



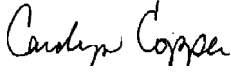
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
INSPECTOR GENERAL

September 26, 2002

MEMORANDUM

SUBJECT: Final Evaluation Report
Federal Facility Cleanups: EPA Review of Contaminants
and Increased Funding Levels Needed to Ensure Continued
Compliance with Superfund at Oak Ridge
Report No. 2002-P-00013

FROM: Carolyn Copper 
Director of Program Evaluation
Hazardous Waste Issues

TO: Jimmy Palmer
Regional Administrator
Region 4

Attached is a copy of the final report on *Federal Facility Cleanups: EPA Review of Contaminants and Increased Funding Levels Needed to Ensure Continued Compliance with Superfund at Oak Ridge*.

On August 20, 2002, we issued a draft report to you and received your response dated September 19, 2002. Your response indicated that you generally agreed with the recommendations and have implemented corrective action. Based on the recommendations and your response, no further action is needed to close the assignment in the assignment tracking system.

We have no objections to the further release of this report. If you or your staff have any questions regarding this report, please contact me at (202) 566-0829. For your convenience, this report will be available at <http://www.epa.gov/oigearth/eroom.htm>.



Office of Inspector General

Evaluation Report

FEDERAL FACILITY CLEANUPS

EPA Review of Contaminants and Increased Funding Levels Needed to Ensure Continued Compliance with Superfund at Oak Ridge

Report No. 2002-P-00013

September 26, 2002



**Inspector General Offices
Conducting the Evaluation:**

**Office of Program Evaluation
Washington, DC**

**Southern Audit and Evaluation
Resource Center
Atlanta, Georgia**

Region Covered:

Region 4

**Regional Program
Office Involved:**

**Waste Management Division
Federal Facilities Branch**

**EPA Headquarters Program
Office Involved:**

**Office of Solid Waste and Emergency
Response**

Report Contributors:

**Angela Bennett
Carolyn Copper
John Price
Johnny Ross**

Abbreviations

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	Department of Energy
EPA	Environmental Protection Agency
FFA	Federal Facility Agreement
GAO	General Accounting Office
NCP	National Contingency Plan
OIG	Office of Inspector General

(Cover Photo Courtesy of Bechtel Jacobs, *Quick Facts-ETTP Watershed*, March 2001)



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

OFFICE OF
INSPECTOR GENERAL

September 26, 2002

MEMORANDUM

SUBJECT: Final Evaluation Report
Federal Facility Cleanups: EPA Review of Contaminants
and Increased Funding Levels Needed to Ensure Continued
Compliance with Superfund at Oak Ridge
Report No. 2001-P-00013

FROM: John A. Price /s/ *John Price*
Project Manager
Southern Audit and Evaluation
Resource Center

TO: Jimmy Palmer
Regional Administrator
Region 4

Attached is our report entitled *Federal Facility Cleanups: EPA Review of Contaminants and Increased Funding Levels Needed to Ensure Continued Compliance with Superfund at Oak Ridge*. The objectives of our evaluation were to determine whether: (1) the Oak Ridge Federal Facility Agreement (FFA) cleanup requirements and related cleanup actions were consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and planned uses for the site; (2) EPA Region 4's oversight of cleanup activities for Oak Ridge was effective in achieving compliance with CERCLA and FFA requirements; and (3) DOE's compliance with CERCLA and FFA requirements was adversely affected by funding limitations.

The report contains issues that describe conditions the Office of Inspector General (OIG) has identified and OIG recommendations. 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 EPA resolution procedures.

ACTION REQUIRED

On August 20, 2002, we issued a draft report to you and received your response dated September 19, 2002. Your response indicated that you generally agreed with the recommendations and have implemented corrective action. Based on the recommendations and your response, no further action is needed to close the assignment in the assignment tracking system.

We have no objections to the further release of this report. If you or your staff have any questions regarding this report, please contact me or Angela Bennett, at (404) 562-9830. For your convenience, this report will be available at <http://www.epa.gov/oigearth/eroom.htm>.

Attachment

Executive Summary

Introduction

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund) gives the Environmental Protection Agency (EPA) authority and oversight responsibility for the cleanup of hazardous waste sites owned and operated by other federal agencies. Department of Energy (DOE) facilities represent some of the most contaminated federal facilities. As a result of preliminary research at the Hanford facility in Washington State, the OIG decided to review remedial actions and related EPA oversight at other selected DOE facilities. The Oak Ridge Reservation Site (Oak Ridge), a Superfund site in Oak Ridge, Tennessee, was selected for review primarily because the facility had the fourth highest estimated long-term cleanup costs of all DOE facilities ¹ (\$13.1 billion).

Objectives

The objectives for this evaluation were to determine whether:

- Oak Ridge Federal Facility Agreement (FFA) cleanup requirements were consistent with CERCLA and planned uses for the site;
- EPA Region 4's oversight of cleanup activities for Oak Ridge was effective in achieving compliance with CERCLA and FFA requirements; and
- DOE's compliance with CERCLA and FFA requirements was adversely affected by funding limitations.

Results in Brief

We found that Oak Ridge FFA requirements and Region 4 oversight were effective in ensuring consistency with CERCLA. Remedies approved under the FFA generally complied with applicable federal and State requirements and were consistent with planned uses for the site. Selected remedies generally addressed control and containment of pollutants and were designed to be protective of human health and the environment. However, oversight at Oak Ridge could be improved by reviewing and evaluating additional studies conducted by the Tennessee Department of Health that identified potential contaminants of concern that may not be accounted for in existing FFA documents. Without adequate review and

¹Estimate includes cost for Oak Ridge, Paducah, and Weldon Springs facilities managed by the Oak Ridge Operations Office.

comparison of these contaminants, Region 4 cannot be assured that on-going and proposed remedial actions are addressing all contaminants of concern and that risks to human health and the environment are being addressed.

