scores of at least 28.5. Although EPA has no further Federal actions planned for these sites, they remain on EPA's "watch list" pending subsequent action by the States.

According to studies conducted by the Environmental Law Institute since 1989 under an EPA cooperative agreement, all 50 States have hazardous waste site cleanup programs. These studies provide general descriptions of their statutes, program organization, staffing, funding, expenditures, cleanup policies, enforcement provisions, and cleanup activities. However, the studies do not evaluate the effectiveness and capacities of the cleanup programs. The most recent study – *An Analysis of State Superfund Programs, 50-State Study, 2001 Update* – reported that, as of the end of fiscal 2000, the States had completed cleanups at about 29,000 non-NPL sites since the start of their programs. The report also disclosed that the States were overseeing or conducting cleanups at approximately 16,000 sites during fiscal 2000.

Superfund Program Faces Future Challenges

The Superfund program faces significant challenges in paying for the remediation of current and future sites on the NPL. The taxing authority generating the majority of revenues for the Superfund Trust Fund expired in 1995, which has resulted in a steady decrease in appropriations supporting the Superfund program. According to the General Accounting Office[1] (GAO), Superfund program appropriations have decreased from fiscal 1995 to 2004, in constant 2003 dollars, from approximately $1.5 billion to $1.2 billion (or a reduction of 20 percent), respectively.

As a result of the funding challenges, Congress requested that Resources for the Future conduct an independent study on the future costs of the Superfund program. The report on the study[2] estimates that costs to implement the Superfund program will be at least $14 billion for fiscal 2000 through fiscal 2009. The report also includes recommendations intended to help formulate a clear mission for the program and improve its effectiveness and efficiency.

EPA developed an action plan to respond to the recommendations in the Resources for the Future report. As part of the action plan, EPA established a committee of experts – the Superfund Subcommittee to the National Advisory Council for Environmental Policy and Technology – that was asked to address: (1) the role and purpose of the NPL; (2) how to address potentially complex and expensive contaminated sediment and mining sites; and (3) how to measure Superfund program progress. The subcommittee's final report was issued to EPA in April 2004.

As a complement to the Superfund Subcommittee's work, EPA initiated an internal study in November 2003 to identify opportunities to more efficiently deploy Superfund

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[1] *Superfund Program: Updated Appropriations and Expenditure Data*, GAO-04-475R, February 18, 2004.

[2] Probst, Katherine N. and Konisky, David M., *Superfund's Future: What Will It Cost? A Report to Congress*, Resources for the Future (Washington, D.C.:2001).

program resources within the Agency. An important goal of the study was to identify how more Superfund resources can be dedicated to the construction of remedial actions. EPA issued a report on the study results in April 2004, *SUPERFUND: Building on the Past, Looking to the Future*. The report concluded that although the Superfund program has made and continues to make significant progress in remediating Superfund sites, the program can be further improved. The report also noted that the States have played a vital role in the Superfund program and have had a major role in setting cleanup standards for Superfund sites. The report made 102 recommendations for improving the effectiveness of the Superfund program, including recommendations to reexamine: (1) existing EPA policies relating to State-lead remedial actions to determine whether the policy includes areas such as capability, past experience, cost, and timeliness; and (2) existing State-lead sites to determine whether the remediation is being conducted timely and cost efficiently.

Scope and Methodology

We began our review April 17, 2003, and completed field work March 10, 2004. To answer our evaluation questions, we judgmentally selected hazardous waste site cleanup programs for five States: New Jersey, Michigan, Pennsylvania, Kansas, and Washington. We based our sample selection on State information reported in the 50-State studies conducted by the Environmental Law Institute from 1989 through 2001 and criteria suggested by the Association of States and Territorial Solid Waste Management Officials. The evaluation scope covered site identification, assessment, prioritization, and remedial processes and activities for NPL caliber-sites, generally for the period October 2000 through March 2003. We defined NPL-caliber sites as hazardous waste sites that were not included on the NPL but appeared to be eligible based on site characterization data. The scope also included long-term response planning processes and activities for NPL sites scheduled for turnover to the five States during the 10-year period ending December 2013.

We interviewed officials in EPA's Office of Superfund Remediation and Technology Innovation, which is within the Office of Solid Waste and Emergency Response (OSWER). We also interviewed officials in the hazardous waste site cleanup programs for each of the five States. Our evaluation included a review of EPA and State hazardous waste program records and other evaluation procedures.

This evaluation was performed in accordance with *Government Auditing Standards*, issued by the Comptroller General of the United States. Appendix A provides further details on the scope and methodology.

Chapter 2
States Need to Address Backlogs in Site Assessments and Scoring

The five States reviewed – New Jersey, Michigan, Pennsylvania, Kansas, and Washington – have all implemented processes for identifying, assessing, investigating, and prioritizing hazardous waste sites that are similar to EPA's remedial process for the Superfund program. However, three of the States had a combined backlog of at least 423 sites that were awaiting site assessment, and one of these States may also have a backlog in scoring sites. Although one of the remaining two States also appeared to have a backlog, there was insufficient data for determining whether a backlog exists. According to State officials, the backlogs were primarily attributable to limitations in Federal and State funding. Until these backlogs are eliminated, the States cannot assure that sites posing the greatest threat to human health and the environment are being addressed promptly, and the backlog may limit the States' capacity to address future hazardous waste sites, including sites on the NPL.

Processes Used by States and Superfund Are Similar

NCP requirements in 40 Code of Federal Regulations (CFR) Part 300 set forth the processes and regulations for conducting Superfund remedial activities. In accordance with the NCP, EPA has established processes for site discovery, preliminary assessment, site inspection, and relative risk scoring, to evaluate the potential for a release of hazardous substances from a site.

New Jersey, Michigan, Pennsylvania, Kansas, and Washington have all implemented processes for identifying, assessing, investigating, and prioritizing hazardous waste sites which are similar to EPA's processes for the Superfund program. These five States are addressing over 5,400 hazardous waste sites under their State cleanup programs, including over 1,700 sites that could be considered NPL-caliber sites. Appendix B provides additional details on the States' cleanup programs.

Identification

All five States reviewed have hazardous waste site identification and response processes that place priority on addressing sites posing immediate threats to human health and the environment. Further, a judgmental sample of notifications and response actions at 14 sites showed that the States were following these procedures and taking prompt and appropriate response actions. The States generally used NCP requirements. All States maintain a 24-hour telephone hotline for receiving public

notification of hazardous conditions, and have procedures in place for initial response and evaluation of reported hazardous waste releases, spills, and other issues. In addition, States identified sites through other means, such as real property transactions; formal citizen complaints; and referrals from other State and Federal agencies, including EPA. In conjunction with their site identification processes, each of the five States maintain databases to manage and track sites from notification through disposition.

Assessment and Investigation

In Superfund, the preliminary assessment process is used to determine what steps, if any, are needed to occur next at a site. For those sites requiring further investigation, a site inspection is generally performed. This involves collection of field data to confirm or deny the presence of contamination and to further characterize it. All five States conduct site assessments and investigations to determine the need for further investigation and remediation. Similar to procedures used by the Superfund program, the States' procedures generally were designed to identify those sites that posed the greatest threats, determine the need for removal action, and obtain the necessary data to prioritize and take further action.

Site assessment and investigation activities conducted by New Jersey, Michigan, and Washington were partially funded through cooperative agreements with EPA. The majority of their activities, however, were supported by State funding. In contrast, site assessment and investigation activities conducted by Kansas was supported primarily by Federal funding, while such activities in Pennsylvania were supported exclusively by State funding.

We found that the five States conducted site assessments at more than 390 higher priority State and Federal sites during the period October 2000 to March 2003. Our evaluation of a judgmental sample for 23 sites, which consisted of a mix of State- and responsible party-lead sites, showed that the States' procedures were followed and appropriate decisions were made for further actions.

Prioritization

The Hazardous Ranking System is the primary screening and relative risk scoring system used by EPA to determine whether to place uncontrolled hazardous waste sites on the NPL. This system is a numerical-based system that uses information obtained from the preliminary assessment and site inspection to assess the relative potential of sites to pose a threat to human health and the environment. This approach assigns numerical values to factors that relate to risk based conditions at the site. One of the States (Pennsylvania) used EPA's Hazardous Ranking System to prioritize sites for State-funded remedial actions, and the other four used similar scoring systems that we

considered generally equivalent to EPA's scoring system. Further details on the States' scoring systems are in Appendix C.

Backlogs Existed in Assessing Sites

Although the States followed their procedures when conducting site assessments and investigations of new hazardous waste sites, at least three of the States had backlogs in completing site assessments. Additionally one of these three States may have a backlog in scoring sites to assist in assigning remediation priorities. There was insufficient data for determining whether backlogs exist for one other State, although it appeared to have a backlog. The backlog for the three States we could measure totaled 423 sites, as shown in Table 2.1.

Table 2.1. State Backlogs for Assessment

State	Sites Pending Assessment
New Jersey	52
Kansas	92
Washington	279
Total	423

Also, Pennsylvania had a backlog in completing site assessments for about 90 sites, but we could not arrive at a specific figure due to incomplete inventory data. New Jersey officials indicated the State also had a scoring backlog, but again there were insufficient data to make a determination.

According to New Jersey, Kansas, and Washington program officials, the backlogs were primarily attributable to limitations in Federal and State funding. Additional details on the States' backlogs follow.

- **New Jersey's** backlog of 52 sites has been in the State's hazardous sites inventory since at least 1999. These sites have been classified as "immediate environmental concerns," which New Jersey assigns to sites that pose either acute threats to human health and the environment or threats to drinking water sources. According to New Jersey officials, these sites have been remediated to eliminate actual exposure to human health; however, assessments are necessary to identify the sources of the ground water contamination. In 1999, the State made a decision to designate 150 sites from its immediate environmental concerns inventory for assessment under its cooperative agreement with EPA. The State has since

completed 47 assessments and begun another 51; assessment activities have not been started on the remaining 52 sites primarily due to limited annual funding by EPA. The cooperative agreement with EPA has decreased from $1.9 million in fiscal 2000 to less than $1.0 million in fiscal 2003. New Jersey officials said the State also has a backlog in scoring sites for State-funded remedial actions, due to funding limitations, as well as plans to develop a new site scoring system, but there was insufficient data to quantify.

- **Kansas** has a backlog of 92 sites pending assessment. Some of these sites have been in the State's inventory for more than 5 years. According to State officials, the State's capacity to conduct assessments is limited by the annual funding of approximately $517,000 provided by EPA under a cooperative agreement, and State funding limitations.

- **Washington** has a backlog of 279 sites pending assessment. Some of the sites have been in the State's inventory since at least 1990. According to program officials, the overall backlog is due to a combination of factors, including: (i) the ability of local governments to obtain assessment grants; (ii) higher risk sites taking priority over the many low risk sites; and (iii) the lack of State funding/staffing to address non-grant funded local government sites. Since the majority of assessment activities in Washington, unlike the other States, are performed by county health departments under State-awarded site assessment grants, the county health departments' capacity to move sites through the assessment process is contingent on State funding. Total funding for these site assessment grants has averaged $2.4 million per year since 2000.

- **Pennsylvania** program officials indicated that they have backlogs in completing site assessments for approximately 90 sites in one of its six regions, but we were unable to confirm this backlog and arrive at a specific figure statewide because of incomplete site inventory data.

- **Michigan** does not have a backlog in conducting site assessments and scoring.

The scope of our evaluation did not include an analysis of funding, staffing, and workload for the States' cleanup programs. As a result, we were unable to verify whether funding limitations are the primary cause for the backlogs. We note that other potential factors for the backlogs may include non-optimal management of site assessment processes, diversion of staff resources to other priorities, or non-optimal management of available funds.

Conclusion

The States have established procedures for identifying, assessing, investigating, and scoring sites to assist in the prioritization of sites for remediation that are similar to processes used by the Superfund program. However, at least three States have a backlog in conducting site assessments and one also may have a backlog in site scoring. Until these backlogs are eliminated, the States cannot assure that sites posing the greatest threat to human health and the environment are being addressed promptly, and the backlog may limit the States' capacity to address future hazardous waste sites, including sites on the NPL.

Recommendation

We recommend that the Acting Assistant Administrator for Solid Waste and Emergency Response:

2-1. Work with the States to determine the degree to which funding or other management issues are factors for the backlogs in completing site assessments and scoring sites for remediation and/or NPL referral.

Agency and State Comments and OIG Evaluation

OSWER's Comments and OIG Evaluation

OSWER agreed with the recommendation and commented that while the five States reviewed have all implemented processes for identifying, assessing, investigating, and prioritizing hazardous waste sites that are similar to EPA's remedial process for the Superfund program, they are concerned with the backlogs in sites requiring assessment and scoring. Since all five of the States studied have backlogs, OSWER agreed to work with States to determine the key reasons for the backlogs.

Although OSWER agreed to implement the recommendation, OSWER, in its response to our final report, needs to provide a milestone for completion of the planned action, for resolution of the recommendation.

New Jersey's Comments and OIG Evaluation

New Jersey generally agreed with the findings and recommendation. However, the State provided clarifying comments in regards to its backlog of site assessments and also commented that it seems far reaching to suggest that the backlog of site assessment cases may limit the State's ability to address NPL sites. The State also said that if this limitation to address NPL sites is attributed to a statement by some State official then it

should be attributed to that official. Additionally, New Jersey said that its future ability to respond at NPL sites is not affected by the cases awaiting site assessments.

We have modified the report to address the State's comments. However, we do not believe that it is far reaching to conclude that the backlogs may limit the State's future ability to address NPL sites. In our opinion, the backlogs represent a potential limitation in the State's future capability to address NPL and other hazardous waste sites. This potential exists because these backlogs may include sites that pose significant threats to human health and the environment. Therefore, the State's inventory of sites requiring remediation may increase as the backlog of site assessments are addressed. This inventory increase may limit the State's capacity to address future NPL and other hazardous waste sites.

Michigan's Comments

Michigan did not specifically comment on the findings, but agreed with the recommendation.

Pennsylvania's Comments and OIG Evaluation

Pennsylvania generally agreed with the findings and did not comment on the recommendation. However, the State requested additional clarification be provided in the final report in regards to its backlog of approximately 90 sites. The State said that these sites are part of the Region 3/State work share inventory, which is maintained by the Region as part of its database, and is not a reflection of State inventory data.

