

CR-B-99-02

AUDIT
REPORT

MANAGEMENT OF UNNEEDED
MATERIALS AND CHEMICALS



SEPTEMBER 1999

U.S. DEPARTMENT OF ENERGY
OFFICE OF INSPECTOR GENERAL
OFFICE OF AUDIT SERVICES

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MEMORANDUM FOR THE CHIEF FINANCIAL OFFICER

FROM: William S. Maharay /signed/
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Office of Inspector General

SUBJECT: INFORMATION: Report on "Management of Unneeded Materials and Chemicals"

BACKGROUND

For more than 50 years, the U.S. Department of Energy (Department) and its contractors operated large production facilities and laboratories that acquired and produced directly or as by-products enormous amounts of non-nuclear materials such as sodium, lead, chemicals, and scrap metal. However, a mission change resulting from the end of the Cold War called into question the need for continued stockpiling of these materials. In the past, the Department has conducted reviews that have identified inefficiencies and recommended improvements to the materials management function. The objective of this audit was to determine if the Department efficiently disposed of its unneeded materials.

RESULTS OF AUDIT

The Department's needs to strengthen its management of unneeded materials and chemicals. Large quantities of unneeded inventories existed at many contractor sites, and Departmental actions to sell or reuse these items have been fragmented. This situation existed because the Department has not assigned organizational responsibility and instituted an overall program to sell, reuse, or characterize as waste its unneeded inventory. As a result, the Department may be missing disposition opportunities that could result in savings or reduced costs. We recommended that the Deputy Secretary working through the Chief Financial Officer assign responsibility and work with a designated Headquarters organization to reduce the Department's unneeded materials and chemicals inventory to a level commensurate with current mission requirements.

MANAGEMENT REACTION

Management agreed that there are opportunities to improve its asset disposition program and agreed in principle with the recommendations included in the audit report.

Attachment

Management of Unneeded Materials and Chemicals

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Overview

INTRODUCTION AND OBJECTIVE

For more than 50 years, the U.S. Department of Energy (Department) and its contractors operated large production facilities and numerous laboratories that acquired and produced directly or as by-products enormous amounts of materials and chemicals. The Department used these materials to research, design, test, and manufacture nuclear weapons as well as for basic scientific research. However, stockpiling such materials and chemicals has been questioned because of the Department's mission change resulting from the end of the Cold War.

In January 1996, the Department conducted a Materials in Inventory (MIN) Initiative study to compile a "snapshot" of nuclear and non-nuclear material and chemical inventories not planned for use within one year. These materials and chemicals were considered unneeded or "Materials in Inventory" and consisted of at least 900,000 tons located at 44 sites in 19 states. The MIN study indicated that "Materials in Inventory" exceeded mission needs, inventory systems and organizational structures varied, and safety issues existed relative to the storage of these materials. Additionally, the study discussed disposition options including sale, reuse, and disposal as waste, and it recommended actions to improve materials management deficiencies.

The objective of this audit was to determine if the Department efficiently disposed of its unneeded materials.

CONCLUSIONS AND OBSERVATIONS

The Department needs to strengthen its management of unneeded materials and chemicals. Large quantities of unneeded inventories existed at many contractor locations, and the Department has not aggressively pursued the disposition or reuse of these items. The Department's inventory consists of significant quantities of scrap metal, lead, sodium, and chemicals. The actions the Department has taken to dispose of or reuse these items have been fragmented. Further, progress has been inhibited by the lack of policy, assignment of organizational responsibility, and systems and resources to manage the inventory.

To ameliorate this situation, the Department needs to assign overall responsibility for the disposition or reuse of materials and chemicals to a Headquarters organization. This organization would be responsible for developing and implementing a program to efficiently manage and dispose of unneeded inventory. Through these efforts, the Department could realize savings and reduce costs.

The conclusions of this report parallel that of a second audit on the Department's non-nuclear materials inventory at the Kansas City Plant. The results of that audit are discussed in Office of Inspector General (OIG) Report IG-0450. The second audit found that non-nuclear parts with an acquisition value of about \$275 million had not been reviewed and approved for disposal, even though the Plant had made a preliminary determination that these parts were no longer needed.