DOE compliance with FAA requirements was adversely affected by insufficient funding levels. Funding levels under the FFA were not sufficient to support cleanup commitments and maintain a remediation program consistent with FFA requirements. Further reductions in funding levels could have significant impact on the FFA and on initiation and completion of future cleanup efforts. The overall adequacy of DOE's level of commitment to the FFA's ongoing remediation program has prompted Region 4 and the State to invoke the FFA's formal dispute resolution process. Without sufficient funding levels DOE cannot meet the FFA purpose of ensuring that the environmental impacts associated with past and present activities at the site are thoroughly investigated and that appropriate remedial action is taken to protect public human health and the environment.

Recommendations

We made several recommendations to the Region 4 Regional Administrator to address issues identified, including expediting completion of the review and comparison of potential contaminants of concern identified in State Health Department reports with past remedial investigation documents; and continuing to work with DOE to obtain a level of funding that is sufficient to support cleanup commitments and maintain a remediation program consistent with FFA requirements.

Agency Comments and OIG Evaluation

Region 4 generally agreed with the findings and recommendations, and provided additional comments to clarify portions of the report. We have incorporated these comments and modified the report as appropriate. Further, we have included the Region's comments following each chapter and have included the complete response in Appendix 5.

Table of Contents

Executive Summary i

Chapters

1 Introduction 1

2 Review of Contaminants Needed to Ensure Continued Consistency with CERCLA 5

3 Funding Levels Adversely Affect DOE Compliance with FFA Milestones 9

Appendices

1 Details on Scope and Methodology 15

2 Prior Reports on Federal Facility Cleanups 17

3 Records of Decision Issued Under Oak Ridge FFA 19

4 Potential Contaminants of Concern 21

5 Agency Response 23

6 Distribution 25

Chapter 1

Introduction

The Office of Inspector General (OIG) initiated this evaluation based on concerns related to certain remedial actions at the Department of Energy (DOE) Hanford facility in Washington State, and concerns with Environmental Protection Agency (EPA) oversight of the remedial actions. As a result of preliminary research at Hanford, OIG decided to review remedial actions and related EPA oversight at other selected DOE facilities. Oak Ridge, a Superfund site in Oak Ridge, Tennessee, was selected for review primarily because the facility had the fourth highest estimated long-term cleanup costs of all DOE facilities at \$13.1 billion.

The specific objectives of our evaluation were to determine whether:

- Oak Ridge Federal Facility Agreement (FFA) cleanup requirements were consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and planned uses for the site;
- Region 4's oversight of cleanup activities for Oak Ridge was effective in achieving compliance with CERCLA and FFA requirements; and
- DOE's compliance with CERCLA and FFA requirements was adversely affected by funding limitations.

Background

DOE Responsibility

Over the past five decades, DOE and its predecessors were responsible for the research, development, testing, and production of nuclear weapons and a variety of nuclear related research projects. These activities created significant amounts of hazardous chemical and radioactive wastes and contamination at DOE sites across the nation.

In 1980, CERCLA, also referred to as "Superfund," provided EPA with enforcement authority for cleaning up abandoned and inactive contaminated waste sites. Section 120 of CERCLA provided EPA with specific regulatory enforcement and oversight authority for the cleanup of hazardous waste sites owned by other federal agencies, such as DOE. The National Contingency Plan (NCP), in 40 Code of Federal Regulations Part 300, establishes the requirements for all CERCLA cleanup actions.

The DOE Environmental Management Program is responsible for cleaning up some 114 sites around the country. At the beginning of fiscal year 2002, DOE had completed cleanup at 74 sites, bringing them into compliance with federal and State environmental laws and regulations. Total life cycle cleanup cost for the remaining sites were estimated at \$147 billion in the 1998 *Paths to Closure* report². More recently, DOE has estimated total life cycle cleanup costs at \$220 billion, but DOE acknowledges these costs could easily increase to more than \$300 billion.³ At Oak Ridge, of the \$13.1 billion in total life cycle cleanup costs estimated by DOE, \$3.1 billion was for CERCLA-regulated cleanups.

Oak Ridge

Established in the early 1940s, Oak Ridge occupies approximately 37,000 acres and is located almost entirely within the city limits of Oak Ridge, Tennessee, approximately 25 miles west of Knoxville. Oak Ridge is composed of three primary areas: the Oak Ridge National Laboratory, the East Tennessee Technology Park, and the Y-12 Plant. Work performed in each of these areas contributed to Oak Ridge's major role in the enrichment of uranium and the production of plutonium for the first nuclear weapons. Although the primary areas of Oak Ridge are no longer operating in their original capacities, portions of the areas are currently in operation. Federal and contractor employment at Oak Ridge totaled some 12,998 employees, as of December 31, 2001. Current operations, by area, include:

- Oak Ridge National Laboratory, formerly tasked with producing and chemically separating the first gram quantities of plutonium to support the production of the atomic bomb, is now one of the country's largest multi-disciplinary and multi-program laboratories and research facilities with a scope of work that includes production of isotopes, fundamental research in a variety of sciences, research involving hazardous and radioactive materials, environmental research, and radioactive waste disposal.
- East Tennessee Technology Park, formerly used to provide enriched uranium for nuclear weapons production, now has a multipurpose mission that includes environmental restoration, waste management, technology development and demonstration, education and training, and technology transfer for DOE, other agencies, and the public.

²Department of Energy, Office of Environmental Management: *Accelerating Cleanup, Paths to Closure*, June 1998.