We do not agree that the backlog of 90 sites represents sites included in the Region 3/State work share inventory. Rather, the sites represent No Federal Remedial Action Planned sites, archived in CERCLIS, and returned to the State for further evaluation. As discussed in the report, we were unable to confirm this backlog because of incomplete site inventory data provided by the State.

Kansas' Comments and OIG Evaluation

Kansas generally agreed with the findings and recommendation, but commented that the backlog of site assessments represents sites that are believed to be low priority which remain on the list of sites to be assessed. Kansas also said that the statement "States cannot assure sites posing the greatest threat to human health and the environment are being addressed ..." is not accurate. Currently, Kansas believes that all sites with known human health and environmental risks are being addressed by either the State or EPA Region 7. However, the State said that this may not be the case in the future if there is a continual decrease in State and Federal funding.

Additionally, Kansas commented that the statement regarding that over 50 percent of the sites have been in the inventory for more than 5 years is misleading. Sites that have been in the system for an extended period of time have been screened and deemed as low priority, low risk sites will be assessed once higher priority sites have been assessed. The screening takes into account the geographical location of the site (i.e., aquifer, water use, etc.), potential receptors, known contaminant levels, type of contaminant, etc. These low priority sites do not represent a known risk to human health and/or the environment. Sites posing the greatest threat to human health and the environment are being assessed. However, if after assessment a site is determined to be an orphan site, there may not be enough Federal or State funding to address the problem.

We acknowledge that Kansas believes that its site assessment backlog represents lower risk sites. However, this risk determination has been made based on the State's initial screening process. This initial screening process is designed to assess immediate threats and determine the need for further investigation. In contrast, the preliminary assessment and site investigation are the processes where releases or threatened releases are confirmed or ruled out; contaminants are characterized; exposure pathways are considered; and the potential threat to human health and the environment are evaluated. Therefore, until sites are fully assessed, the State cannot be assured of the full risk to human health and the environment.

Washington's Comments and OIG Evaluation

Washington generally agreed with the findings, but did not comment on the recommendation. The State commented that it is important to recognize that the backlog of unaddressed sites represents a dynamic process, with new sites being continually added at the same time other sites are removed due to assessments being completed. Consequently, there will generally always be a backlog, unless limitations in funding precludes further "site discovery" to continue to add new sites to the list.

The State also commented that, while it is true these "backlogged" sites have not been formally ranked, they have been subjected to an "initial investigation." This includes a records review, site inspection, and, usually, limited sampling. Any imminent risks are identified and addressed as part of this process, and higher risk sites are prioritized for ranking. Thus, this backlog represents lower risk sites, and the State does not believe the backlog impedes its ability to take on higher risk sites if one is identified.

We agree that addressing backlogs is a dynamic process as a result of the continuous discovery of new sites. We acknowledge that the backlog of sites have had an initial investigation that includes a review for imminent risks. We also acknowledge that the State has a response process in place for addressing sites posing imminent risks to human health and the environment. However, the initial investigation is designed to

assess immediate threats and determine the need for further investigation. The State's site hazard assessment is the process where releases or threatened releases are confirmed or ruled out and the potential threat to human health and the environment are evaluated. Until the site hazard assessments are completed, the State cannot be assured of the full risk to human health and the environment.

Chapter 3
States Apply Remedy Processes That Are More Flexible Than Superfund's Process

The five States reviewed have developed cleanup standards that are based on risk and sound science and are intended to be protective of human health and the environment. Additionally, processes used by the States to characterize contamination, assess risks, and make remedy decisions generally incorporate sound scientific analysis and are similar, but not equivalent, to EPA's remedy decision process for Superfund. The States generally use a streamlined decision process that does not include the Superfund equivalent baseline risk assessments established by EPA. However, we found that the States' decision processes for NPL-caliber sites generally provide remedies that are designed to be protective to human health and the environment. Therefore, if EPA wants the States to assume a larger role in addressing NPL sites, it should consider giving the States greater flexibility in their remedy selection processes.

Superfund Cleanup Goals and Remedy Selection Process

CERCLA, as amended by the Superfund Amendments and Reauthorization Act, requires that EPA coordinate with the States on remedial actions for contaminated sites and encourages States to participate in remedial actions. However, the Act does not establish specific cleanup standards for contaminated soils, ground water, surface water, and sediments. Instead, CERCLA specifies that cleanup actions must attain compliance with applicable, or relevant and appropriate requirements (ARARs) to ensure protection of human health and the environment.

In the absence of ARARs, EPA has set remediation goals for both carcinogens and non-carcinogens. For carcinogens, EPA considers cleanup levels to be protective of human health when the final cleanup levels fall within a lifetime cancer risk range of $1x10^{-6}$ (one in a million) to $1x10^{-4}$ (one in ten thousand) for contaminated site related exposures. EPA considers cleanup levels for non-carcinogens to be protective of human health when the final cleanup levels achieve a Hazard Index of no more than 1. The Hazard Index is defined as the ratio of the exposure level to the referenced, acceptable daily long-term dose from exposure to contaminants at the site. Therefore, a Hazard Index that exceeds 1 increases the potential for adverse health effects from non-carcinogens at the site.

EPA established a remedy selection process for the Superfund program that includes a Remedial Investigation/Feasibility Study, a Proposed Plan, and a Record of Decision. The Remedial Investigation/Feasibility Study includes performance of a baseline risk

assessment to assess the current and potential future human and ecological risks posed by the contamination. The Proposed Plan presents the preferred remedy to the public for comments, and the Record of Decision documents the remedy selection decision. States are not required to follow Superfund's remedy selection process for sites that are addressed under their own hazardous waste cleanup programs.

Cleanup Standards Protective of Human Health and Being Followed

All five States have developed cleanup standards and/or criteria for NPL-caliber sites that are based on risk and sound science and are intended to provide long-term protection to human health and the environment. Furthermore, the cleanup levels apply to soil, ground water, and surface water, and are consistent with CERCLA remediation goals.

State regulations are the primary source of cleanup criteria and standards for the five States' cleanup programs for NPL-caliber sites. Many Federal regulations have been adopted by reference in the States' regulations. Where Federal cleanup standards have not been established, the States have developed their own cleanup standards and/or criteria based on statutory requirements and other ARARs. Table 3.1. summarizes the general criteria used by all States to develop their cleanup standards, and Appendix B provides additional details by State.

Table 3.1. General Criteria Used by States to Develop Cleanup Standards

• Carcinogenic Risk Range Between 10^{-6} to 10^{-4}	• Maximum Cleanup Levels/Goals
• Non-Carcinogenic Risk of 1 or <1	• Aquifer Use
• Land Use	• Water Quality Criteria
• Background Levels	• State and Federal Statutory
• Chemical Specific Health Based Criteria	• Environmental Impact Data

The process for setting cleanup standards and/or criteria varied among the five States. While Michigan, Kansas, and Pennsylvania used lookup tables and optional baseline risk assessments for determining cleanup levels, New Jersey and Washington used lookup tables and generic risk-based formulas. Despite this variation, the States' basis for developing cleanup levels for soil, ground water, and surface water is largely derived from EPA toxicological information, exposure pathway models, exposure assumptions, and human health risk calculations. These processes have resulted in State cleanup standards and/or criteria that are based on sound scientific analysis and are consistent with EPA's remediation goals for carcinogens and non-carcinogens, as well as other standards. Further, each State applies the standards and/or criteria consistently to their cleanup programs that address NPL-caliber sites.

Although EPA has not established national cleanup standards for contaminated sediments, we found that Washington, New Jersey, and Michigan have proactively developed their own standards or guidance. Specifically:

- Washington has developed sediment management standards. The objective of these standards is to eliminate adverse effects on biological resources and human health from contaminated sediments. These standards are established on a site specific basis using risk-based criteria and apply to marine, low salinity, and freshwater sediments. According to State officials, the cleanup standards have been applied to 134 hazardous waste sites with contaminated sediments.

- New Jersey has established a formal process for assessing risks posed by contaminated sediments. This guidance – *Guidance for Sediment Quality Evaluations* – is primarily based on EPA ecological risk assessment guidance and criteria. The document includes guidelines for developing sampling plans and screening values for conducting ecological risk assessments.

- Michigan has established guidance that serves as a mechanism for development of site specific sediment cleanup criteria. The objective of the criteria is to provide protection of aquatic life, wildlife, and human health. A phased approach is used to determine the potential for contaminated sediments to exceed water quality standards, and consider appropriate response actions based on use impairments. The guidance was developed from *EPA Ecological Screening Levels* and other EPA guidance documents.

State and Superfund Remedy Processes Not Equivalent

The processes used by the five States to characterize contamination, assess human and environmental risks, and make remedy decisions are generally based on sound scientific analysis and are similar, but not equivalent, to EPA's remedy decision process for the Superfund program. However, the processes generally provide remedies that are designed to be protective to human health and the environment. NCP requirements in 40 CFR Part 300 set forth the process and regulations for conducting Superfund cleanup actions, and sets forth nine criteria:

- Protection to human health and the environment
- ARARs
- Long-term effectiveness and permanence
- Toxicity, mobility, or volume reduction through treatment
- Short-term effectiveness
- Implementability
- Cost
- State acceptance

- Community acceptance

Our review of State laws, regulations, and written guidance covering remedy selection, and interviews of State officials, identified that each State's remedy decision process for NPL-caliber sites are similar to the Superfund process. Their processes generally include the application of scientific methods to characterize the type and extent of contamination, as well as application of the nine criteria specified by the NCP (although Pennsylvania and New Jersey, while including long-term effectiveness, did not include permanence).

Although the Superfund program requires that each site receive a baseline risk assessment to evaluate the potential threat to human health and the environment, the States typically do not. State officials expressed concern that the baseline risk assessments were time-consuming and not needed for the less complex NPL-caliber sites. Instead, the States generally compare site characterization data with their risk-based cleanup standards as an alternative to completion of a risk assessment. According to State officials, the benefits received from using risk-based cleanup standards in place of baseline risk assessments include streamlined decision-making, consistency in cleanup levels among similar sites, and flexibility in decision making by providing tabulated risk-based cleanup standards with the opportunity to develop site-specific goals.

We found that the States' decision processes were generally followed and decisions were generally based on risk and sound scientific analysis. We reviewed records supporting decisions made by the five States for 20 judgmentally selected NPL-caliber sites, which consisted of a mix of State- and responsible party-lead sites. Our review showed that the States' decision processes were followed and the selected remedies were designed to protect human health and the environment for all but one of the sites. The supporting records showed that: (1) contamination was characterized; (2) human health and environmental risks were assessed; (3) remedial alternatives were identified and analyzed; (4) public comments on proposed remedies were solicited and considered; and (5) remedies were selected based on EPA criteria as appropriate. Also, the review showed that cleanup levels met EPA's remediation goals for carcinogens and non-carcinogens.

We were unable to verify whether the selected remedy for one of five sites included in our sample for Pennsylvania was protective to human health and the environment. Contamination at the site was not completely characterized and the decision was not based on a formal evaluation of remedial alternatives. According to Pennsylvania program officials, the original remedy selected for the site was modified due to State budget constraints, which resulted in selection of a more cost effective remedy. The original remedy is being retained as a contingency. Our evaluation results do not indicate that a systemic weakness exists in Pennsylvania's remedy decision process.

For the one instance, we issued a memorandum to the Region 3 Administrator describing our concerns and requesting that the Region take corrective action. The memorandum is included in this report as Appendix D.

Conclusion

All five States reviewed have implemented cleanup programs for NPL-caliber sites that are generally similar to EPA's Superfund program. However, we noted that the States typically do not require baseline risk assessments as part of their remedy selection process and instead compare site characterization data with their risk-based cleanup standards. Providing the States with flexibility in the use of baseline risk assessments is an important facilitating factor in increasing State-lead remediation activities in the Superfund program.

Recommendation

If EPA desires States to assume greater responsibilities in Superfund remedy processes or actions, we recommend that the Acting Assistant Administrator for Solid Waste and Emergency Response:

3-1. Identify ways to streamline the Superfund remediation process and provide States with flexibility in the application of baseline risk assessments where possible and as appropriate.

Agency and State Comments and OIG Evaluation

OSWER Comments and OIG Evaluation

OSWER agreed with the recommendation and noted that the observations in the draft report merit additional evaluation. OSWER will be examining State contributions to the Federal Superfund program in the coming year, particularly as it relates to State-lead cleanups, and will refer to the OIG findings as the evaluation is developed. It is the Agency's intent to share the lessons learned with the States and other interested parties.

OSWER's planned actions appear to meet the intent of the recommendation. However, in its response to our final report, OSWER will need to provide the specific actions it plans to take as well as milestones for completing the actions for resolution of the recommendation.

New Jersey's Comments and OIG Evaluation

New Jersey generally agreed with the findings and recommendation. However, the State commented that throughout the report, the use of the phrase "flexible remedy decision processes…." or the word "flexible" is used to describe the State's process. It is unclear what this means, and the use of the word "flexible" implies that decisions are not consistently applied. Please consider another word that doesn't imply inconsistency.

The use of the word "flexible" in describing the remedy decision processes throughout the report was not intended to imply that the States are not consistently applying their decisions as indicated by New Jersey. We have used the word to communicate a need to consider processes outside of the prescriptive bounds of Superfund.

Michigan's Comments and OIG Evaluation

Michigan generally agreed with the findings and provided comments clarifying its approach to sediment criteria and permanence. Additionally, the State suggested a stronger recommendation to look at updating the Superfund program to allow a similar delegation authority similar to those found in the hazardous waste and tank programs. Michigan supported this suggestion by stating that States have shown that they are capable of handling sites as large and/or complex as Superfund sites.

We have modified the report to address the State's comments pertaining to sediment criteria and permanence. However, we have no basis to make the suggested recommendation because the scope of our review did not address delegation of Superfund authority to the States.

Pennsylvania's Comments and OIG Evaluation

Pennsylvania generally agreed with the findings. However, the State requested that the chapter and the memo in Appendix D be revised to include additional language regarding protectiveness in the discussion of the remedy selection for the ADSCO site. The State said that the original remedy selected for the site was re-evaluated due to cost effectiveness brought on by State budget restraints. The re-evaluation resulted in a modified remedy considering cost effectiveness with additional monitoring to assure protectiveness of human health and the environment, with the original remedy being retained as a contingency if the modified remedy proved not to be protective. Additionally, the State commented that the public notification process was satisfied according to State requirements due to the modified remedy being one of the alternatives considered throughout the remedy selection process.