Management should consider the matters discussed in this report when preparing its yearend assurance memorandum on internal controls.

/S/
Office of Inspector General

Management Of Unneeded Materials And Chemicals

Unneeded Materials And Chemicals

The Department retains large quantities of unneeded materials and chemicals. In addition, actions to dispose of unneeded inventory have been fragmented, and Departmental entities have not taken full advantage of opportunities to reuse these materials.

Materials Quantities

The 1996 MIN Initiative identified materials and chemicals at 33 Departmental sites that exceeded mission requirements. Since 1996, field activities have taken some actions to dispose of its unneeded inventory.¹ However, work conducted as a part of this audit indicated that the Department still had substantial quantities remaining. Table 1 compares estimated unneeded inventory for seven sites between 1996 and 1998.

Table 1: Estimated Unneeded Materials and Chemicals²

	<u>1996</u>	<u>1998</u>
Scrap Metal (tons)	58,718	57,982
Lead (lbs.)	3,831,779	1,006,725
Sodium (gal.)	110,204	62,233
Chemicals (gal.)	220,000	40,000
Chemicals (lbs.)	5,984,187	4,524,000

At the time of the MIN study, the market value of unneeded materials and chemicals Departmentwide was estimated to be about \$94 million. This 1996 value would be reduced by any preparation costs associated with disposition. Sometimes these disposition costs can be significant.

¹ Most of the field sites visited had ongoing scrap metal sales programs that were not reflected in the MIN Initiative because the metals remain in inventory for only a very short time. These programs sell metals from facilities operations and/or decommissioning efforts at public auctions or through negotiated contracts. As an example, the Fermi National Accelerator Laboratory sold about 1,152 tons of scrap metal in FY 1998 for a revenue of \$251,887. In addition, the Department has established a National Center of Excellence for Metals Recycle at Oak Ridge. The Center reported substantial progress in the sale and reuse of scrap metal.

² The estimated inventory balances relate to the Hanford Site; Pacific Northwest, Argonne, and Oak Ridge National Laboratories; Fermi National Accelerator Laboratory; Y-12 Plant; and East Tennessee Technology Park.

Disposition Actions

Field sites have adopted different approaches to the management of unneeded materials and chemicals, and they have incurred differing costs in the disposition of these items. To illustrate, three sites were in the process of disposing non-radioactive sodium at different costs per gallon. In 1997, the Hanford site sold approximately 48,000 gallons of sodium, at a net cost of about \$1 million³, or \$21 per gallon. In contrast, the Oak Ridge National Laboratory proposed to convert 14,369 gallons of unneeded sodium into sodium hydroxide for use in its wastewater treatment process. It was projected that this would result in a net cost of about \$1.4 million, or about \$100 per gallon. Further, the Argonne National Laboratory was in the process of shipping 1,675 gallons of sodium to a commercial firm. The net cost of disposition was \$175,266, or about \$105 per gallon.

Departmental activities, in addition, did not fully maximize the use of systems and processes to reuse unneeded items. For example, at the Argonne National Laboratory an automated system for managing chemicals, dubbed "ACES" was developed and used by one division. The intent of the system was to save research funds and reduce the facility's chemicals inventory by centrally storing surplus chemicals and offering them for reuse. Despite demonstrated cost savings, appropriate managerial support was not obtained for site-wide implementation. In another example, an Office of Science official developed a Departmentwide web-site called the Exchange. The purposes of the site were to promote reuse of materials, facilitate their exchange, reduce acquisition time, and save resources. Although this effort resulted in a White House Environmental Award, the Department did not institutionalize site participation in the Exchange program.

Department Regulations Require Maximum Use Of Property

The Department's Property Management Regulations (41 CFR Chapter 109) establish standards and practices for personal property management. Materials and chemicals are covered by these regulations. Subpart 109-1.5102 requires that management ensure the best possible use of personal property. Additionally, it requires property be limited to those items essential for efficiently carrying out the Department's programs.