³CERCLA-regulated cleanups represent a small portion of these life cycle costs. Only about one-third of the Environmental Management program budget today is going toward actual cleanup and risk reduction. The remainder is spent on maintenance, fixed costs, and other activities required to support safety and security.

- The Y-12 Plant, formerly used to separate uranium isotopes, has evolved into supporting highly sophisticated manufacturing and development engineering associated with the production and fabrication of nuclear weapon components.

As a result of past operations, approximately 4,000 acres of land in parts of the three primary areas and in other areas of Oak Ridge have been or have the potential to be contaminated. Oak Ridge has approximately 1,100 acres of unlined radioactive and mixed waste burial grounds, inactive tanks, surplus facilities, and unlined ponds. Contamination is found in the soil, groundwater, surface water, and downstream in two major rivers, the Clinch River, bordering Oak Ridge, and the Tennessee River further downstream. As of December 2001, 25 Records of Decision have been approved to address cleanup of contaminants found at the site.

On November 21, 1989, EPA placed Oak Ridge on the Superfund National Priorities List. As required by CERCLA and amended by the Superfund Amendments and Reauthorization Act, federal facilities on the National Priorities List must enter into a interagency agreement with EPA for the expeditious completion of all necessary remedial action at the facility. Accordingly, DOE signed an FFA with EPA and the Tennessee Department of Environment and Conservation (the State) that became effective on January 1, 1992. The FFA established a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions at the Site in accordance with CERCLA, the NCP, the Resource Conservation and Recovery Act, the National Environmental Policy Act, appropriate guidance and policy, and State laws. As a compliance agreement, the FFA provides for enforceable milestones and penalties for non-compliance.

EPA Oversight

The Federal Facilities Branch within Region 4's Waste Management Division is principally responsible for oversight and implementation of the Oak Ridge FFA. The Federal Facilities Restoration and Reuse Office within the Office of Solid Waste and Emergency Response is responsible for EPA's federal facility oversight policies and provides support to regional oversight programs.

Scope and Methodology

This evaluation was performed in accordance with the *Government Auditing Standards*, issued by the Comptroller General of the United States. We assessed management controls and compliance with applicable laws and regulations. We did not identify any instances of noncompliance with statutory or regulatory requirements.

The evaluation fieldwork was primarily performed at Region 4 in Atlanta, Georgia; DOE Oak Ridge Operations Office in Oak Ridge, Tennessee; and the Tennessee Department of Environment and Conservation Office, also located in Oak Ridge, Tennessee. The evaluation included a review of the FFA and related CERCLA remedial activities from January 1, 1992 through December 2001.

See Appendix 1 for details on Scope and Methodology.

Prior Coverage

This is the OIG's first evaluation of Region 4's oversight of DOE cleanup actions at Oak Ridge. Similar OIG evaluations at DOE's Hanford facility in Washington State, and at the Savannah River Site near Aiken, South Carolina have been conducted. The EPA OIG, DOE OIG, DOE Program Management, and the General Accounting Office (GAO) have performed numerous reviews directly or indirectly related to federal facility hazardous waste cleanups. See Appendix 2 for a list of reports directly or indirectly related to this evaluation.

In May 2002, GAO's report, *Waste Cleanup-Status and Implications of DOE's Compliance Agreements*, included a review of six compliance agreements, including the Oak Ridge FFA. Similar to our review, GAO looked at overall compliance with milestones, budgets and funding levels, and relative risk and prioritization. The results of GAO's review were considered in our evaluation.

Chapter 2

Review of Contaminants Needed to Ensure Continued Consistency with CERCLA

Oak Ridge FFA requirements and EPA oversight were considered effective in ensuring consistency of remedial actions with CERCLA. Remedies approved under the FFA generally complied with applicable and appropriate requirements and were consistent with planned uses for the site. Selected remedies generally addressed control and containment and were designed to be protective of human health and the environment. However, the Region's oversight can be improved by reviewing and comparing potential contaminants of concern identified in reports issued by Tennessee's Department of Health with contaminants of concern addressed in various FFA cleanup decision documents. Without this review EPA cannot be assured that on-going and proposed remedial actions are addressing all contaminants of concern and that subsequent remedies will be protective of human health and the environment.

Requirements

CERCLA established EPA's hazardous substance release reporting and cleanup program, and the NCP sets forth the process and regulations for conducting Superfund cleanup actions. The NCP provides that a remedy shall be selected based on whether it provides:

- Overall protection of human health and the environment.
- Compliance with Applicable or Relevant and Appropriate Requirements.
- Long-term effectiveness and permanence.
- Reduction of toxicity, mobility, or volume through treatment.
- Short-term effectiveness.
- Implementability (including technical feasibility).
- Cost effectiveness.

Oversight Sufficient to Ensure Compliance With CERCLA and FFA Requirements

The Oak Ridge FFA establishes the roles and responsibilities of DOE, Region 4, and the State for the CERCLA activities at Oak Ridge and further provides processes and operating procedures to ensure effective and efficient implementation of the FFA. Region 4 generally completed its review and approval of Oak Ridge cleanup decision documents, work products, and deliverables within specified time-frames. Additionally, Region 4 actively

participated in establishing work scope, priorities, and schedules/milestones under the FFA.