We modified the chapter to disclose that the original remedy was modified because of State budget restraints. We don't believe that the State satisfied its public notification requirements. The State presented a remedy to the public for comment that included the installation of a synthetic cap on the fill areas. Furthermore, the State's Statement of Decision for the site, identified the cap as the main component of the selected alternative. Therefore, the cap is critical to the success of the combined remedial action alternatives to provide protection of human health and the environment. Although the remedy was modified to make the cap a contingent component, the modification was not presented to the public for comment.

Kansas' Comments

Kansas did not provide specific comments on the findings and recommendations.

Washington's Comments

Washington did not provide specific comments on the findings and recommendations.

Chapter 4
States May Not Be Able to Support Impending Operation and Maintenance Responsibilities

Over the next 10 years, States will be assuming additional operation and maintenance (O&M) responsibilities for long-term response actions (LTRAs) at many NPL sites. However, four of the five States reviewed may not have the resources to undertake these future obligations because of declining budgets. Additionally, the States are concerned that they may be required to assume O&M responsibilities for ineffective and/or inefficiently performing LTRAs. They are concerned about the performance of the LTRAs because EPA may not conduct optimization studies on all of the systems. Consequently, States may not be able to maintain the integrity of remedies and ensure protection to human health and the environment. Further, inadequate LTRAs can result in the States incurring unanticipated costs that could impact other cleanup priorities.

States Will Assume O&M Responsibilities

Under the NCP, States are generally required to assume responsibility for 100 percent of the O&M costs for Federal-funded remedial actions at NPL sites after the remedies become operational and functional. However, the NCP provides an exception for LTRAs involving treatment or other measures to restore ground or surface water quality to a level that ensures protection to human health and the environment. For these LTRAs, States are not required to assume complete responsibility for O&M until the remedies have been operational and functional for a period of 10 years. If cleanup goals have not been achieved after the 10 years, the remedy becomes the sole responsibility of the State.

EPA contractors have estimated the average annual site operating costs of Federal-funded LTRAs for contaminated ground water sites at $570,000. This was cited in prior EPA OIG Report No. 2003-P-000006, *Improving Nationwide Effectiveness of Pump-and-Treat Remedies Required Sustained and Focused Action to Realize Benefits* (most LTRAs are pump-and-treat systems). Many LTRA systems are estimated to operate for more than 30 years, which could result in significant costs to the States in the O&M period.

Since 1988, EPA has turned over LTRAs at NPL sites to the States of California, New York, Arkansas, New Hampshire, and Kentucky for O&M. Over the next 30 years, these States and others will be assuming O&M responsibility for an additional 82 LTRA sites. Each of the five States in our evaluation will be assuming O&M responsibilities for one or more LTRA sites over the next 10 years. As shown in Table

4.1, the five States in our review will be assuming responsibility for a total of 24 of the remaining 82 LTRA sites:

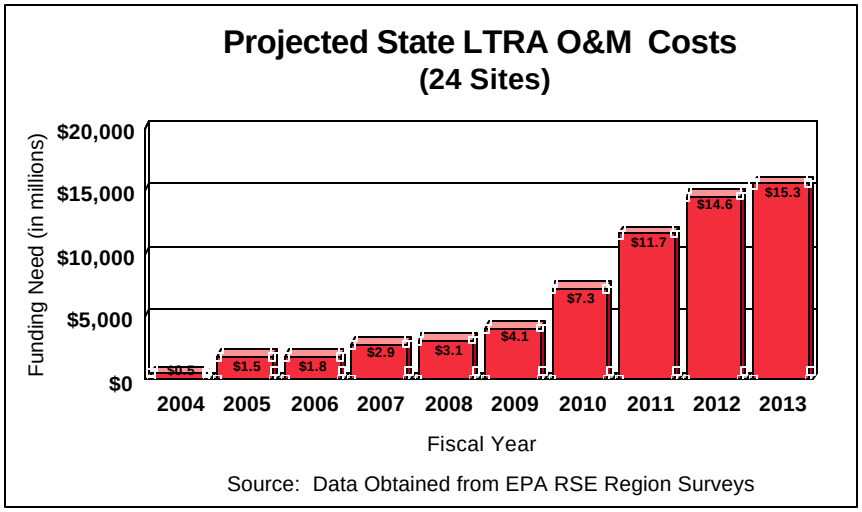
Table 4.1. State Assumption of LTRA Sites

Year	New Jersey	Michigan	Pennsylvania	Kansas	Washington	Total
2004		2	1			3
2005	1		1		1	3
2006						
2007	1		1			2
2008			2			2
2009	1					1
2010	1	1	1			3
2011	1	1	2			4
2012	2	1		1		4
2013			1	1		2
Total	7	5	9	2	1	24

States May Not Be Prepared to Assume O&M Responsibilities

The five States will realize a substantial increase in funding needs with the assumption of O&M responsibilities at these LTRA sites. As illustrated in Figure 4.1, the combined annual O&M costs for the five States' LTRAs are estimated to increase (in current year dollars) from approximately $520,000 in 2004 to over $15.3 million in 2013. See Appendix E for listing of sites and their specific costs.

Figure 4.1. O&M Funding Projections for NPL LTRA Sites



States may not be prepared to assume additional O&M responsibilities resulting from the assumption of these LTRA sites. Officials from Pennsylvania, Kansas, Michigan, and Washington expressed concerns that their States may not have the resources to undertake these future obligations because of increasing workloads and declining budgets. Michigan program officials told us that the State has been evaluating future O&M financial obligations for LTRA sites and intends to continue to work to meet those obligations. New Jersey program officials said site specific funding for long-term O&M can be set up through the State's Hazardous Discharge Bond Fund. Additionally, in 2003, the State increased revenues from the corporate business tax. According to New Jersey program officials, funding of future O&M obligations seem secure for planning purposes, based on this increase.

In addition to the financial concerns, the five States are concerned that they may be required to assume O&M responsibilities for ineffective and/or inefficiently performing LTRAs. These concerns have been confirmed through OSWER's Optimization Initiative. The first 20 optimization studies identified a variety of deficiencies and resulted in over 200 recommendations intended to improve the overall efficiency and effectiveness of the systems. Currently, EPA has completed optimization studies on 8 of the 24 LTRA sites (33 percent) scheduled to be turned over to the five States over the next 10 years (3 in New Jersey, 2 in Michigan, 2 in Pennsylvania, and 1 in Washington). However, EPA has not scheduled studies for the remaining 16 (see Appendix E). Without the benefit of optimization reviews, there is no assurance that States will take over effective and efficient LTRAs, and the States may be required to incur unanticipated costs to correct deficiencies.

OSWER is in the process of preparing draft guidance that will provide expectations on the use of optimization studies, and an action plan that will specify the funding, timeframes, and priorities for performing additional optimization studies for Superfund financed LTRAs. However, we were unable to review the new guidance and action plan because they were still under development during our review.

Conclusion

States have expressed concern over their financial capability to assume O&M responsibilities for LTRAs. Additionally, States have concerns about the effectiveness and efficiency of some of the LTRAs scheduled for turnover by EPA. If these issues are not resolved, the capacity of States to effectively perform O&M at LTRA sites and remediate other hazardous waste sites may be impacted. This could ultimately result in an increase in site referrals for the NPL, as well as a decrease in State capacity to participate in remedial activities at NPL sites. The development of funding and staffing scenarios to address State O&M obligations at LTRAs could better prepare States and

EPA to develop solutions for expected challenges. In part, completion of plans for conducting optimizations at Superfund LTRAs will assist in the development of accurate funding and staffing scenarios for State O&M obligations.

Recommendations

Given that the States are required to assume O&M responsibilities at LTRA sites, we recommend that the Acting Assistant Administrator for Solid Waste and Emergency Response:

4-1. Work with the States to explore viable funding and staffing options to support their O&M responsibilities at NPL LTRA sites.

4-2. Complete guidance on optimization of LTRAs at NPL sites to include an action plan that establishes funding and a schedule.

Agency and State Comments and OIG Evaluation

OSWER Comments and OIG Evaluation

OSWER agreed with Recommendations 4-1 and 4-2. In response to Recommendation 4-1, OSWER said it will work with the States, through the Regions, to jointly assess the States' O&M funding strategies and identify possible solutions. For Recommendation 4-2, OSWER stated it has developed an "Action Plan for Ground Water Remedy Optimization" that is intended to apply important lessons learned into the Superfund cleanup process. The plan, which is expected to be finalized by September 30, 2004, provides details on several activities, that will help foster routine optimization at LTRA sites. These activities include: (i) conducting additional optimization reviews at high priority, Fund-lead sites (at a rate of 5-8 sites per year); (ii) providing priority funding for the implementation of recommended changes; (iii) monitoring implementation progress in the Regions; (iv) developing appropriate guidance and training tools; (v) coordinating with State counterparts and responsible parties; and (vi) establishing a network of Regional Optimization Liaisons.

In response to the final report, OSWER needs to provide specific milestones for actions planned and taken for resolution of Recommendations 4-1 and 4-2.

New Jersey's Comments and OIG Evaluation

New Jersey generally agreed with the findings and recommendations. Additionally, the State suggested the OIG recommend that EPA support the State's efforts to have the

O&M funding changed to a 90/10 ratio for all O&M. New Jersey also commented that although the State will be able to meet its obligations, it would rather use those funds for obligations at other sites.

We have no basis for including New Jersey's suggested recommendation because we did not review the feasibility of making all O&M a 90/10 cost share.

Michigan's Comments and OIG Evaluation

Michigan generally agreed with the findings and recommendations. Michigan commented that the State has been evaluating the LTRA needs at its respective sites, and intends to continue to work to meet those obligations. Additionally, Michigan stated that it fully supports the efforts to conduct optimization studies and urges that the report strongly recommend that these studies be conducted on a priority basis at sites where transfer of responsibility is imminent, or where project managers have raised concerns about the effectiveness of the system. The State also said that Recommendation 4-2 should suggest an aggressive time line for completion of the guidance optimization of LTRAs.

We have modified the report to include a statement regarding the State's LTRA evaluation efforts. We did not revise Recommendation 4-2 as suggested by the State because we have requested that OSWER provide a specific milestone for completing its action plan.

Pennsylvania's Comments

Pennsylvania did not provide specific comments on the findings and recommendations.

Kansas' Comments and OIG Evaluation

Kansas generally agreed with the findings and recommendations. The State provided clarification on its number of LTRA sites, and suggested an additional recommendation for EPA to consider performing a system optimization study during the LTRA, and at a minimum of: 1) for the 5-year review period, and 2) prior to the 10-year review. Further, the State suggested these studies be performed jointly with the States.

Kansas also suggested that EPA develop training for their project managers to create a philosophy of continuous system evaluation and optimization. Further, the State said EPA should seek project managers with strong technical backgrounds in site remediation and empower those managers to perform system evaluations as data is generated.

We have modified the report to include the State's LTRA data. However, we did not include the State's suggestion of an additional recommendation in the report because implementation of Recommendation 4-2 should ensure optimization studies are conducted at LTRA sites before the sites are transferred to the States for O&M. Additionally, we note that OSWER's planned corrective actions include the development of optimization training tools and coordination with the States and responsible parties on optimization study activities.

Washington's Comments

Washington did not provide specific comments on the findings and recommendations.

Appendix A

Details on Scope and Methodology

To address our evaluation questions, we selected a judgmental sample of five States' hazardous waste site cleanup programs. We selected the cleanup programs for New Jersey, Michigan, Pennsylvania, Kansas, and Washington. These States were selected because we sought to obtain a mix of States based on geography, size of program, size of site inventories, and number of cleanup actions. Additionally, we selected States with and without referrals to the NPL during 1998 through 2001. We based our selection primarily on State information reported in the 50-State studies conducted by the Environmental Law Institute from 1989 through 2001. Additionally, we interviewed Association of States and Territorial Solid Waste Management Officials to obtain their views on the States' hazardous waste site cleanup programs and criteria for selecting States for our evaluation. We also reviewed prior reports issued by EPA OIG and the GAO, although none were specific to the scope of our evaluation.

The evaluation generally covered management controls from October 2000 through March 2003. We also reviewed relevant records maintained by these States before and after that period.

To gain an understanding of EPA's Superfund processes and procedures, we interviewed officials from OSWER's Office of Superfund Remediation and Technology Innovation, and reviewed EPA regulations and program records applicable to the Superfund program. Additionally, we reviewed data in EPA's CERCLIS database to determine State-lead activities at NPL sites. We did not validate any of the data obtained from CERCLIS. Because EPA OIG Report No. 2002-P-00016 concluded that over 40 percent of CERCLIS data on site actions reviewed was inaccurate or not adequately supported, we used the CERCLIS information only to estimate State-lead remedial activities at NPL sites.

We made site visits to each of the five States to evaluate their hazardous waste cleanup programs. We conducted interviews with State hazardous waste cleanup program officials; and reviewed and obtained pertinent data from the States. We compared and evaluated the States' policies, processes and procedures against Superfund requirements and procedures. Additionally, we performed file reviews of selected NPL-caliber and other hazardous waste sites.

To evaluate States' site identification, assessment, and prioritization processes, we:

- Obtained listings of hazardous waste sites at each State, which showed site identifications, preliminary assessments, investigations, and priority scores.

- Selected a judgmental sample for each State (minimum of three sites) to review each phase of the identification and assessment processes. We selected NPL-caliber sites from various State cleanup programs with assessment activities. The availability of site files limited our sample selections for Michigan, Pennsylvania, and Washington to sites administered by regional offices located within the vicinity of each State's main office.

- Evaluated State maintained hazardous waste site files for judgment samples to determine compliance with State processes and procedures.

- Obtained and reviewed hazardous waste site inventories for each State to determine the remediation status of sites and whether they were assessed, investigated, and scored promptly. For New Jersey, hazardous waste site inventory data related to scoring was not provided. Our work for Pennsylvania was based on limited site information because hazardous waste site inventory data received did not include activity dates and statuses (the State provided alternate data) and information was not available from the State's official database, E-Facts.

To evaluate States' cleanup standards and remedy selection processes, we:

- Obtained listings of NPL-caliber sites with Records of Decision or equivalent documents issued for each State, generally during the review period.

