

**GAO**

Report to the Ranking Minority  
Member, Subcommittee on Financial  
Management, the Budget, and  
International Security, Committee on  
Governmental Affairs, U.S. Senate

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April 2003

# NUCLEAR NONPROLIFERATION

## DOE Action Needed to Ensure Continued Recovery of Unwanted Sealed Radioactive Sources



  
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**Highlights**

Highlights of [GAO-03-483](#), a report to the Ranking Minority Member, Subcommittee on Financial Management, the Budget, and International Security, Committee on Governmental Affairs, United States Senate

## Why GAO Did This Study

Potentially dangerous sealed sources containing greater-than-Class-C radioactive material pose a threat to national security because terrorists could use them to make “dirty bombs.” Public Law 99-240 requires the Department of Energy (DOE) provide a facility for disposing of unwanted sources. Because DOE has no disposal facility for these sources, its Off-Site Source Recovery Project is recovering and temporarily storing them at Los Alamos, New Mexico. GAO was asked to determine (1) the number of unwanted sealed sources that DOE plans to recover through 2010 and the estimated cost, (2) the status of recovery efforts and any problems that DOE may face, and (3) the status of DOE’s efforts to provide a disposal facility for these sealed sources.

## What GAO Recommends

GAO recommends that the Secretary of Energy (1) determine whether the priority given to the project is commensurate with the threat these sources pose; (2) ensure adequate resources are devoted to the project; (3) take immediate action to provide space to store sealed sources containing plutonium-239, strontium-90, and cesium-137; (4) initiate the process to develop a permanent disposal facility for greater-than-Class-C radioactive waste; and (5) develop a plan to ensure the continued recovery of greater-than-Class-C waste until a disposal facility is available. DOE did not comment on our recommendations.

[www.gao.gov/cgi-bin/getrpt?GAO-03-483](http://www.gao.gov/cgi-bin/getrpt?GAO-03-483).

To view the full report, including the scope and methodology, click on the link above. For more information, contact Gene Aloise, 202-512-3841, [aloisee@gao.gov](mailto:aloisee@gao.gov).

# NUCLEAR NONPROLIFERATION

## DOE Action Needed to Ensure Continued Recovery of Unwanted Sealed Radioactive Sources

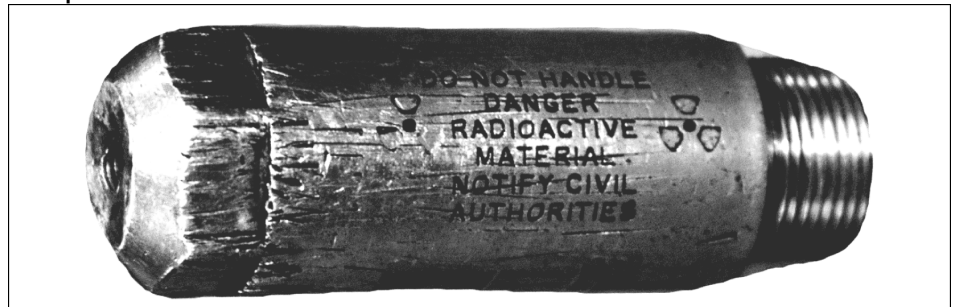
### What GAO Found

The exact number of unwanted greater-than-Class-C sealed sources in the United States is unknown, but DOE estimates it will recover about 14,300 such sources by the end of fiscal year 2010, at a total cost of about \$69 million. DOE’s estimate of the number of sealed sources it will recover was based on three assumptions—that a permanent disposal facility would be available by fiscal year 2007; that the Off-Site Source Recovery Project’s recovery operations would be phased out from fiscal years 2007 through 2010; and that, after fiscal year 2010, all sealed sources would be sent directly to a disposal facility and the project would cease operations.

Through February 2003, DOE’s Off-Site Source Recovery Project had recovered more than 5,000 greater-than-Class-C sealed sources from about 160 sites across the United States; however, the project faces three problems that could hinder future recovery efforts. First, the project is not a priority with DOE’s Office of Environmental Management, because, according to office officials, the project does not conform with the mission of the office. The project did not receive full funding, even after September 11, 2001, because of the Office of Environmental Management’s other higher priority projects, and the office’s current budget specifies future annual funding levels that, according to project officials, would be insufficient to enable the project to recover additional sealed sources. Second, DOE cannot recover any additional sealed sources containing plutonium-239 because the project has already run out of space at the Los Alamos National Laboratory that meets DOE’s higher security standards for storing these sources. Third, DOE has not approved a means for storing sealed sources containing strontium-90 and cesium-137 until a permanent disposal facility is available.