Remedies Generally Addressed Control or Containment

Remedies selected by DOE and approved by Region 4 and the State generally addressed control and containment of hazardous wastes. Of the 25 Records of Decision approved under the FFA since inception in 1992, 16 included source control and containment-type remedies. The remaining 9 Records of Decision included 4 with no further action required, 4 with institutional controls⁴, and 1 for an environmental waste management facility. Refer to Appendix 3 for Records of Decision issued under the FFA. These remedies generally represented proven cleanup techniques used by EPA and responsible parties on other Superfund sites. The cleanup goals/levels for remedial actions were consistent with statutory and regulatory requirements and the planned uses for the site. The overall end state of the site is assumed to be composed of some combination of controlled access, restricted and unrestricted industrial use, and open space/recreation. Since many remedial actions leave hazardous wastes in-place, the remedies included institutional controls to ensure protectiveness to human health and the environment.

Whether the remedies will ultimately meet remedial goals and objectives and provide the protectiveness to human health and the environment, as set forth in the applicable Records of Decision, can only be determined over the long term. Thus far, five-year reviews of Oak Ridge remedial actions have indicated that completed actions continue to meet remedial goals and provide adequate protection to human health and the environment.

Risks From Potential Contaminants of Concern Have Not Been Thoroughly Reviewed

The Region's oversight has primarily focused on the review and evaluation of specific FFA activities and related documents and has not always included review of other information relevant to cleanup decisions and actions at Oak Ridge. For example, in 1999 the Tennessee Department of Health issued a series of reports which showed that, in some cases, levels of pollutants being released from Oak Ridge were substantially higher than previously acknowledged by the federal government.⁵ These reports, referred to here as the Dose Reconstruction reports, document the results of the Oak Ridge Health Agreement Studies, a nine-year, \$14 million effort to evaluate historical contaminant releases from Oak Ridge and

⁴Institutional controls may include land access controls (fencing, security, signs, surveillance), and/or use restrictions (deed, drilling, fish advisories).

⁵Tennessee Department of Health, *Reports of the Oak Ridge Dose Reconstruction*, Volumes 1-7, 1999.

related health problems among nearby residents. The studies, primarily funded by DOE, were performed from 1991 to 1999, and represented independent assessments of contaminant releases from the three Oak Ridge facilities. The studies addressed a variety of potential contaminants of concern from each of the three areas (see Appendix 4 for a list of these contaminants).

The Dose Reconstruction reports were issued after Region 4's review and concurrence with the DOE remedial investigations. However, neither DOE nor Region 4 adequately evaluated the impact the reports may have on current remedial activities. Region 4 said that a thorough review of the Dose Reconstruction reports was not performed at that time because resources were not available to evaluate such "non-FFA" reports. Rather, FFA-related activities and oversight required all of the Region's available resources.

Although no comparisons were made between the Dose Reconstruction reports and the remedial investigations, DOE was confident that all potential contaminants of concern identified were evaluated in the remedial investigation process and are appropriately being addressed. However, we believe that without comparisons between specific contaminants identified in the Dose Reconstruction reports and those evaluated during the remedial investigations, DOE has no assurance that all the contaminants identified in the reports are being appropriately addressed in current remedial activities.

Region 4 told us that they have concerns that not all contaminants identified in the Dose Reconstruction reports were evaluated or addressed in Oak Ridge's remedial investigation process. In April 2002, during our review, the Region initiated a comparison of the Dose Reconstruction reports with all contaminants evaluated in the DOE remedial investigations and the K-25 Leasing Baseline Environmental Assessment reports. However, because of limited contract resources, Region 4 staff estimated it would take at least two years to complete the review. According to Region 4, the amount of time and resources needed depend upon whether contaminants identified require on-site sampling and testing to determine potential impacts to human health and the environment. Until this review and comparison is completed, Region 4 cannot be assured that all contaminants are being addressed, that remedies are protective, and that unaddressed threats to human health and the environment do not exist.

Conclusion

The FFA requirements for Oak Ridge are generally consistent with CERCLA and the NCP. Documentation maintained by Region 4 supports that the selected remedies for contaminants identified at Oak Ridge were based on realistic expectations that such remedies would also meet the requirements of CERCLA and NCP for the specific media addressed in the remedy. However, based on Tennessee State Health Department reports issued subsequent to certain Oak

Ridge remedial investigations, the potential exists that all contaminants may not have been identified, adequately evaluated, and addressed in selected remedies.

Recommendation

We recommend that the Region 4 Administrator:

- 2-1 Expedite review and comparison of potential contaminants of concern identified in the Dose Reconstruction Reports to contaminants of concern in Oak Ridge remedial investigations and other FFA primary decision documents, and determine the impacts and possible need for changes in completed and on-going remedial activities.

Agency Comments and OIG Evaluation

Region 4 agreed with this recommendation and has already begun its review and comparison of potential contaminants of concern identified in the Dose Reconstruction Reports to contaminants of concern in Oak Ridge remedial investigations and other FFA primary decision documents. Upon completion of this review, the Region indicated it will determine the impacts and possible need for changes in completed and on-going remedial activities.

Chapter 3

Funding Levels Adversely Affect DOE Compliance with FFA Milestones

Funding levels under the Oak Ridge FFA have not been sufficient to support milestone commitments and maintain a remediation program consistent with FFA requirements. The overall adequacy of DOE's level of commitment to the FFA's ongoing remediation program has prompted Region 4 and the State to invoke the FFA's formal dispute resolution process.

Continued cuts in funding levels may have significant impact on the FFA and on initiation and expeditious completion of future cleanup efforts. Increasing costs for long-term response actions have and will continue to impact remedial funding levels, and may preclude or significantly limit new cleanup actions. Without sufficient funding levels, DOE cannot meet the overall FFA purpose of ensuring that the environmental impacts associated with past and present activities at the site are thoroughly investigated and that appropriate remedial action is taken, as necessary, to protect human health and the environment.