- Selected a judgmental sample of a minimum of three sites for each State. We selected a mix of State- and responsible party-lead NPL-caliber sites with decision documents completed generally between October 2000 and March 2003. Additionally, the availability of site files limited our sample selections for Michigan, Pennsylvania, and Washington to those sites administered by regional offices, located within the vicinity of each State's main office.

- Evaluated State maintained hazardous waste site files for judgment samples. For purposes of this evaluation, we defined sound science as a decision process that adheres to conventionally accepted models and procedures and is based on accurate and reliable data.

To evaluate States' planning process for O&M responsibilities for LTRAs at NPL sites, we:

- Interviewed State program officials to discuss their programs for conducting and funding O&M activities at NPL and other hazardous waste sites.

- Reviewed EPA policies and guidance associated with O&M for LTRA sites to determine EPA and State requirements and procedures for managing these sites.

- Interviewed officials and obtained information from OSWER's Office of Superfund Remediation and Technology Innovation pertaining to OSWER's Optimization Initiative and Optimization Studies conducted at LTRA Sites.

- Obtained listings of LTRA sites on the NPL from OSWER's Office of Superfund Remediation and Technology Innovation and the States in order to identify the number of sites scheduled for transfer to the States during the period 2004 through 2013, and also obtained and evaluated O&M funding projections from the States for that period.

Appendix B

Details on States' Hazardous Waste Site Cleanup Programs

New Jersey

In 1976, New Jersey promulgated the Spill Compensation and Control Act, which was the first government program to address cleanup of contaminated land. In 1980, Congress designed Superfund from New Jersey's program. New Jersey's Department of Environmental Protection is responsible for administering the State's hazardous waste cleanup programs. The Site Remediation and Waste Management Program, regulated by NJAC 7:26E Technical Requirements for Site Remediation, is the State's primary cleanup program. The program is addressing more than 1,035 hazardous waste sites[3] through State- and responsible party-lead actions. Approximately 562 of these sites are higher priority sites that could be considered NPL-caliber.

The State's Spill Compensation Fund, Hazardous Discharge Bond Fund, and Corporate Business Tax revenues provide the primary sources of funding for the Site Remediation and Waste Management Program. These funds provide for a variety of cleanup activities, including: site investigation, CERCLA match, studies and design, operation and maintenance, removals, remedial actions, program administration, natural resource restoration, and long-term stewardship. State budget reports for fiscal 2000-2003 indicate overall program funding has decreased (in constant 2003 dollars) from approximately $90.9 million in fiscal 2000 to $82.2 million in 2003, or approximately 9 percent. Staffing levels have remained relatively constant, with approximately 513 full-time equivalents (FTEs).

Cleanup Standards

New Jersey has developed cleanup standards and/or criteria that are derived from EPA toxicological information and exposure pathway models using exposure assumptions and risk calculations for soil, ground water, and surface water. To consider development of risk-based cleanup criteria, New Jersey includes: land use scenarios, exposure pathways, background levels, maximum contaminant levels (MCLs), aquifer use, chemical-specific health-based criteria, water quality criteria, State statutory requirements, soil type, and environmental impact data. The criteria are based on a risk level of $1x10^{-6}$ for carcinogens and a Hazard Index value of less than or equal to 1 for non-carcinogens, and thus are consistent with EPA goals.

[3] According to the 2001 Known Contaminated Sites List, the Program has 12,648 sites (including petroleum sites). Since our review pertained to Superfund hazardous substances, we focused our review on the State's Industrial Site Recovery Act facilities, and the sites listed in the Publically Funded Cleanup Sites Report 2002. This effort yielded a list of 1,035 sites. Working with Program officials, we estimated that 562 of these sites could be considered NPL-caliber.

New Jersey uses a lookup table to identify generic remediation standards for soils that are risk-based goals presented as *Soil Cleanup Criteria*. The standards are generic chemical-specific health-based standards, and include as criteria: residential direct contact, nonresidential direct contact, and site-specific impact to ground water.

The State has developed *Ground Water Quality Standards and Surface Water Quality Standards* using Federal guidance. These standards specify cleanup levels and designated uses of water, and include specific, interim generic and interim specific criteria. The specific and interim generic criteria are chemical specific lookup values. The interim specific criteria are applied where cleanup levels have not been established and are derived using EPA risk guidance methodologies and associated risk equations. The State has 13 drinking water standards that are less stringent than Federal ones, but it applies the more stringent standard when there are both Federal and State standards. Classification Exception Areas are established to classify ground water according to a combination of natural characteristics and actual or potential uses where ground water standards have not been met.

New Jersey has also established a formal process for assessing risks posed by contaminated sediments. The *Guidance for Sediment Quality Evaluations* forms a framework for determinations of actual or potential adverse ecological effects from contaminated sediments, and includes guidelines for developing sampling plans and screening values for conducting ecological risk assessments. These assessments are based on EPA risk guidance documents.

Remedy Selection Process for NPL-Caliber Sites

The State has established formal remediation decision processes through laws, regulations, and procedure manuals for hazardous waste sites. New Jersey's remedy selection process requires scientific analysis, disclosure, and documentation including an ecological risk evaluation, site investigation report, remedial investigation/feasibility studies, remedial alternatives analyses report, remedial action selection report, and final decision document. In addition, the nine criteria specified by the NCP are generally included in the decision process. Similar to Superfund, the State also uses interim remedial actions to mitigate risks posed by sites until a final remedy is selected.

The major difference between the decision process used by the State and Superfund is the evaluation of risk. Under the Superfund program, a baseline risk assessment is required to be conducted as part of the decision process. However, a risk assessment is not required under New Jersey's process; instead, the State considers risk through its soil, ground water, and surface water cleanup criteria.

Michigan

Michigan's Remediation and Redevelopment Division of the Department of Environmental Quality is responsible for administering the State's hazardous waste cleanup program. The Environmental Cleanup and Redevelopment Program is the State's primary cleanup program. This program is addressing approximately 1,700 State- and responsible party-lead hazardous waste sites. According

to program officials, 847 of these active sites represent higher priority State-funded sites that could be considered NPL-caliber.

The State's Cleanup and Redevelopment Fund and the Clean Michigan Initiative Bond Fund provide funding for a variety of cleanup activities under the program, including: site investigation, CERCLA match, studies & design, O&M, removal actions, remedial actions, and program administration. State funding proposals for the last four fiscal years indicate funding has decreased (in constant 2003 dollars) approximately 30 percent, from $23.4 million in fiscal 2000 to $16.3 million in fiscal 2003. Although staffing levels have remained relatively constant, with approximately 236 FTEs, program duties have increased since 2002 due to program restructuring, hiring freezes, and more recently, "early out" retirements.

Cleanup Standards

Part 201 of Michigan's Natural Resources and Environmental Protection Act regulates the remediation of hazardous waste sites. Michigan has established cleanup standards for soil, ground water, and surface water that are risk-based and reflect the potential for human health risk from exposure to contaminants based on requirements of Part 201.

The State uses lookup standards for soil and ground water which were established through the application of generic exposure assumptions and risk assessment formulas using EPA risk assessment guidance and calculations. In addition, site specific standards may be developed by conducting a risk assessment that is generally consistent with Superfund's baseline risk assessment process. Michigan considers land use as a significant factor in establishing cleanup standards, as well as background levels, water quality criteria, MCLs/MCL goals (MCLGs), chemical specific health-based criteria, State statutory requirements, and environmental impact data. Calculated cleanup standards are based on a risk value of $1x10^{-5}$ for carcinogens and a Hazard Index value of 1 for non-carcinogens.

Cleanup standards for soil and ground water are applied at sites based on the three main land use categories: residential, commercial, and industrial. The residential standards are the most restrictive for site remediation; the party remediating the site is allowed to select the category of cleanup standard, provided that the remedial action plan documents that the cleanup criteria category is consistent with zoning and is subject to State approval. For commercial or industrial sites, it must be demonstrated that the selected category is appropriate for future land use. The generic cleanup standards for soil are calculated for carcinogenic and non-carcinogenic constituents based on land use associated with contaminant exposure risks from direct contact, leaching into ground water, and indoor inhalation. The cleanup standards for ground water are calculated for these constituents based on risks associated with adverse aesthetic impacts, ingestion for drinking water, human dermal contact, indoor inhalation, and ground water/surface water interface (GSI).

Michigan's criteria for the GSI is used to evaluate the impact that contaminated ground water may have on a surface water body which is an ARAR in the Superfund program. The State's cleanup standards for surface water are modeled from Federal surface water criteria including the National Pollutant

Discharge Elimination System. The State's cleanup criteria sets minimum water quality requirements based on designated use. Consistent with Federal requirements, Michigan has separate standards for protection of human health, aquatic organisms, and wildlife.

Michigan has established guidance that serves as a mechanism for development of site specific sediment cleanup criteria. The objective of the criteria is to provide protection of aquatic life, wildlife, and human health. A phased approach is used to determine the potential for contaminated sediments to exceed water quality standards, and consider appropriate response actions based on use impairments. The guidance was developed from *EPA Ecological Screening Levels* and other EPA guidance documents.

Remedy Selection Process for NPL-Caliber Sites

Michigan's remedy selection process for NPL-caliber sites is based on risk reduction and is determined based on land use categories. Once a category has been identified, the remedy decision process is generally consistent with the Superfund program. The State's decision process includes studies that characterize the type and extent of contamination and analysis of remedial alternatives. Similar to Superfund, the State requires decisions to be supported by scientific analysis, public disclosure and participation, and documentation.

In contrast to the Superfund program, Michigan does not require the use of site-specific baseline risk assessments. The State generally considers human health and environmental risks through development and application of its cleanup standards. In addition, interim response actions are designed and implemented to mitigate risk associated with land use until the final remedy is selected. Interim actions include soil removal/relocation and containment/capping activities. Michigan's risk reduction approach to remedy selection is generally consistent with the Superfund program. Furthermore, soil remediation is generally based on the need to protect an aquifer from hazardous substances.

Pennsylvania

Pennsylvania's Department of Environmental Protection, Bureau of Land Recycling and Waste Management, administers the State's hazardous waste cleanup programs, including the Hazardous Sites Cleanup Program and the Land Recycling Program. These programs, regulated by the Hazardous Site Cleanup Act, are addressing approximately 700 hazardous waste sites. The Hazardous Sites Cleanup Program investigates and remediates contaminated sites through State- and responsible party-lead actions. The Land Recycling Program oversees the State's voluntary cleanup program, and promotes the recycling and redevelopment of contaminated industrial sites. As of July 8, 2003, there were six active sites on the State's Priority List that represent NPL-caliber sites.

The State's Hazardous Sites Cleanup Fund provides funding for cleanup activities, including: site investigation, studies & design, O&M, removal actions, remedial actions, grants to local governments, CERCLA match, emergency response, program administration, and long-term stewardship. Fund reports indicate funding decreased (in constant 2003 dollars) from approximately $177.9 million in

fiscal 2000 to $138.4 million in fiscal 2003, or about 22 percent. Staffing levels have remained relatively constant, with approximately 299 FTEs.

Cleanup Standards

Act 2 of the Pennsylvania Land Recycling Program establishes three environmental remediation standards to provide a uniform framework for establishing cleanup levels: background, generic State-wide health, and site-specific standards. The standards apply to soil, ground water and surface water. These standards are derived from water quality standards and criteria, EPA toxicological information, environmental impact data, exposure pathway models and assumptions, and human health risk calculations. For the generic State-wide health standards, State regulations mandate use of MCLs and State-developed health advisory levels. All three standards also consider land use, aquifer use, and background levels.

The background and generic State-wide health standards were developed using risk-based methodologies derived from EPA and other scientifically recognized risk assessment guidance and criteria. These standards are based on risk standards of $1x10^{-5}$ for carcinogens and a Hazard Index value of less than or equal to 1 for non-carcinogens. These standards are provided in lookup tables and establish medium specific cleanup levels based on various land use scenarios and contaminant exposure pathways.

The site-specific standard represents a risk management approach to establishing cleanup levels. Under this standard, a remedial investigation is required to determine whether potential exposure pathways exist. In cases where potential for exposure does exist, a site specific risk assessment is required to establish cleanup levels. The State requires that these risk assessments be conducted using EPA risk assessment guidance. Additionally, the State has established an acceptable risk level range for carcinogens of $1x10^{-4}$ to $1x10^{-6}$, with a limitation that cumulative risk cannot exceed $1x10^{-4}$ for risk assessments. Risk assessments are also required to be based on a Hazard Index of no more than 1 for non-carcinogens. The background standard may be applied when the contamination is not related to any onsite release. Applying the standards are generally at the discretion of the party responsible for addressing the site. The generic State-wide health standard is the most commonly used method for determining cleanup levels and addresses soil, ground water, and surface water.

Remedy Selection Process for NPL-Caliber Sites

Pennsylvania's remedy selection process for NPL-caliber sites is similar to the decision process used for the Superfund program. The State's process requires scientific analysis, disclosure, and documentation that are similar to Superfund Remedial Investigation/Feasibility Study, Proposed Plan, and Record of Decision processes, and documentation. The State's remedy selection process includes consideration of the: (1) nature of contamination; (2) potential human and environmental risks; and (3) time and cost of remediation. In addition, the nine criteria specified by the NCP are generally included in the decision process.

Although similar, the State's process is not equivalent to Superfund's process. Superfund requires that a baseline risk assessment be conducted as part of the Remedial Investigation/ Feasibility Study. However, the State does not require a baseline risk assessment unless the site-specific standard is applied at a site. The generic State-wide health standard is applied at most sites, including NPL-caliber sites; therefore, baseline risk assessments are not required for most remedy decisions. Similar to Superfund, interim remedial activities may be conducted to mitigate risk from known contamination prior to implementation of a final remedy. Interim activities include source removal and containment, and are intended to support a final remedy.

Kansas

The Kansas Department of Health and Environment's Bureau of Environmental Remediation is responsible for administering the State's hazardous waste cleanup programs. Kansas has three programs that may address NPL-caliber sites: State Water Plan Contamination/Remediation Program, State Cooperative Program, and Dry Cleaning Trust Fund Program. These programs, regulated by various State Acts, are addressing approximately 361 hazardous waste sites. According to program officials, 63 of these sites could be considered NPL-caliber.