³ Although Hanford realized proceeds from the sale, preparation costs exceeded those proceeds.

Barriers Remain To Efficient Disposition

The Department retained large quantities of materials and chemicals, in part, because no one organization was assigned overall responsibility to develop and institutionalize a materials and chemicals disposition program. As a result, detailed policy guidance was not approved and implemented, Departmentwide systems were not established to identify and track unneeded inventory balances, and adequate resources were not devoted to materials management and disposition. In 1996, the Office of Field Management drafted a policy to require the economic disposition of unneeded physical property and encourage reuse within the Department. This draft policy was never formally adopted and implemented. Also, Departmentwide systems to track material balances did not exist.

Generally, such materials were expensed when purchased. Inventory information was limited and could only be obtained through labor-intensive, one-time collection efforts. As a consequence, we noted that the Office of Science official responsible for laboratory infrastructure was not aware that the Argonne National Laboratory was maintaining unneeded lead in a central storage facility. Past reviews of the Department's inventory management practices have mentioned the need for improved information systems.

Similarly, budgetary constraints and crosscutting organization responsibility impeded effective disposition of unneeded inventory. To illustrate, the former Office of Field Management in September of 1998 solicited proposals from field offices for actions that could result in returns on investments in property disposition and reduce the Department's health and safety exposure. The field responded with 42 projects and the Department selected 13. However, these projects were not funded because of "overall shortfalls and the fact that the effort would have been a newly started program." Organizational and funding responsibilities were also fragmented. As an example, costs associated with warehousing the sodium at the Hanford facility were funded by the Office of Environmental Management at Headquarters; however, decisions relating to management of the sodium were the responsibility of the Office of Nuclear Energy.

Past reviews have advocated the implementation of policy and information systems to reuse unneeded materials and chemicals throughout the Department. However, a detailed plan with clear goals and benchmarks has not been developed. Such a plan would have aided the disposition of unneeded quantities in the Department and would be

consistent with the objectives of the Government Performance and Result Act of 1993. This Act requires managers to establish goals and performance measures for program activities.

A recent change to the Department's organization structure is a positive step that may aid efforts to resolve this issue. On April 21, 1999, the Secretary announced changes to the Department's overall management structure. The intention was to clarify roles and responsibilities, lines of authority and accountability, and establish a Field Management Council. The Council would be charged with integrating both corporate programs and support activities with line programs. The Secretary noted that all staff and support office policy and guidance that impacts the field will flow through the Council, and newly formed Lead Program Secretarial Offices would be responsible and accountable for proper implementation at field sites for which they are assigned.

Opportunities Exist To More Effectively Manage Materials And Chemicals

The Department has an opportunity to reduce costs by disposing unneeded materials and chemicals. Data provided by the field sites reviewed indicated that one-time and recurring savings could be achieved. Additional savings opportunities may be possible for other sites.

One-time net savings are possible through Departmentwide sale of the uncontaminated sodium inventory. However, additional analysis and site coordination may be necessary to determine the most cost-effective disposition option. The adoption of the ACES system at Argonne is another reuse strategy that could result in a one-time savings of \$100,000. Recurring annual savings would be possible through the reduction of storage costs for unneeded inventories. For example, the Department pays almost \$500,000 each year to store and maintain 4,589 gallons of unneeded non-radioactive sodium at Hanford.

Exact quantification of future savings is difficult, but the overall efficiency and economy of Departmental operations would be improved if Headquarters responsibility was assigned and resources were provided to facilitate the disposition of unneeded inventories.

RECOMMENDATIONS

We recommend that the Deputy Secretary working through the Chief Financial Officer assign a Headquarters organization responsibility and resources to facilitate the disposition of unneeded materials and chemical inventories across the Departmental complex.

We also recommend that the designated organization develop and implement a Departmentwide disposition program. This program should include at a minimum:

1. policy that outlines procedures for and requires efficient maintenance and disposition of unneeded materials and chemicals;
2. a long-range strategy consistent with GPRA that includes goals, performance measures, and milestones for key program activities and actions to address recommendations made in prior reviews;
3. a funding plan for implementing the objective of the program; and
4. a mechanism that identifies the value and quantity of unneeded materials and chemicals on-hand at Departmental sites.