CERCLA and FFA Require Adequate Funding and Expeditious Cleanup of Federal Facilities

CERCLA requires an agreement between federal agencies and EPA on the expeditious completion of all necessary remedial actions, and that remedial actions at facilities subject to interagency agreements be completed as expeditiously as practicable. The Oak Ridge FFA provides that DOE shall, in good faith, take all necessary steps to obtain sufficient funding to comply with the provisions of the agreement.

Funding Levels Not Sufficient to Support Milestone Commitments

Funding levels under the Oak Ridge FFA were not sufficient to support milestone commitments and maintain a remediation program consistent with FFA requirements. Specifically, DOE had not acquired sufficient funding to support compliance with approved work plans and milestones as reflected in FFA Appendix E, for the period Fiscal Year 2002-2004.⁶ As a result, DOE has proposed significant changes to Appendix E milestones that would delay the

⁶ Appendix E work plan, due annually under the FFA, sets forth the enforceable milestones for the current fiscal year, plus two more years. The Appendix J work plan, also due annually, includes the unenforceable milestones for the third year.

beginning of remedial investigation field starts and/or extend the overall period needed to complete major remediation projects on which DOE, EPA, and the State have focused most of their planning and evaluation resources.

EPA and the State do not agree with DOE's proposed changes and are currently in a formal dispute with proposed changes for approximately 30 current and future years' project milestones.⁷ DOE's proposed changes to current and future work plan milestones will result in multiple year delays in project completions with some milestones being moved beyond the 3-year FFA planning period for enforceable milestones. EPA and the State believe that DOE has not demonstrated a good faith effort to obtain required funding to meet all of its milestones. Region 4 believes that the overall Oak Ridge funding shortfall for 2002, and future years' work plans as a whole, appears to have fallen disproportionately on FFA-related activities. For Fiscal Year 2002, DOE Oak Ridge planned to offset \$48.4 million of a \$60.7 million shortfall in its overall 2002 funding allocation by cutting FFA remediation expense categories while maintaining funding increases for other budget categories.

Without Sufficient Funding, Hazardous Releases and Related Human Health and Environmental Risks Will Continue Unabated

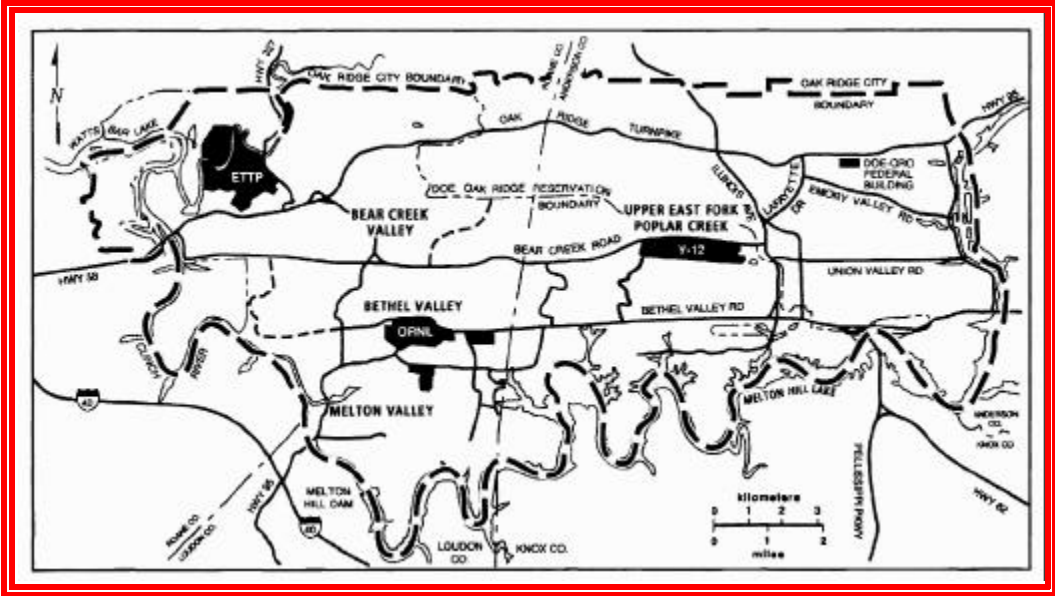
Completion of cleanups may be delayed by funding limitations. As discussed above, Region 4 only participates in DOE's annual budget allocation process, which encompasses a 3-year planning period. Although DOE periodically provides Region 4 with long-term cost estimates, the information is limited and not sufficient to determine whether the current and projected funding levels will result in expeditious cleanups at the site.

DOE, with concurrence of EPA and the State, has developed a strategy for managing its long-term cleanup program based on a comprehensive watershed approach to planning remediation. Therefore, it is particularly important to have reliable long-term estimates of cleanup costs. If completion of significant components of the watershed remediation decisions is delayed by funding limitations, and longstanding, unacceptable offsite releases of contaminants continue, the longer term and broad goals associated with the watershed approach will be more difficult to reach. The watersheds addressed under this cleanup approach include: East Tennessee Technology Park, Bear Creek Valley, Upper East Fork Poplar Creek, and Bethel and Melton Valley portions of the Oak Ridge National Laboratory. Using the watershed cleanup strategy, the parties have made long-term remediation decisions for major portions of Melton Valley and Bear Creek Valley. The decision process for remediation of Bethel Valley and parts of

⁷On March 28, 2002, EPA notified DOE of its formal statement of dispute and invoked the FFA dispute resolution process.

Upper East Fork Poplar Creek and East Tennessee Technology Park is near completion. Implementation of response actions related to these decisions will not only provide risk reduction benefits but will also significantly reduce the release of uranium into the surface water of Bear Creek; release of cesium-137, tritium, and strontium-90 into White Oak Creek; and release of mercury into the Upper East Fork Poplar Creek. Cleanup will also facilitate the reindustrialization and continued viability of East Tennessee Technology Park.