The State Water Plan Program addresses contaminated sites where the responsible party is either unknown, unwilling, or unable to conduct the cleanup. The State Cooperative Program provides oversight of more complex, higher priority responsible party cleanups that are conducted under administrative or consent orders. The Dry Cleaning Trust Fund Program conducts and oversees the cleanup of contaminated dry cleaning facilities utilizing revenues generated through taxes on the Dry Cleaning Industry and certain chemical use.

The State Water Plan-Contamination Remediation Account and the State Environmental Response Fund provide funding for State and Federal funded cleanups activities, including: site investigation, studies and design, removals, emergency response, remedial action, CERCLA match, O&M, and program administration. Budget data provided by the State indicates that funding for the State's General Fund and Water Plan decreased (in constant 2003 dollars) from approximately $1.8 million in fiscal 2000 to $1.4 million in fiscal 2003, or approximately 17 percent. In addition to the General Fund and Water Plan, the State maintains a Fee Fund that represents revenue generated from various programs. The fund, which primarily supports the oversight of responsible party cleanups, experienced significant increases in revenues over the 4-year period. The most significant increase in revenue was attributable to the Dry Cleaning Trust Fund, which increased from $523,804 in fiscal 2000 to over $1.6 million in fiscal 2003. Staffing levels have remained relatively constant, with approximately 111 FTEs.

Cleanup Standards

Kansas uses a three-tiered system for defining the applicable cleanup standards for individual sites for soil and ground water. The State's surface water quality standards are used for cleanup levels for surface water. The *Risk-Based Standards for Kansas Manual* establishes the process for determining

chemical-specific and site-specific cleanup goals for the system. The cleanup standards for each of the tiers are based on ARARs; MCL/MCLGs; chemical, physical and toxicological properties of contaminants; background levels; land use; and other environmental impact data. Cleanup levels for Tiers 1 and 2 are based on risk standards of $1x10^{-6}$ and $1x10^{-5}$, respectively, for carcinogens, and a Hazard Index value of 1 for non-carcinogens. Tier 3 standards are developed using site-specific data in the existing Tier 2 formulas or baseline risk assessments. Kansas generally requires that baseline risk assessments follow EPA risk assessment guidance. Tier 3 cleanup levels may not exceed a risk standard of $1x10^{-4}$ for carcinogens and a Hazard Index of 1 for non-carcinogens.

Kansas applies Tier 1 standards when natural background levels for constituents exceed a risk standard of $1x10^{-6}$ for carcinogens or a Hazard Index value of 1 for non-carcinogens. Tier 2 standards are the default standards for hazardous waste sites, including NPL-caliber sites. For ground water sites the Federal MCL is also used as default standards. Tier 3 standards are applied in instances where responsible parties desire assurance that remedies are consistent with the NCP. The State determines cleanup levels for surface waters using *Kansas Surface Water Quality Standards*, which are derived from Federal water quality standards and criteria. These standards are applied at hazardous waste sites, where applicable.

Remedy Selection for NPL-Caliber Sites

Kansas' remedy selection process was designed from the Superfund process. Consequently, the State's process for NPL-caliber sites is generally consistent with EPA's decision process for NPL sites. For NPL-caliber sites, Kansas requires scientific analysis, disclosure, and documentation that are similar to Superfund's Remedial Investigation/Feasibility Study, Proposed Plan, and Record of Decision processes and documentation. The major difference between the Superfund and State's process is the approach for assessing risk. The Superfund program requires that the decision process include a site specific baseline risk assessment. The State does not require a risk assessment because Tier 2 cleanup standards are applied to most NPL-caliber sites. A baseline risk assessment is only required for sites when the responsible party must follow the NCP for future liability protection. This determination is generally made by the responsible party. Site-specific risk assessments are only required when Tier 3 standards are applied. Similar to the Superfund process, Kansas uses interim remedial measures to contribute to the efficient performance of long-term remedial actions.

Washington

Washington's Department of Ecology administers the State's hazardous waste cleanup program. The Toxics Cleanup Program, regulated by the Model Toxics Control Act, is the State's primary cleanup program. This program is addressing approximately 1,641 State- and responsible party-lead hazardous waste sites. According to program officials, 304 of these active sites would be considered NPL-caliber.

The Toxics Cleanup Program primarily addresses contaminated sites through the oversight of responsible party investigative and remedial activities. With the exception of a one-time appropriation of $9.4 million in fiscal 2002 under the Clean Sites Initiative, funding limitations have precluded the program from initiating State-funded cleanup actions. The program also oversees the assessment of sites conducted by county health departments under State site assessment grants, and the remediation of sites by local governments under State Remedial Action Grants. In fiscal 2003, grants funds totaling over $17 million were awarded for cleanup activities at 21 sites, and program officials said some would be considered NPL-caliber sites.

The State Toxics Control Account and Local Toxics Control Account provide funding for site cleanup activities including: site investigation, emergency response, removal actions, studies and design, remedial actions, O&M, CERCLA match, long-term stewardship, and program administration. State Budget and Program Overview reports indicate funding decreased (in constant 2003 dollars) from approximately $89.6 million in the 1999-2001 biennium to $61.8 million in the 2003-2005 biennium, or approximately 31 percent. Staffing has remained relatively constant, with approximately 145 FTEs.

Cleanup Standards for NPL-Caliber Sites

The Washington Model Toxics Cleanup Act established three methods for developing cleanup standards for hazardous waste sites. Cleanup standards are established for each medium at a site and are developed based on ARARs and other criteria, including: background levels, MCLs/MCLGs, aquifer use, chemical specific health based criteria, land use, water quality criteria, and other environmental impact data.

Method A specifies cleanup levels for approximately 30 of the most common hazardous substances in soil and ground water at sites. These cleanup levels are provided in lookup tables. Method A standards are based on a risk level of $1x10^{-6}$ for carcinogens and a Hazard Index of less than 1 for non-carcinogens. Method B provides two tiers – standard and modified. The standard method uses State and Federally developed risk formulas and generic default assumptions to calculate cleanup levels. In contrast, the modified method provides for the use of chemical- or site-specific information to change selected default assumptions in formulas. Method B may be used at any site, including NPL-caliber sites, and is the most common method for setting cleanup levels when sites are contaminated with constituents not listed under Method A. A carcinogenic risk level of $1x10^{-6}$ is assigned for both standard and modified Method B levels. Method C also has standard and modified tiers, and is based on a carcinogenic risk level of $1x10^{-5}$ and a non-carcinogenic hazard index of less than 1. Method C is generally applied at sites where natural background levels for constituents exceed Method A and B cleanup levels, or when the other methods cannot be achieved because of technology limitations or other factors.

Washington has also developed cleanup standards for contaminated sediments. The objective of these standards is to eliminate adverse effects on biological resources and human health from contaminated sediments. These standards are established on a site-specific basis and developed using risk-based criteria and apply to marine, low salinity, and freshwater sediments.

Remedy Selection Process for NPL-Caliber Sites

Washington's remedy selection process requires scientific analysis, disclosure, and documentation that are similar to Superfund remedy requirements, with the exception of risk assessments. Washington's process for NPL-caliber sites requires analysis similar to the Remedial Investigation/Feasibility Study process. In addition, the State requires development of a proposed plan, solicitation and consideration of public comments on the proposed remedy, and documentation of the remedy decision. However, the State does not require that the remedy decision process include a site specific baseline risk assessment. Instead, the State relies on the Washington Model Toxics Cleanup Act methods to determine cleanup levels for NPL-caliber sites. Although Methods B and C use risk assessment formulas derived from State and EPA guidance, the cleanup calculations for both tiers are less comprehensive than a site-specific baseline risk assessment. Washington also uses interim remedial actions to mitigate threats posed by sites until the final remedy is selected.

Appendix C

Systems Used for Scoring Sites

Pennsylvania uses EPA's Hazardous Ranking System exclusively to prioritize hazardous waste sites for State-funded remedial actions. New Jersey, Michigan, Kansas, and Washington have developed ranking systems similar to EPA's system to assist in prioritizing sites.

New Jersey, Michigan, Kansas, and Washington generally score all sites intended to be addressed with State funding as part of their assessment process. In contrast, Pennsylvania only scores sites requiring State funding in excess of $2 million. Although scoring is an important aspect of the assessment and prioritization process for each of the four States besides Pennsylvania, assigned scores do not establish absolute priorities or the order in which sites are addressed. Instead, the scores provide a relative ranking of sites based on estimated risk to human health and the environment. These States generally prioritize sites for remediation using assigned scores, as well as other factors, such as economic development opportunity, cost, and available funding. The table identifies the system and scoring ranges for each State.

State	System	Score Range	Priority/NPL-Caliber Range
New Jersey	Remedial Priority System	1 - 1000	350-1000
Michigan	Site Assessment Model	0 - 48	30 - 48
Pennsylvania	EPA's Hazardous Ranking System	1 - 100	28.5 - 100
Kansas	Contaminated Sites Ranking System	1 - 100	N/A[4]
Washington	Washington Ranking Model	1 - 5	1 - 2

New Jersey developed its scoring system to rank contaminated sites awaiting assignment to ensure that sites are addressed on a "worst first" basis. The system calculates scores using criteria that assess risks associated with confirmed or potential contamination of ground water, surface water, and soil. The State is currently in the process of developing a new scoring system that is intended to better define the levels of risk that hazardous substances pose to health and the environment. In addition to the remedial priority system, the State also utilizes HRS and HRS Pre-Score to score sites under its EPA grant.

[4]Kansas does not have a range or specific score in its scoring system to designate a site as an "NPL caliber" site.

Michigan's assessment model calculates site priorities based on evaluations of existing and potential chemical substances. The model is a structured value assessment based upon perceived risk of actual and potential affected resources. The State is currently in the process of rescoring sites based on a change in the assessment model that was necessitated by the inclusion of the State's cleanup standards into the scoring model. In setting funding priorities, Michigan places emphasis on those sites that present the most significant risks to public health and the environment, as well as those sites with redevelopment potential.

Kansas' ranking system establishes scores based on type of waste and actual or potential impact to soil/bedrock, surface water, ground water, and air. Human exposure pathways are primary factors considered by the State's scoring system. In establishing funding priorities, the State designates emergency priority status for sites where drinking water supplies are impacted or the potential exists for direct contact to highly contaminated soil, waste, or ground water.

Washington's ranking model estimates the relative potential risk posed by the site to human health and the environment. Score calculations consider air, ground water, and surface water migration pathways; human and nonhuman exposure targets; properties of the substances present; and the interaction of these variables. In establishing funding priorities, the State also considers other factors such as: potentially liable parties ability to pay, public concern, and economic factors (e.g., will create substantial jobs and feasibility of cleanup).

Pennsylvania uses the Hazardous Ranking System to score sites in its hazardous waste cleanup program. Unlike most States, Pennsylvania does not score sites as part of its assessment process; rather, sites are scored for listing on the State's priority list for funding. State statute requires that remedial activities for State-funded cleanups with estimated costs in excess of $2 million be scored and placed on the State's priority list for funding. Scoring and listing on the priority list is contingent upon availability of funds. In establishing funding priorities, Pennsylvania has taken the position to only expend funds on sites where public health is at risk and where reuse efforts exist in communities that benefit the State. Sites exhibiting only environmental risk are either referred to EPA for listing on the NPL or deferred until funding is available to address identified risks.

Appendix D

Memorandum to Region 3

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF
INSPECTOR GENERAL

April 14, 2004

MEMORANDUM

SUBJECT: OIG Findings on Review of Pennsylvania Landfill Remedy

FROM: Carolyn Copper ***/signed/***
Director for Program Evaluation: Hazardous Waste Issues
Office of Program Evaluation

TO: Donald S. Welsh
Region 3 Administrator

During fieldwork for an ongoing Office of Inspector General evaluation, we identified an issue in the state of Pennsylvania that we are forwarding for your review and action. As part of our study of five State cleanup programs (Pennsylvania, New Jersey, Michigan, Kansas and Washington) and the management of their State-lead NPL-caliber sites, we found that the Adam's Sanitation Company (ADSCO) Landfill in Pennsylvania has a final selected remedy that has not been evaluated through a formal process. As a result, assurance cannot be provided that the selected remedy will eliminate potential direct contact exposure pathways, contain landfill waste over the long term, minimize surface water infiltration through the waste and leachate generation, and minimize contaminated groundwater migration off-site. In addition, we have concerns about the quality of the information used in the remedy selection decision process. We are recommending that Region 3:

- Review Pennsylvania's decision process for the site to determine whether the remedial decision is supported by appropriate data and analysis and provides reasonable assurance that the remedy will eliminate potential direct contact exposure pathways, contain landfill waste over the long term, minimize surface water infiltration through the waste and leachate generation, and minimize contaminated groundwater migration off-site, and
- If the remedial decision is not adequately supported, take appropriate action to ensure that the remedial decision is reevaluated using data and analysis that provides reasonable assurance that the selected remedy will provide effective protection to human health and the environment.

If Region 3 authority limits actions you can take on these matters we request that you forward this letter to the proper authorities. Information on the site and our findings follow.

Background

The ADSCO landfill is an inactive municipal and industrial waste landfill located along Cranberry Road near Aspers, Pennsylvania. According to Pennsylvania's Department of Environmental Protection (DEP), this site is a State-led, NPL-caliber site managed under Pennsylvania's Hazardous Sites Cleanup Program. The site is located on a farm property consisting of 108 acres of which more than 23 acres are landfilled. The site consists of three areas filled during three different time periods. These areas include:

- "very old fill area": an unpermitted dumping site in the 1940?s-1960?s located at the southern portion of the site. The boundaries are not defined.
- "old fill area": consisting of 13 acres landfilled from 1977-1983 located in the northcentral portion of the site.
- "new fill area": Keystone Sanitation Company leased 30 acres north of the old fill area, and operating as ADSCO, landfilled eight acres. The landfill closed in approximately 1989.
- The old and new fill areas operated with a leachate collection system, aeration lagoon and two settling lagoons under an NPDES permit. The very old fill area is an unlined dump. There is no indication that similar engineering controls are in place at the very old fill area.
- The area surrounding the site consists mostly of agricultural lands. There is one onsite residence and there is limited residential development adjacent to the site. There are approximately 65 domestic wells serving approximately 3,700 people within a three-mile radius of the site.