MANAGEMENT REACTION

The Office of Chief Financial Officer in responding to the draft report stated that there are opportunities to improve the management of the Department's excess assets. This office indicated that in the past year, the Department had refocused its efforts to encourage contractors to pursue excess assets sales and disposal projects. It also proposed a series of actions to strengthen the Department's disposition program that parallel the recommendations included in this report. These actions included advising the Deputy Secretary of the need for assigning management responsibility for the disposition programs and taking steps to establish policy and operational activities to reduce the inventory of unneeded materials and chemicals.

AUDITOR COMMENTS

The actions that management proposed are responsive to the audit recommendations. However, a detailed action plan will need to be developed to ensure successful disposition of unneeded materials and chemicals.

Appendix 1

SCOPE

The audit was performed from August 1998 through April 1999 at Headquarters; the Hanford site; Pacific Northwest, Argonne, and Oak Ridge National Laboratories; Fermi National Accelerator Laboratory; Y-12 Plant; and East Tennessee Technology Park.

METHODOLOGY

To accomplish the audit objective, we:

- Reviewed Federal and Departmental regulations and local operating policies and procedures relating to the management and disposition of unneeded non-nuclear materials;
- Determined through discussions and review of documentation whether recommendations from prior reviews were implemented;
- Determined what types of materials existed and the management practices associated with the materials;
- Determined the extent of coordination with field personnel on management and disposition of materials;
- Held discussions with field officials to determine management and storage costs;
- Determined what efforts to reuse materials existed in the Department; and
- Determined if field sites were performing cost-benefit analyses to evaluate disposition alternatives and whether the Department is requesting the necessary funding to complete the alternatives.

The audit was performed in accordance with generally accepted Government auditing standards for performance audits and included tests of internal controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We did not rely on computer-processed data. A meeting was held with Headquarters officials on July 28, 1999, to discuss the report's finding and recommendations.

Appendix 2

SELECTED EXAMPLES OF PRIOR AUDIT REPORTS ON PROPERTY MANAGEMENT

Audit of Fuel Processing Restoration Property

DOE/IG-WR-B-96-04, October 20, 1995

The Department and its contractors did not completely and accurately account for \$54 million of property and promptly redistribute or appropriately excess the property. A significant amount of property was not accounted for in the Department's approved property management system. In addition, over 2,700 stock items had neither been identified for redistribution nor excessed.

Audit of the Department of Energy's Management of Precious Metals

DOE/IG-0375, June 20, 1995

The Department had not developed an effective method for disposing of \$10.3 million of existing excess precious metals. This disposal problem will be compounded in the future when \$36 million of additional precious metals are recovered from dismantled nuclear weapons. Retention of excess metals occurred because the Department did not consider precious metals management a high priority.

Summary Report on the Department of Energy's Management of Personal Property

DOE/IG-0344, March 1, 1994

This report summarized the results of 26 previous OIG reports dealing with personal property. Key issues include the following: (1) the Department was vulnerable to significant future losses as facilities consolidate, missions change, and more property becomes excess to the Department's current needs; (2) property inventory records were not sufficient to identify the types, quantities, location, and cost of personal property inventories; (3) contractors were not properly identifying, storing, and disposing of excess personal property; and (4) contractor property management systems were not reviewed and approved in a timely manner.

Department of Energy Management of Excess Property

General Accounting Office, GAO/RCED-99-3, November 4, 1998

The Department of Energy's property records did not consistently provide information that would help identify property that is no longer needed. The Department acknowledged problems with its identification and disposal of excess real and personal property. Department officials cited, for example, a lack of funding for the environmental cleanup of the current inventory of excess real property and a lack of incentives to identify property as excess. Because the costs associated with the maintenance and storage of unneeded property were generally not separately identified, little incentive existed to spend the resources necessary to dispose of it.

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