Figure 1. Oak Ridge Site Map



Recent Reviews Acknowledge Problem with Funding and Related Timeliness of Cleanups

A recent GAO report on compliance agreements governing cleanups at DOE sites, stated that DOE is concerned that deferring activities that support milestones in future years may cause future milestones to be missed or renegotiated.⁸ Generally, the sites’ target estimates and actual funding received have been below the sites’ full requirements estimates. According to GAO, DOE officials are concerned that recurring years of funding below the “full requirements” level could result in growth of future funding needs that eventually may cause DOE to fail to meet milestone dates and/or require it to renegotiate milestones.

DOE’s recent review of its Environmental Management Program indicated that its facilities had not properly focused program resources on quickly reducing risk to

⁸ GAO report, *Waste Cleanups-Status and Implications of DOE’s Compliance Agreements*, GAO-02-567, May 2002.

public health and the environment and had expended resources for low risk activities.⁹ The report further indicates that an extended cleanup schedule will eventually lead to more prolonged and severe public health and environmental risks. The report recommends that program resources be increased and focused principally on cleanup actions that achieve the greatest risk reduction at an accelerated rate. Moreover, the report emphasizes that it would be inefficient as well as environmentally unacceptable, to prolong these risks by making an inadequate commitment to implement remediation projects. Region 4 has acknowledged this is especially true in the case at Oak Ridge given that its watershed-scale projects have already been prioritized to achieve risk reductions based on technical risk evaluations.

Conclusion

DOE's lack of commitment to provide adequate funding levels has adversely affected compliance with FFA milestone commitments, resulting in delays in the initiation and expeditious completion of remedial activities, as well as the continued release of hazardous substances that pose risk to human health and the environment. Appropriate action has been initiated by Region 4 and the State to facilitate DOE compliance with FFA requirements.

Recommendations

We recommend that the Region 4 Administrator:

- 3-1 Work with DOE to obtain a level of funding that is sufficient to support milestone commitments and maintain a remediation program consistent with meeting the purpose of the FFA.
- 3-2 Work with DOE to obtain long-term cost estimates that are sufficient to determine whether current and projected funding levels will result in expeditious cleanups at the site.

Agency Comments and OIG Evaluation

Region 4 agreed to work directly with DOE and the State to obtain a level of funding that is sufficient to support milestone commitments and maintain a remediation program consistent with meeting the purpose of the FFA. The Region noted that since the OIG completed its draft report, EPA, the State, and DOE have resolved the work plan dispute (i.e. Appendix E) without extending the overall period needed to complete major remediation projects.

⁹Department of Energy, *A Review of the Environmental Management Program*, February 4, 2002.

Additionally, Region 4 is working with DOE Oak Ridge and the State to obtain long-term cost estimates that are sufficient to determine whether current and projected funding levels will result in expeditious cleanups at the site.

Details on Scope and Methodology

The Oak Ridge evaluation was performed by the OIG from September 2001 through July 2002. We evaluated controls established by the Oak Ridge FFA to ensure consistency and compliance with applicable laws, regulations, and policies, and Region 4's implementation of these procedures to ensure that remedial actions initiated by DOE were protective of human health and the environment to the maximum extent practicable.

To assess consistency of the FFA and related remedial actions with CERCLA and the NCP, we:

- Compared FFA provisions to requirements in CERCLA and the NCP.
- Identified all 25 remedial actions approved by Region 4 under the FFA and reviewed decision documents and supporting data for each action.
- Reviewed Oak Ridge FFA annual progress reports to ascertain EPA and State review and concurrence with FFA remedial actions.
- Interviewed officials regarding: (1) the consistency of FFA requirements with CERCLA and NCP; (2) any Regional guidance pertaining to federal facility cleanups and the consistency of guidance with CERCLA and the NCP; (3) whether Oak Ridge-selected remedies met statutory and regulatory requirements; and (4) whether there were concerns with any Oak Ridge remedies to date.¹⁰

To assess the adequacy of Region 4 oversight and implementation of the Oak Ridge FFA, we:

- Identified and evaluated primary Region 4 controls and procedures for ensuring compliance with FFAs and ultimately CERCLA and the NCP. This included specific controls and procedures related to establishing FFA milestones and ensuring that milestones are met.
- Reviewed Fiscal Year 1999 through 2001 Federal Managers' Financial Integrity Act reports for the Region 4 Waste Management Division to identify any material weaknesses related to oversight of federal facility cleanups.
- Interviewed officials (see footnote 10) to identify potential problems with: (1) Region 4 oversight of Oak Ridge cleanup activities; (2) FFA requirements; (3) DOE compliance with major FFA requirements and milestones; and (4) Region 4 guidance related to federal facility cleanups.

¹⁰ Officials interviewed included: EPA Region 4 Federal Facilities Branch Chief, Section Chief, and FFA Project Manager; DOE FFA Project Manager and Contractor Staff; and State FFA Project Managers.

- ❑ Prepared a listing and analyzed all CERCLA operable units at Oak Ridge and cleanup actions approved and initiated under the FFA from January 1992 through December 2001. This analysis included the media involved, contaminants of concern, milestone dates, selected remedies, remedial action status, five-year review requirements, and institutional controls and monitoring.
- ❑ Evaluated Oak Ridge land use control plans and remedial action five-year review reports for compliance with applicable policies and guidance, and to determine whether institutional controls were properly implemented, maintained, and monitored. This included a review of Record of Decisions issued between 1992 and 2001 to determine that responsibilities for implementation and maintenance of institutional controls were properly established in the Record of Decisions.
- ❑ Obtained FFA work plans with milestones and compared milestones for completion of cleanup actions to extension requests and/or actual completion dates.
- ❑ Obtained and reviewed environmental and water quality monitoring reports for ground and surface waters within and outside DOE facility boundaries to identify contaminant trends and related risks.
- ❑ Obtained and reviewed State public health assessments and studies to identify risks from Oak Ridge activities and related environmental contamination.