Aquifer Contamination and DEP Response

Operations at the ADSCO landfill have resulted in contamination of a spring and aquifer beneath and surrounding the site at levels exceeding medium-specific cleanup standards and Maximum Contaminant Levels (MCLs). The aquifer supplies domestic wells in the area. In 1985 volatile organic compounds (VOCs) were detected in the spring serving as the water supply for the onsite residence. Subsequent sampling of the spring and bedrock drinking water aquifer has detected VOCs in excess of MCLs. Several subsurface investigations have occurred, including a Preliminary Assessment conducted by EPA in 1989. The site was judged, "No Further Remedial Action Planned" (under CERCLA) and was archived in CERCLIS in 1990. A Focused Feasibility Study presented remedial alternatives. The site is currently in "design phase" that incorporates elements of the initially selected remedy.

Alternative remedies were evaluated and the selected remedy was presented for public comment. The remedy would comply with ARARs and included:

- Installation of a synthetic cap on the "old" and "new" fill areas in accordance with Pennsylvania regulations for municipal waste landfills. No plans exist to cap the "very old" fill area south of Cranberry Road as it is not considered by DEP to be a significant contributor to groundwater contamination. This ARAR would be waived on the basis of cost effectiveness.
- Installation of an active combustor gas venting system.
- Upgrade of a leachate collection and treatment system.
- Natural attenuation of two surface water (spring) discharges by collection in a lagoon.

- Maintenance of a point-of-entry treatment system for the onsite residential water supply. This was addressed as a prompt interim response and the source spring water will continue to be treated.
- Implementation of a long-term monitoring program to assess plume migration and to protect downgradient receptors (i.e., streams).

Portions of the remedial action alternative were chosen based on cost-effectiveness considerations. Groundwater modeling has shown that landfill capping is more effective at reducing contaminant concentrations in groundwater than pumping and treating over a twenty-year period.

DEP documents supporting the initially selected remedy alternative indicate that it would be effective in eliminating potential direct contact exposure pathways, in containing landfill waste over the long term, in minimizing surface water infiltration through waste and subsequent leachate generation and, in minimizing contaminated groundwater migration off-site. The remedy would meet surface water quality discharge limits for VOCs for leachate treatment and the spring discharge and would complies with landfill closure regulations concerning capping the old and new fill areas.

OIG Concerns Related to Remedy Selection

- **The approved remedy has been modified from its original presentation**. The installation of a cap on the old and new landfill areas is considered integral to the success of supporting remedial technologies and overall remediation of the site. The approved remedy consisting of a synthetic cap and supporting technologies was presented for public comment. However, the subsequent Statement of Decision is contradictory and appears misleading. It states concurrence with the approved remedy, but concludes that installation of the cap (the cornerstone of the combined selected remedy) would be retained as a contingent component of the remedy. The modified, and final remedy consists of many of the supporting remedial technologies of the cap, without the cap. Thus, the final selected remedy is not an alternative that has been evaluated through a formal process. The public has not been informed of this change in the remedy. Importantly, the environmental and public health that the publicly presented remedy was designed to protect cannot be assured under the final remedy.

  According to Pennsylvania state officials, budget cuts resulted in the synthetic cap becoming a contingent component of the remedy. We do not have information to determine whether budget cuts were the primary reason for the change in remedy.

- **Decisions based on site characterization data, including those related to risk, and remedy selection, may have been based on unreliable data because the site characterization is incomplete**.

  - The VOC plume in the bedrock aquifer is over ½ mile in length and 1,000 feet wide downgradient (south) and has not been adequately delineated to the north, southwest and southeast. VOCs were not detected from the testing of several domestic wells in 1999 and 2000, however, the migration potential of the plume has not been evaluated and it is unknown whether the plume will reach sensitive receptors over time. The receptors potentially include small streams and domestic wells.
  - The groundwater monitoring well network is inadequate to evaluate groundwater characteristics and contaminant distribution in the aquifer. It is possible that two separate

sources of PCE and two separate plumes are present at the site including one from the new fill area and one from the old fill area. Data collected to date has not confirmed, verified, or refuted this situation. The new and old fill areas are the primary sources of groundwater contamination, although the lateral extent of significant in the waste has not been delineated. Although VOCs were detected in soil gas samples collected from the very old fill area south of Cranberry road the extent to which contamination from this area has contributed to the overall groundwater plume is unknown because only one soil boring has been advanced.

- Hot spots in the source area have not been conclusively identified.
- The Focused Feasibility Study was based on data obtained from incomplete site characterization.

We have spoken with EPA and Region 3 officials about the site, and were informed that Region 3 has not been involved with it since it was archived in 1990.

We did not identify concerns at other sites in Pennsylvania we looked at as part of our ongoing review.

We will contact your office within two weeks of the date of this letter to answer questions or discuss this matter further. In the meantime, I can be reached at 202-566-0829, or Steven Textoris, the lead staff on this issue, can be reached at 202-566-1033.

cc: Kirby Biggs-OSWER-Assessment and Remediation Division
Kwai Chan-OIG
Eileen McMahon-OIG
Michael Owen-OIG
Abraham Ferdas-Region 3, Superfund Division Director
Jim Mccreary-Region 3, Chief, Brownfields Assessment Section
Cornelius Carr-Region 3, Audit Liaison

Appendix E

Superfund NPL LTRA Sites Pending State Assumption Over 10-Year Period (2004-2013)

State	Sites	Turnover Date	*Estimated O&M Cost	Optimization Study
New Jersey	Bog Creek	08/2005[5]	$ 460,000	Yes
	Lang Property	09/2007	$ 700,000	No
	Higgins Property	10/2009	$ 1,000,000	No
	S. Jersey Clothing/Garden State	09/2010	$ 500,000	Yes
	Vineland Chemical	06/2011	$ 4,000,000	No
	Ellis Property	09/2012	N/A	No
	Lipairi Landfill	12/2012	$ 2,500,000	Yes
Michigan	U.S. Aviex	03/2004	$ 300,000	No
	Duell & Gardner LF	09/2004	$ 70,000	No
	Ott/Story/Cordova	09/2010	$ 2,400,000	Yes
	Wash King Laundry	03/2011	$ 75,000	No
	Peerless Plating	06/2012	$ 400,000	Yes
Pennsylvania	Berks Sand Pit	06/2004	$ 150,000	No
	Croydon TCE	11/2005	$ 200,000	No
	Hellertown Manufacture	09/2007	$ 50,000	Yes
	North Penn-Area 1	09/2008	$ 100,000	No
	Cryochem, Inc	05/2008	$ 125,000	No
	Butz Landfill	09/2010	$ 250,000	No
	AIW Frank/Mid-County	09/2011	$ 180,000	No
	Raymark OU 1, OU2, OU3	09/2011	$ 155,711	Yes
	Havertown PCP	03/2013	$ 1,000,000	No
Kansas	57th and Broadway	09/2012	$ 81,200	No
	Ace Services	09/2013	$ 325,000	No
Washington	Commencement Bay	12/2005	$ 300,000	Yes
	Total Cost		**$15,321,911**	

*Estimated Costs are in current year dollars.

[5]The Bog Creek site is currently undergoing additional remedial action based on an optimization study, therefore the turnover date will have to be adjusted. A new date has not been set.

Appendix F

Agency's Comments to Draft Evaluation Report

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

July 30, 2004

MEMORANDUM

SUBJECT: OSWER Response to OIG Draft Evaluation Report "States May Not Meet Future Superfund Cleanup Requirements and Some Current Cleanup Needs Cannot Be Addressed" Assignment No. 2003-000118

FROM: Barry N. Breen /s/
Principal Deputy Assistant Administrator

TO: Carolyn Copper
Director of Program Evaluation: Hazardous Waste Issues
Office of Program Evaluation

The Office of Solid Waste and Emergency Response is providing its response to the Office of Inspector General (OIG) findings and recommendations contained in the above-referenced draft assignment. We thank the OIG for its analysis of State hazardous waste site cleanup programs; their capacity to undertake future actions at sites that are either eligible for or listed on the National Priorities List ((NPL) and to conduct future operation and maintenance (O&M) funding requirements for NPL sites; and for providing recommendations for program improvements.

OSWER will address each of your study findings and recommendations.

OIG Objective

Have the States established processes that identify, assess, and prioritize cleanups to ensure that sites with the greatest threats to public health and the environment are being addressed promptly?

OIG Recommendation

OIG recommends that the Agency work with States to determine the key reasons for the backlogs in completing site assessments and in scoring sites.

OSWER Response

While you noted that the five States reviewed (New Jersey, Michigan, Pennsylvania, Kansas, and Washington) have all implemented processes for identifying, assessing, investigating, and prioritizing hazardous waste sites that are similar to EPA's remedial process for the Superfund program, we are concerned that you found the States have backlogs in sites requiring assessment and scoring. You further state that until these backlogs are eliminated, the States cannot assure that sites posing the greatest threat to human health and the environment are promptly addressed, and further, that the backlog may limit the States' capacity to address future hazardous waste sites, including sites on the NPL. Since all five of the States studied have backlogs, we will follow your recommendation that the Agency, working with States, determine the key reasons for the backlogs.

OIG Objective

Are cleanup standards and remedies used by the States based on risk and sound science and do they provide long-term protection for public health and the environment?

OIG Recommendation

EPA should consider streamlining the Superfund remediation process to provide States more flexibility in the application of baseline risk assessments and in their remedy selection processes.

OSWER Response

We are pleased with your finding that the five States reviewed have cleanup standards that are based on risk and sound science and are intended to be protective of human health and the environment, that the processes used by these States to characterize contamination, assess risks, and make remedy decisions generally incorporate sound scientific analysis and are similar to EPA's remedy decision process for Superfund, and that the States' decision processes for NPL-caliber sites generally provide remedies that are designed to be protective of human health and the environment.

The observations in this draft report merit additional evaluation. The Agency will be examining State contributions to the federal Superfund program in the coming year, particularly as it relates to State-lead cleanups. We will refer to your findings as we develop this evaluation. It is our intent to share the lessons learned as a result of this with States and other interested parties.

OIG Objective

Are States able to support impending operation and maintenance responsibilities?

OIG Recommendation

OIG recommends that EPA work with the States to explore viable funding and staffing options to support their O&M responsibilities for LTRAs at NPL sites, and complete guidance on optimization of LTRAs at NPL sites.

OSWER Response

Your third study objective was to evaluate the States' capacity to assume O&M responsibilities for long-term response actions (LTRAs) at NPL sites. Your findings were that the States may lack the resources to undertake these future obligations due to declining budgets, States are concerned with the performance of the LTRAs, and the lack of EPA optimization studies of all of the systems. Consequently, States may be unable to maintain the integrity of remedies and ensure protection of human health and the environment. Further, inadequate LTRAs may result in the States incurring unanticipated costs which may impact other cleanup priorities.

We agree with your recommendation that EPA work with States to explore viable funding and staffing options to support their O&M responsibilities for LTRAs at NPL sites. We will, through our Regions, work with the States to jointly assess their O&M funding strategies and identify possible solutions.

In response to your recommendation that EPA complete guidance on optimization of LTRAs at NPL sites to include an action plan that establishes funding and a schedule, below is a description of activities underway and our timetable for completion of the optimization guidance.

Upon completion of the pilot phase of the optimization initiative, the Office of Superfund Remediation and Technology Innovation initiated development of the "Action Plan for Ground Water Remedy Optimization." The Action Plan is intended to apply important lessons learned in order to fully integrate optimization into the Superfund cleanup process. On May 7, 2004, we circulated a draft Action Plan to the Regions, other OSWER offices, and OSRE for comments. We expect to finalize the guidance by September 30, 2004. The plan provides details on the following activities, which will help foster routine optimization at LTRA sites:

- conduct additional optimization reviews at high priority, Fund-lead sites (at a rate of 5-8 sites per year);
- provide priority funding for the implementation of recommended system changes;
- monitor implementation progress in the Regions;
- develop appropriate guidance and training tools;
- coordinate with State counterparts and responsible parties (RPs); and,

- establish a network of Regional Optimization Liaisons.

Thank you for the opportunity to review your draft report. Your focused recommendations will assist us in enhancing the role of States as co-implementers of the Superfund program. If you have any questions, please contact Kirby Biggs at (703) 308-8506 or Johnsie Webster, OSWER Audit Liaison, at (202) 566-1912.

Appendix G

New Jersey's Comments to Draft Evaluation Report

July 30, 2004

Ms. Carolyn Copper, Director
Program Evaluation: Hazardous Waste Issues
Office of Program Evaluation
USEPA Office of the Inspector General
1200 6th Avenue (OIG-195)
Seattle, WA 98101

Dear Ms. Copper:

Thank you for the opportunity to comment on the draft report, *States May Not Meet Future Superfund Cleanup Requirements and Some Current Cleanup Needs Cannot Be Addressed*.

Generally, the report is accurate as it relates to the OIG visit to our offices, and we generally agree with the report's conclusions and recommendations. Enclosed are some specific comments and clarifications that we request be incorporated into the report, the most notable is a clarification on the backlog in the site assessment process. The report is correct in that cases currently awaiting the PA/SI process often result from Immediate Environmental Concern (IEC) cases. However, the report fails to indicate that the referenced cases are "Unknown Source" cases, and more important the receptor exposure has been previously remedied. The cases awaiting the PA/SI, are efforts to determine the source(s) of contamination that caused the IEC. Preventing any exposure to the contamination is our utmost priority. You are correct in your conclusion that the backlog is, at least in part, a function of the reduced funding in the PA/SI grant.

Some of the comments provided require a response from your team before we can assess the accuracy of the information. Please contact Edward Putnam, Assistant Director for Remedial Response, at 609-984-3074 to discuss those issues.

Sincerely

Joseph J. Seebode, Assistant Commissioner
Site Remediation & Waste Management

c. George Pavlou, Director OERR, Region II

Comments
OIG Draft Report
States May Not Meet Future Superfund Cleanup Requirements
And Some Current Cleanup Needs Cannot Be Addressed
June 28, 2004

Executive Summary

- In the results paragraph and throughout the summary the phrase "flexible remedy decision processes…." Or the word flexible is used to describe the state's process. It is unclear what this means, and the use of the word flexible implies that decisions are not consistently applied. Please consider another word that doesn't imply inconsistency.