To evaluate the impact of funding on DOE compliance with the FFA, we:

- ❑ Reviewed FFAs for requirements related to DOE budgets, annual plans, and EPA involvement in DOE planning and budgeting process; and evaluated reports, plans, and correspondence related to these FFA requirements.
- ❑ Interviewed Region 4 and DOE Oak Ridge staff (see footnote 10) regarding the FFA planning process, EPA's involvement in DOE's budgeting for remedial cleanups, the reasons for any funding shortfalls, and impacts of any funding problems on accomplishment of major milestones.

Prior Reports on Federal Facility Cleanups

We reviewed various management, evaluation, and audit reports that directly or indirectly related to federal facility cleanups. The principal reports reviewed are listed below:

EPA OIG Reports:

- Superfund Audit Report, *Laboratory Data Quality at Federal Facility Superfund Sites*, No. 7100132, March 1997.
- Resource Conservation and Recovery Act Audit Report, *Report on the Tank Waste Remediation System (TWRS) Program for the Hanford Federal Facility*, No. 2000-P-00012, March 30, 2000.
- Superfund Audit Report, *Backlog of Five-Year Review Reports Increased Nearly Threefold*, No. 1999-P-218, September 30, 1999.

DOE Internal Management Reports:

- Tritiated Wastewater Treatment and Disposal Evaluation for 1994*, No. DOE/RL-94-77, August 1994.
- Office of Environmental Management Reports: *Accelerating Cleanup, Paths to Closure*, June 1998, and *Status Report on Paths to Closure*, March 2000.
- A Review of the Environmental Management Program (a.k.a.: The Top to Bottom Review)*, February 4, 2002.

DOE OIG Reports:

- Sale of Land at Oak Ridge*, No. DOE/IG-0502, May 2001.
- The Decontamination and Decommissioning Contract at the East Tennessee Technology Park*, No. DOE/IG-0481, September 2000.
- Waste Characterization at Oak Ridge*, No. ER-B-00-03, June 2000.
- Decontamination and Decommission at the East Tennessee Technology Park*, No. ER-B-99-01, December 1998.

- ❑ *Groundwater Remediation at the Savannah River Site*, ER-B-96-02, June 11, 1996.

General Accounting Office Reports:

- ❑ *Nuclear Cleanup - Difficulties in Coordinating Activities Under Two Environmental Laws*, GAO/RCED-95-66, December 1994.
- ❑ *Department of Energy - National Priorities Needed for Meeting Environmental Agreements*, GAO/RCED-95-1, March 1995.
- ❑ *Environmental Protection - Issues Facing the Energy and Defense Environmental Management Programs*, GAO/T-RCED/NSIAD-96-127, March 1996.
- ❑ *Nuclear Cleanup - Completion of Standards and Effectiveness of Land Use Planning Are Uncertain*, GAO/RCED-94-144, August 1994.
- ❑ *Superfund - More Emphasis Needed On Risk Reduction*, GAO/RCED-96-168, May 1996.
- ❑ *Federal Facilities - Consistent Relative Risk Evaluations Needed for Prioritizing Cleanups*, GAO/RCED-96-150, June 1996.
- ❑ *Superfund - Progress Made by EPA and Other Federal Agencies to Resolve Program Management Issues*, GAO/RCED-99-111, April 1999.
- ❑ *Nuclear Cleanup - DOE Should Reevaluate Waste Disposal Options Before Building New Facilities*, GAO-01-441, May 2001.
- ❑ *Waste Cleanup - Status and Implications of DOE's Compliance Agreements*, GAO-02-567, May 2002.

Records of Decision Issued Under Oak Ridge FFA

<u>ROD Date</u>	<u>Operable Unit Name</u>	<u>Remedial Action *</u>	<u>Remedy Type**</u>
09/30/92	K-1070-C/D SW-31 Spring	IROD	(1)
09/19/91	K-1417 A/B Drum Storage	IROD	(1)
09/13/93	K-1407 B/C Ponds	ROD	(1)
01/23/98	K-1070 C/D G-Pit and Pad	ROD	(1)
01/13/00	K-1070-A Burial Ground	ROD	(1)
09/25/97	WAG 1 Surface Impoundments	ROD	(1)
09/02/97	GATT (Gunitite & Assoc. Tanks)	IROD	(1)
10/06/92	WAG 13 Cesium Plots	IROD	(1)
07/07/98	MSRE D&D Fuel Salt Removal	ROD	(1)
09/21/00	Melton Valley Watershed	IROD	(1)
10/06/92	WAG 11 White Wing Scrap Yard	IROD	(1)
01/23/97	Bear Creek OU2 Rust Spoil	ROD	(3)
06/16/00	Bear Creek Valley Watershed	ROD	(1)
11/02/99	Environmental Management Waste Management Facility	ROD	(4)
06/28/91	United Nuclear Corp Disposal LF	ROD	(1)
09/26/91	Mercury Tanks	IROD	(1)
09/30/92	Plating Shop Container	ROD	(2)
09/12/94	UEFPC OU Nitric Acid Pipeline	ROD	(2)
09/29/95	Kerr Hollow Quarry	ROD	(2)
02/21/96	Filled Coal Ash Pond	ROD	(1)
07/10/97	Union Valley	IROD	(3)
09/29/95	Lower Watts Reservoir	ROD	(2)
12/28/95	ORAU-South Campus Facility	ROD	(3)
09/23/97	Clinch River/Poplar Creek	ROD	(3)
08/17/95	Lower East Poplar Creek	ROD	(1)

* ROD - Record of Decision
IROD - Interim Record of Decision

****Remedy Type**

- (1) Source Control/Containment
- (2) No Further Action Required
- (3) Institutional Controls
- (4) Environmental Management Waste Management Facility

Potential Contaminants of Concern

Reports of Oak Ridge Dose Reconstruction, Volume 6, Screening-Level Evaluation of Additional Potential Materials of Concerns (the Report of Project Task 7, July 1999) included various levels of screening for the following contaminants of *potential concern*¹¹:

- Arsenic
- Asbestos
- Beryllium Compounds
- Boron carbide, boron nitride, yttrium boride, titanium boride, rubidium nitrate, triplex coating, carbon fibers, glass fibers, four-ring polyphenyl ether
- Copper
- Hexavalent Chromium
- Lead
- Lithium
- Neptunium-237
- Nickel
- Niobium
- Plutonium
- Technetium-99
- Tellurium
- Tetramethylammoniumborohydride
- Tritium
- Zirconium

¹¹*Reports of Oak Ridge Dose Reconstruction, Volumes 1-5*, (July 1999) included studies related to the releases of: Iodine-131, Mercury, Polychlorinated biphenyls (PCBs), Radionuclides, and Uranium.

Agency Response

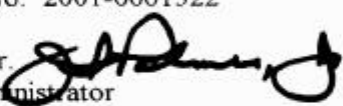


UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

SEP 19 2002

MEMORANDUM

SUBJECT: EPA Region 4 Responses to EPA Office of Inspector General
Draft Evaluation Report
Federal Facility Cleanups: EPA Review of Contaminants and
Increased Funding Levels Needed to Ensure Continued Compliance
With Superfund At Oak Ridge
Assignment No. 2001-0001522

FROM: J. I. Palmer, Jr. 
Regional Administrator
Region 4

TO: Carl A. Jannetti
Divisional Inspector General
Southern Audit and Evaluation Resource Center

This memorandum provides EPA Region 4's responses to recommendations presented in the EPA's Office of Inspector General (OIG) evaluation of the EPA Region 4 Oversight of Department of Energy Cleanup Activities at the Oak Ridge Reservation. It is my understanding that the draft report reviewed by my staff is subject to revision by OIG and, therefore, does not represent the final position of the OIG on the subjects reported.

In accordance with EPA Order 2750, EPA Region 4 is providing these comments to you within 30 days of the draft report date. These comments address the factual accuracy of the draft report, the policy implications of the recommendations, and plans for taking corrective action as recommended. EPA Region 4 has consulted with the EPA Office of Solid Waste and Emergency Response, Federal Facilities Restoration and Reuse Office, and the EPA Office of Enforcement and Compliance, Federal Facilities Enforcement Office, in preparing these comments. At this time, EPA Region 4 plans to implement corrective actions, as acknowledged in our individual responses, by September 30, 2003. Please feel free to contact Jon Johnston, Federal Facilities Branch Chief, at 404/562-8527 or at johnston.jon@epa.gov if you have any questions regarding EPA Region 4's responses.

OIG RECOMMENDATIONS AND EPA RESPONSES

- 2-1. The OIG recommends that the Region 4 Administrator expedite review and comparison of potential contaminants of concern identified in the Dose Reconstruction Reports to contaminants of concern in Oak Ridge remedial investigations and other FFA primary decision documents and determine the impacts, and possible need for changes in completed and on-going remedial activities.

EPA agrees with this recommendation and has already begun its review and comparison of potential contaminants of concern identified in the Dose Reconstruction Reports to contaminants of concern in Oak Ridge remedial investigations and other FFA primary decision documents. Upon completion of this review, EPA will determine the impacts, and possible need for changes in completed and on-going remedial activities.

- 3-1. The OIG recommends that the Region 4 Administrator work with DOE to obtain a level of funding that is sufficient to support milestone commitments and maintain a remediation program consistent with meeting the purpose of the FFA.

EPA will work directly with DOE and the Tennessee Department of Environment and Conservation (TDEC) to obtain a level of funding that is sufficient to support milestone commitments and maintain a remediation program consistent with meeting the purpose of the FFA. It should be noted that since the OIG completed its draft report, EPA, TDEC, and DOE have resolved the Appendix E dispute. The approved Appendix E does not extend the overall period needed to complete major remediation projects on which DOE, EPA, and the State have focused most of their planning and evaluation resources.

- 3-2. The OIG recommends that the Region 4 Administrator work with DOE to obtain long-term cost estimates that are sufficient to determine whether current and projected funding levels will result in expeditious cleanups at the site.

EPA Region 4 is working with DOE Oak Ridge and the Tennessee Department of Environment and Conservation to obtain long-term cost estimates that are sufficient to determine whether current and projected funding levels will result in expeditious cleanups at the site.

Distribution

EPA Headquarters Offices

Assistant Administrator for Solid Waste and Emergency Response
Assistant Administrator for Enforcement and Compliance Assurance
Director, Federal Facilities Restoration and Reuse Office
Director, Federal Facilities Enforcement Office
Comptroller (2731A)
Agency Followup Official (2710A)
Agency Followup Coordinator (2724A)
Associate Administrator for Congressional and Intergovernmental Affairs (1301A)
Director, Office of Regional Operations (1108A)

EPA Region 4

Regional Administrator
Director, Waste Management Division
Chief, Federal Facilities Branch
Audit Followup Coordinator/Liaison

EPA Office of Inspector General

Inspector General (2410)