- In the Backlog paragraph it seems far reaching to suggest that the backlog of Site Assessment cases may limit the states ability to address NPL sites. If this is attributed to a statement by some state official then it should be attributed to that official. New Jerseys future ability to respond at NPL sites is not effected by the cases awaiting site assessments.

- In the O&M paragraph, declining state budgets are mentioned. Although at the time of your visit this was true, since then New Jersey has increased the revenue from the corporate business tax and funding of our future obligation for O&M seems secure for planning purposes. This needs to be qualified with a statement that New Jersey also believes that the statute needs to be amended to include ALL O&M as a 90/10 cost share so that state funds can used effectively used on non-NPL sites. Although we will be able to meet our obligations New Jersey would rather use those funds for our obligations at other sites.

Chapter 1
- No specific comments

Chapter 2
- Page 6. Assessment and Investigation- It is unclear if the language in this section is referring only to the work performed by BEMSA under the PA/SI grant or a more general statement about investigations in the entire program. PA/SI deliverables under the grant are entirely federally funded while a combination of state and federal funds are used for publicly funded remedial program areas.
- Page 7. Backlogs- The 52 cases backlogged represent Unknown Source Ground Water Investigations that are the basis for conducting Preliminary Assessments and Site Inspections (PA/SI's) under the grant. In most cases, BEMSA will perform multiple PA's and SI's as part of the process utilized to investigate each site and to identify potential responsible parties.

We concur that our annual grant award has been cut in half since 2001. The direct impact of this funding reduction will be a correlating extension of the timeframe needed to perform PA/SI's associated with our backlog of Unknown Source Investigations.

Of particular concern in this section is the implication that these backlogged sites still pose an immediate risk. The sentence that's missing and needs to be added is the explanation that these case ALL have had the actual exposure to humans remedied. These sites that require a PA/SI are for the unknown source aspects of the case.

Chapter 3

- Page12, cleanup standards- Officially New Jersey has groundwater cleanup standards, but only soil "criteria". Therefore we recommend that " and criteria" be added wherever standards is used.

Chapter 4

- Page 17, first paragraph, the current fiscal year budget is no longer declining.

- Page 20, Recommendations- New Jersey would like to suggest an additional recommendation to have the OIG suggest the agency support the States efforts to have the O&M funding changed to a 90/10 ration for ALL O&M.

Details on New Jersey's Programs

- Page 25, first paragraph- The citation is NJAC 7:26E.
- Page 25, first paragraph- It is unclear where the numbers of cases came from please contact us and discuss the source of these numbers. The Site Remediation Program is handling significantly more case that 1,035, and it should be specified that NPL caliber equates to C3 and D cases and therefore 562 seems low also. New Jersey cannot confirm these numbers without additional information on how they were derived.
- Page 25, Standards- Again "and criteria" needs to be added.

Appendix C

- It might be worth noting that the PA/SI grant sites are also scored using the HRS and HRS pre-score.

Appendix E

- Bog Creek is currently undergoing additional remedial action based on an optimization study, so the takeover date will have to be adjusted. A new date has not been set.

- Williams Property is currently not operating and is being monitored so the cost listed to operating the site would only apply if monitoring indicates the system has to be turned back on.

Appendix H

Michigan's Comments to Draft Evaluation Report

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

July 28, 2004

Mr. Michael Owen
United States Environmental Protection Agency
Office of Inspector General
1200 6th Avenue (OIG-195)
Seattle, WA 98101

Dear Mr. Owen:

SUBJECT: Draft Report, *States May Not Meet Future Superfund Cleanup Requirements and Some Current Cleanup Needs Cannot Be Addressed*

Thank you for the opportunity to review the above-subject draft report. The Michigan Department of Environmental Quality, Remediation and Redevelopment Division (RRD), has reviewed the draft report and have provided the attached comments.

In general, the title of the evaluation report is somewhat misleading, especially after one has read the report. The text of the report seems to indicate that the evaluated states run cleanup programs that while different from the strict Superfund process, are equally able to identify and address risks in a sound, scientific manner. In addition, the use of the term “hazardous waste” throughout the report seems inappropriate as hazardous waste sites are addressed through the federal Resource Conservation and Recovery Act, as opposed to the Superfund Program, which is the focus of the report.

The Executive Summary indicates that the United States Environmental Protection Agency (U.S. EPA) is considering the future direction of the Superfund Program. The audit report; however, does not attempt to take the information gleaned from the five state reviews to determine if there are aspects of some successful state programs that can be suggested for the federal Superfund Program. This is unfortunate, as the states are often the laboratories for discovering new, more efficient and effective methods to address environmental problems.

We strongly support the Recommendations as stated in the Executive Summary of the draft report and would enjoy the opportunity to find mechanisms for the states to assume greater responsibility in the Superfund Program.

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www.michigan.gov • (800) 662-9278

Specific comments on the body of the report can be found attached to this letter. If you need further information or have any questions relative to our comments you may contact Mr. Andrew W. Hogarth, Chief, RRD, at 517-335-1104 or you may contact me. An electronic version will also be provided to your attention as requested in the June 28, 2004, letter.

Sincerely,

Steven E. Chester
Director
517-373-7917

cc: Mr. Jim Sygo, Deputy Director, MDEQ
Ms. JoAnn Merrick, MDEQ
Mr. Andrew W. Hogarth, MDEQ
Ms. Elizabeth M. Browne, MDEQ

Michigan Department of Environmental Quality Comments
Draft Report
States May Not Meet Future Superfund Cleanup Requirements and Some Current Needs Cannot be Addressed

Chapter 2, pages 7 and 8.
The draft report indicates that the auditors were unable to verify the lack of backlog for site assessments due to insufficient inventory data. All National Priorities List-caliber sites in Michigan have been scored and assessed at least once. Due to recent regulatory changes the state has to update all site scores based on new criteria. In most cases, this is a re-scoring, and not the initial evaluation. The only requirement to score a site historically has been to enable the site to receive state funding. This being the case, sites with identified active responsible parties may not have been a high priority for scoring. This issue is also raised in Appendix A, page 22.

Information as to the source of the problem experienced by the auditors would need to be provided to enable a more specific response to this concern.

Chapter 3, page 13.
The draft report does not acknowledge the Michigan Department of Environmental Quality's (MDEQ's) approach to sediment criteria. Although most of Michigan's cleanup criteria are promulgated in rules which include look-up tables, the mechanism to address contaminated sediments can be found in Rule 730 of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201). Issues that need to be addressed in establishing specific sediment criteria include impacts to fish and wildlife (either directly or as a food source); degradation of the benthos; restrictions on use; beach closings; habitat loss; and unacceptable risk through human contact.

Chapter 3, page 14.
Permanence is identified as a factor in evaluating remedial options as can be found in Section 18(4) of Part 201. Section 18(4) states in part, "…remedies that permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances are to be preferred."

Chapter 3, page 15, Recommendation 3-1.
This recommendation does not give credence to the current risk evaluation processes utilized by states. By only recommending that ways be found to provide flexibility where possible and appropriate, this falls far short of providing any real advancement in efficiency in the Superfund Program. The MDEQ, like many state environmental agencies across the country has successfully demonstrated to the United States Environmental Protection Agency the ability to address site remediation under the hazardous waste and leaking underground storage tank programs. Why then, cannot a stronger recommendation be made to look at updating the Superfund Program to allow a similar delegation authority as those found in the hazardous waste and tank

programs? By recommending that Superfund be updated to allow state authorization or delegation, many of the time sinks and duplication of efforts inherent in the Superfund Program could be eliminated. State run cleanup programs, and state authorized hazardous waste and tank remediation programs often address sites as large and/or complex as many Superfund sites. States have shown that they are capable of handling sites of this magnitude.

Chapter 4, pages 19 and 20.
It is agreed that with decreasing budgets, at both the federal and state level, the state's ability to address long-term remedial action (LTRA) at sites will be stretched. This being said, it should be noted that the MDEQ has been evaluating the LTRA needs for sites where we will assume the financial responsibility for long-term operation and maintenance of these systems, and intends to continue to work to meet those obligations. We strongly support the efforts to conduct optimization studies and urge that the report strongly recommend that these studies be conducted on a priority basis at sites where the transfer of responsibility to the state is imminent, or where project managers have raised concerns about the effectiveness of a current system. Recommendation 4-2 should suggest an aggressive time line for the completion of the guidance on optimization of LTRAs.

Appendix 1, page 22.
Please see the comments relative to Chapter 2, pages 7 and 8.

Appendix B, page 25.
The reference to the staffing levels is misleading due to a restructuring of the MDEQ which took place in 2002. Hiring freezes and the inability to replace staff who took an "early-out" retirement package in 2004 have reduced the number of staff working in the Remediation and Redevelopment Division (RRD) cleanup program. The 2002 restructuring that created the RRD also added the leaking underground storage tank responsibilities to the cleanup program, thus potentially masking staffing reductions with additional program duties.

Appendix B, page 26.
As stated earlier, the MDEQ does have a mechanism to address contaminated sediments in Part 201 (see comment under Chapter 3, page 13). In addition, the MDEQ also has criteria for evaluation of the Groundwater/Surface Water Interface, or GSI. This criterion is used to evaluate the impact that contaminated groundwater may have on a surface water body into which it discharges. The evaluation is modeled on the process used to evaluate point source discharges under the National Pollutant Discharge Elimination System, and is an Applicable or Relevant and Appropriate Requirement under Superfund.

Appendix E
We are not aware of an optimization study having been performed at the U.S. Aviex site.

Appendix I

Pennsylvania's Comments to Draft Evaluation Report

Rachel Carson State Office Building
P.O. Box 8471
Harrisburg, PA 17105-8471

Land Recycling and Cleanup Program 717-783-7816

Mr. Michael Owen
Assignment Manager
U.S. Environmental Protection Agency
Office of the Inspector General
1200 6th Avenue (OIG-195)
Seattle, WA 98101

Dear Mr. Owen:

We have reviewed the draft report, *States May Not Meet Future Superfund Cleanup Requirements and Some Current Cleanup Needs Cannot Be Addressed*, and concur with your findings, but would like the following comments included in the final report:

1. The reference to Pennsylvania's backlog (Page 7, Paragraph 2) of approximately 90 sites requiring assessment and incomplete inventory data needs additional clarification. The State and EPA Region III utilize a work share database, maintained by the EPA Region, that tracks the state or federal agency lead for the assessment and cleanup of National Priorities List (NPL) Caliber priority sites. The inventory data maintenance and updates are a function of EPA Region III with input from Pennsylvania's six Regional DEP Offices. The work share status of the NPL caliber sites is not a reflection of the state inventory data, but a separate inventory maintained by EPA Region III.

2. The report text (Page 14, Paragraph 3) and the Appendix D Memo regarding the remedy selection for the ADSCO Site State-led cleanup requires additional language to conclude remedy protectiveness. The original remedy selected for the site was re-evaluated due to cost effectiveness brought on by state budget restraints. The re-evaluation resulted in a modified remedy considering cost effectiveness with additional monitoring to assure protectiveness of human health and the environment. The original remedy selection was retained as a contingency if the modified remedy proved not to be protective. The public notification process was satisfied according to state requirements due to the modified remedy being one of the alternatives considered throughout the remedy selection process. This selection process was discussed in detail with the Office of Inspector General staff and the EPA Region III Site Assessment Program.

We appreciate the opportunity to review and comment on the report. If you have further questions, please contact me at (717) 783-7816 or tfidler@state.pa.us.

Sincerely,

Thomas K. Fidler
Manager

cc: Kathleen A. McGinty, Secretary
Nicholas A. DiPasquale, Deputy Secretary for Air, Recycling and Radiation Protection
Eugene A. DePasquale, Deputy Secretary for Community Revitalization & Local Government Support
Michael G. Forebeck, Acting Director for the Bureau of Land Recycling and Waste Management
Patricia L. Renwick, Chief for the Division of Remediation Services
Charles Swokel, Acting Chief for the Division of Storage Tanks

Appendix J

Kansas' Comments to Draft Evaluation Report

K A N S A S

RODERICK L. BREMBY, SECRETARY KATHLEEN SEBELIUS, GOVERNOR

DEPARTMENT OF HEALTH AND ENVIRONMENT

July 26, 2004

EPA Office of Inspector General
Attn: Michael Owen
1200 6th Avenue (OIG-195)
Seattle, Washington 98101

RE: Assignment Number 2003-000118

Dear Mr. Owen:

The Kansas Department of Health and Environment (KDHE) appreciates the opportunity to provide comment on the draft report titled, "States May Not Meet Future Superfund Cleanup Requirements and Some Current Cleanup Needs Cannot Be Addressed." The report presents an evaluation of the effectiveness of State hazardous waste cleanup programs conducted by the Office of Inspector General. The report evaluates five state programs and makes general conclusions and recommendations based on cumulative findings.

KDHE is concerned the title of the report is too generic and therefore may misrepresent the actual findings in a particular state. KDHE believes, that each state is unique in their organizational structure and capabilities to address contaminated sites. Strengths and weaknesses vary from state to state, as do each state's needs. KDHE can not represent the interests of the other states, nor can the other states represent KDHE opinions. A global statement indicating states may not meet future requirements and cleanup needs may misrepresent a specific state program.

KDHE agrees that there are global concerns with funding. In particular, federal and state funding in Kansas has been consistently reduced over the last few years. These reductions are leading to assessment backlogs as discussed in the audit report, but more importantly the reductions in funding is leading to orphan sites that can not be addressed following assessment. One of the objectives of the assessment program in the State of Kansas is to identify potentially responsible parties (PRPs). If PRPs are identified the site is transferred to an appropriate state response program (Voluntary Cleanup, State Cooperative, Enforcement, Dry Cleaning, Tanks, etc.) for future work. These sites are generally addressed in a cooperative manner between the PRP and the state.

DIVISION OF ENVIRONMENT
Bureau of Environmental Remediation
CURTIS STATE OFFICE BUILDING, 1000 SW JACKSON ST., STE. 410, TOPEKA, KS 66612-1367
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Thousands of sites are currently being managed by these state response programs. Unfortunately, there are also sites where a PRP can not be identified or is no longer a viable entity (i.e., bankruptcy, defunct, etc.). These sites must be addressed using available state and federal funding. These sites still need to be addressed by an appropriate program whether they are classified as a "Superfund" site or not. When state and federal funding is reduced these sites do not get worked and as a result there may be threats or risks to human health and the environment that are not being addressed by states and federal programs.

Reducing the funding available for any given phase (assessment, investigation, removal, remedial) will create backlogs of sites within that phase, which ultimately means that sites are not being adequately addressed. Reducing funding for assessments will result in less new sites, citizens complaints, etc. being assessed to determine if a problem exists, and if so the priority of the problem. Reducing funding for remediation means less resources will exist to perform corrective action at sites. In any case there will be an increase in the potential risks to public health and the environment due to funding reductions. Historically, federal funding has made a difference in the state's ability to develop programs to address thousands of sites across the nation. The number of sites being addressed collectively by KDHE's state response programs, and the manner in which they are being addressed is an unquestionable positive outcome for the citizens of our state. Obviously without such funding the ability of Kansas, and the other states to address such sites will decrease.

This letter outlines KDHE's comments which identify concerns specific to the state of Kansas. Comments are defined by chapter and page number followed by the statement in the report.

Executive Summary Comments:

1. Executive Summary, page i - *"However, the States' abilities to meet current and future responsibilities for the Superfund program as well as their own cleanup programs are limited."*

Comment - As previously stated, this statement is global in nature and may not accurately represent the findings in the individual states. Individual state programs are unique and their successes or limitations can not be summarized in one simplified statement that may misrepresent a state or program. A global statement that "less sites can be addressed by the states and federal government because of the continued decrease in available funding," may be more representative.

2. Executive Summary, page i - *"Specifically, we found that the States have backlogs in addressing hazardous waste sites, use flexible remedy decision processes that are not equivalent to Superfund's process, and appear to be significantly challenged in their ability to meet their required, and impending, obligations at current Superfund sites."*

Comment - Again this is a generalized statement that may not represent the findings of each state. To clarify this statement for Kansas: KDHE has a backlog of what we believe are low priority sites that need to be assessed; KDHE uses flexible remedy decision processes that meet the public notification processes and the cleanup criteria of one in a million to one in ten thousand as defined by the NCP, and KDHE is financially challenged in our ability to meet the required 10% match at Superfund fund-lead sites and the 100% operation and maintenance requirements following ten years of operation at those sites.

3. Executive Summary, page ii - *"Until these backlogs are eliminated, the States cannot assure that sites posing the greatest threat to human health and the environment are being addressed promptly, and the backlog may limit the States' capacity to address future hazardous waste sites, including sites on the NPL."*

Comment - KDHE is averaging five to seven new sites per month. These sites are screened to determine the sites with the greatest risk. Sites posing the greatest threat to human health and the environment are being addressed promptly by the state of Kansas. Sites that are believed to be low priority remain on the list of sites to be assessed. KDHE believes that for the state of Kansas, the statement "States cannot assure that sites posing the greatest threat to human health and the environment are being addressed...." is not accurate. Currently, KDHE believes that all sites with known human health and environmental risks are being addressed by either the state or EPA Region VII. We are unaware of any known site with a moderate to high risk that is not being addressed. However, this may not be the case in the future if there is a continual decrease in state and federal funding.

There are known sites with low risk to human health and the environment that have been identified but, are not currently being addressed because of limited resources. The concept of addressing the worst sites first has always been implemented by the state of Kansas; however, following assessment many lower priority sites are being addressed by KDHE when there is a progressive, cooperative responsible party.

4. Executive Summary, page ii - *"Therefore, if EPA wants the States to assume a larger role in addressing NPL sites, it should consider giving the States greater flexibility in their remedy selection process."*

Comment - KDHE agrees with this statement.

Chapter 1 Comments:

No comments.

Chapter 2 Comments:

5. Page 8: The statement, "*Kansas has a backlog of 122 sites pending assessment under its cooperative agreement with EPA*." is not a factual statement.

Comment: KDHE's cooperative agreement with EPA outlines a specific number of assessments that KDHE can complete given the annual (state and federal) funding and staff resources. The agreement identifies that KDHE complete a certain, specific number of assessments at unnamed sites in the state. Sites are unnamed at the time of the grant, to give the state the flexibility to assess higher priority sites that are identified during the grant year as opposed to be restricted to assessing specific sites which may be a lower priority. KDHE has always met or exceeded the target numbers in the grant. Grants and commitments are negotiated annual by KDHE and EPA Region VII. The highest priority sites are assessed under the grant for that year. Remaining sites that have not been assessed by the federal site assessment program may carry over to the next grant or may be worked by another state program. Therefore, there are not 122 sites pending assessment under our cooperative agreement with EPA. At the time of the audit there were 122 sites that needed assessed by KDHE either with state or federal funding. The backlog of sites is directly related to the reductions in state and federal funding as previously discussed and not a failure to meet grant commitments.

6. Page 8: The statement, "*Over 50 percent of these sites have been in the State's inventory for more than 5 years*." is misleading.

Comment: Sites that have been in the system for an extended period of time have been screened and deemed as a low priority, low risk site that will be assessed once higher priority sites have been assessed. The screening takes into account the geographical location of the site (i.e., aquifer, water use, etc.), potential receptors, known contaminant levels, type of contaminants, etc. While the term backlog would imply that no action has been taken, the fact is that a desk-top evaluation has been performed to insure that those sites remaining on the inventory are truly low priority.

7. Page 8: The statement, "*...the State has a backlog of 30 sites pending priority scoring for remediation." is inaccurate..".*

Comment: In Kansas, sites are not scored for remediation but, are scored for further investigation following assessment. Following the identification of a new site, sites are screened to determine relative priority based on the factors identified in previous comments. Sites that are screened as higher priority are assessed by the Site Assessment Program under the cooperative agreement. Sites that go through the traditional federal site assessment process are pre-scored. Some sites are assigned to the State Water Plan Program (state funding) where they are scored as required by the program. The sites assigned for assessment with state funding are generally sites with non-hazardous

substances or sites that will require a more extensive assessment due to their geographical location (i.e., deep drilling). No site is ever scored for remediation, as so stated.

8. Page 8: The statement, "*State funding limitations precluded the State from scoring more sites*" is inaccurate.

Comment: There are no funding limitations associated with scoring a site. A site can be scored at any time following assessment. Sites that are assessed and referred to the State Water Plan program are scored prior to further work in that program. The statement should refer to the funding limitations regarding cleaning up orphan sites in the State Water Plan Program once sites are scored.

9. Page 9: The statement, "*States cannot assure that sites posing the greatest threat to human health and the environment are being addressed promptly, and the backlog may limit the States' capacity to address future hazardous waste sites, including sites on the NPL*." is misleading.

Comment: In Kansas, all newly identified sites are screened to determine their relative priority. Those sites with a "moderate to high priority" are assigned for site assessment. Sites with "low priority" may not be assessed until all moderate to high priority sites have been assessed. These low priority sites do not represent a known risk to human health and/or the environment. In the State of Kansas, sites posing the greatest threat to human health and the environment are being assessed. However, if after assessment a site is determined to be an orphan site, there may not be enough federal or state funding to address the problem.

Comment on Recommendation: The limitations of conducting assessments are two-fold: 1) The federal government has not realized that new sites are identified on a daily basis through citizen's complaints, local government referrals, private site assessments, etc. KDHE has documented that the number of new sites has remained fairly constant (for example in 2000 a total of 51 new sites were identified and in 2003 a total of 63 new sites were identified) each year. Note: these numbers do not include new sites entering into the KDHE's Voluntary Cleanup Program; 2) Although the rate of newly identified sites is constant, the amount of federal funding for the site assessment program has declined annually. State funding has also decreased at 5-10 percent annually. The backlog of sites is directly attributable to the reduction of funding at both the federal and state level, not the amount of sites scored. As previously stated, the continued reduction of state and federal funds also limits the actions that can be taken on orphan sites following assessment.

KDHE concurs with the recommendation that additional funding is needed to maintain or meet current assessment needs. Federal site assessment funding has been reduced by the Region on an annual basis; however, the number of new sites that need assessed per year is not decreasing.

Chapter 3 Comments:

No comments.

KDHE concurs with the recommendation that their should be flexibility in the use and application of baseline risk assessments to streamline the process.

Chapter 4 Comments:

10. Page 18: Table 4.1 and Figure 4.1, need to be revised to reflect the O&M costs associated with the Ace Superfund Site. KDHE will be assuming O&M responsibility for this site in September of 2013 with an estimated cost of $325,000 per year.

11. Page 20: KDHE would like you to consider the following recommendation:

> *4-3. EPA should consider performing a system optimization study during the LTRA and a minimum of 1) for the five year review period and, 2) prior to the ten year review. These studies should be performed jointly with the states.*

EPA should develop training for their project managers to create a philosophy of continuous system evaluation and optimization. EPA should seek project managers with strong technical background in site remediation and empower those managers to perform system evaluations as data is generated. Contracts for site remediation should have performance criteria that must be met or a vendor can be replaced. System review should not be limited to a five year process. When EPA is spending millions of dollars a year on site remediation, project managers should be providing extensive oversight to insure that systems are effective.

Appendix B:

Page 26, Clarification of the following statement, *"The State does not require a risk assessment because Tier 2 cleanup standards are applied to most NPL-Caliber sites."*

In Kansas, Tier 2 standards are the default standards and are established at 10^{-5} which is within the protective range of 10^{-4} to 10^{-6} as defined by the NCP. For groundwater sites the federal MCL is also used as default standards. A baseline risk assessment is only required for sites when the responsible party must follow the National Contingency Plan for future liability protection. This determination is generally made by the responsible party. Tier 3 also can include a risk analysis using site-specific data in the existing Tier 2 formulas or a baseline risk assessment.

Appendix C:

Page 27, Table - It is difficult, if not impossible to compare the scoring system in Kansas to the national HRS scoring system. The range provided in the table of 30-100 for an NPL-caliber range site is arbitrary. KDHE does not have a range or a specific score in it's scoring system to designate a site as an "NPL-caliber site."

Appendix E: See Comment 10.

KDHE would like to thank you for the opportunity to comment on this report. If you have any questions regarding our comments please call me at 785-296-1662.

Respectfully,

Gary Blackburn, Director
Bureau of Environmental Remediation

cc: Rick Bean
Leo Henning

Appendix K

Washington's Comments to Draft Evaluation Report

July 28, 2004

Mr. Michael Owen
Environmental Protection Agency
Office of Inspector General
1200 5th Avenue, OIG-195
Seattle, Washington 98101

Dear Mr. Owen:

Thank you for the opportunity to review the draft report, *States May Not Meet Future Superfund Cleanup Requirements and Some Current Needs Cannot Be Addressed.* We appreciate this opportunity and hope that our comments will be useful to the Office of Inspector General (OIG) as this report is finalized.

General Comments
As an overall comment, and distinguishable from the body of the report, we are concerned that there is a disconnect between the title of the report, the Executive Summary, and report findings. Readers of this report will be lead to believe that each of the five state programs reviewed have deficiencies. We believe this not to be the case.

Toward that end, we believe the real issue is declining federal superfund resources and grant funding to state programs. Many states including Washington, have more comprehensive and efficiently run programs than those at the federal level. Furthermore, the breadth of sites that states manage is more expansive by number and type of contaminant addressed than those at the federal level. The draft report accurately describes the substantive equivalency nature of state programs to the federal program and the derived benefits of efficiency, flexibility, and cost-savings of these programs.

Hence, language in the report should more directly link how declining federal funding impacts state programs. This can be accomplished by rewording the title of the report and the headings in the Executive Summary to reflect federal program and funding shortfalls. As example, on page ii, replace **States Need to Address Backlogs in Site Assessments and Scoring** with "**The Decline in Federal Funding has Increased Backlogs in Site Assessments and Scoring**." This rewording more accurately represents the findings and the actual recommendations.

Specific Comments

1. Executive Summary, page ii, first full paragraph, last sentence, regarding backlogs (Note – the following two points commented on immediately below are also found at the end of the first paragraph, page 5; and in the paragraph ending at the top of page 9):

> Statement: "Until these backlogs are eliminated, the States cannot assure that sites posing the greatest threat to human health and the environment are being addressed promptly, and the backlog may limit the States' capacity to address future hazardous waste sites, including sites on the NPL."
>
> Comment: First, it is important to recognize that the backlog of unassessed sites represents a dynamic process, with new sites being continually added at the same time other sites are removed due to assessments being completed. Consequently, there will generally always be a backlog, unless limitations in funding precludes further "site discovery" to continue to add new sites to the list.
>
> Second, in Washington State, while it is true these "backlogged" sites have not been formally ranked, they have been subjected to an "initial investigation". This includes a records review, site inspection, and, usually, limited sampling. Any imminent risks are identified and addressed as part of this process, and higher risk sites are prioritized for ranking. Thus, this backlog represents lower risk sites, and we believe does not impede our ability to take on higher risk sites if one is identified.

2. Page 8, regarding the backlog in Washington State:

> The statement "According to program officials, this backlog is primarily attributable to an increase in its site inventory resulting from the deferral of CERCLIS sites from EPA, and funding limitations." is not entirely true.
>
> Ecology has to date addressed at least 82% of the 500-plus sites referred by EPA for further action, with only 34 sites (6% of total) currently awaiting assessment. In Washington State most detailed site assessments and rankings are being done by local health districts with funding provided through state grants. The overall State backlog is due to a combination of factors: Some sites are ineligible to be assessed by local government due to a potential conflict of interest; many of the backlogged sites are low risk, and assessments are instead done on those sites perceived to be of a higher risk regardless of time of entry into the backlog; and lack of state funding/staffing limits assessments being conducted by the state in those counties not funded at the local level.

3. Page 25, Appendix B, third paragraph, first sentence:

   "The State Toxic …" should read "The State Toxics …"

4. Page 26, Appendix C, second paragraph, third sentence:

   "… assigned scores do not establish priorities or the absolute order …" should read "… assigned scores do not establish absolute priorities or the order …"

5. Page 26, Appendix C, second paragraph, fourth sentence:

   "Instead, the scores provide a general ranking of sites …" should read "Instead, the scores provide a relative ranking of sites …"

6. Page 27, last paragraph, last sentence:

   "… the State also considers other factor such …" should read "…the State also considers other factors such …"

Should you have any questions, please feel free to contact me at (360) 407-7226.

Sincerely,

Tim Nord
Headquarters Section Manager
Toxics Cleanup Program

TN:cp

cc: Linda Hoffman, Ecology Director

Appendix L

Distribution

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