As of February 2003, more than 17 years after the enactment of Public Law 99-240, DOE had not made progress toward providing for the permanent disposal of greater-than-Class-C radioactive sealed sources, as required by the act. Specifically, DOE had not assigned responsibility to an office within DOE to begin developing such a facility. Also, according to DOE officials, DOE lacks a plan for ensuring the continued recovery of sealed sources in the likely event that the disposal facility is delayed beyond fiscal year 2007.

Example of a Radioactive Sealed Source That Contains Americium-241



Source: DOE.

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## Abbreviations

DOE	Department of Energy
NEPA	National Environmental Policy Act of 1969
NRC	Nuclear Regulatory Commission

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United States General Accounting Office  
Washington, DC 20548

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April 15, 2003

The Honorable Daniel K. Akaka  
Ranking Minority Member  
Subcommittee on Financial Management,  
the Budget, and International Security  
Committee on Governmental Affairs  
United States Senate

Dear Senator Akaka:

Since the terrorist attacks of September 11, 2001, there has been a great deal of concern about the control of sealed sources containing radioactive material used in medicine, agriculture, research, and industry throughout the United States. The radioactive material in these sealed sources is encapsulated, or sealed, in metal—such as stainless steel, titanium, or platinum—to prevent its dispersal. The small size and portability of the sealed sources make them susceptible to misuse, improper disposal, and theft. If these sealed sources fell into the hands of terrorists, they could be used as simple and crude but potentially dangerous radiological weapons, commonly called dirty bombs. In general, a dirty bomb is produced by packaging explosives, such as dynamite, with radioactive material, which would be dispersed when the bomb went off. The radioactive material dispersed—depending on the type, form (e.g., solid or powder), amount, and concentration—could cause radiation sickness for people nearby as well as the serious economic costs and social disruption associated with the evacuation and subsequent cleanup of the contaminated area.

Certain sealed sources are considered particularly attractive for potential use in producing dirty bombs because, among other things, they contain more concentrated amounts of nuclear material known as “greater-than-Class-C material”—typically americium-241, cesium-137, plutonium-238,

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plutonium-239, and strontium-90.<sup>1</sup> Applications of greater-than-Class-C sealed sources include portable and fixed gauges used in commercial manufacturing processes, gauges used by the construction industry for testing the moisture content of soil, medical pacemakers, medical diagnostics and treatments, gauges used for petroleum exploration, and government and private research and development.

The Low-Level Radioactive Waste Policy Amendments Act of 1985, Public Law 99-240, requires the Department of Energy (DOE) to provide a facility for disposing of all greater-than-Class-C radioactive waste, including greater-than-Class-C sealed sources that are no longer wanted by their owners, but DOE has not yet developed a disposal facility (see app. D). Until a disposal facility is available, DOE created the Off-Site Source Recovery Project, which, since fiscal year 1999, has been recovering unwanted greater-than-Class-C sealed sources from their owners and temporarily storing them at the Los Alamos National Laboratory in Los Alamos, New Mexico. Currently, owners of unwanted greater-than-Class-C sealed sources must continue to store and secure their sources on their premises until either DOE recovers and temporarily stores them or a disposal facility becomes available. Once a permanent disposal facility becomes available, source holders will be able to send their sources directly to the facility, and the sources that DOE is storing at Los Alamos will be transferred to the facility for permanent disposal.

To assess DOE's progress toward improving its control of greater-than-Class-C sealed sources, you asked us to determine (1) the number of greater-than-Class-C sealed sources that are unwanted, the number that DOE plans to recover and dispose of through 2010, and the estimated cost and schedule to recover and temporarily store these sources until a permanent disposal facility is available; (2) the status of recovery efforts to date and any problems that DOE may face in recovering and temporarily storing greater-than-Class-C sealed sources; and (3) the status of DOE's

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<sup>1</sup> The Nuclear Regulatory Commission classifies low-level radioactive waste (i.e., waste not specifically classified as high-level waste, such as used fuel rods from nuclear power plants) as A, B, or C for the purpose of disposal. Radioactive waste is classified by type of radionuclide (e.g., americium-241) and concentration of radioactivity (often measured in curies per gram). Class A, B, and C radioactive wastes must meet progressively more stringent requirements for disposal. Class A, B, and C wastes (e.g., exit signs containing tritium and contaminated soil or lab equipment) generally can be disposed of at existing commercial disposal facilities. Wastes that exceed the Nuclear Regulatory Commission's criteria for Class C, known as greater-than-Class-C wastes, generally cannot be disposed of at existing facilities.

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efforts to meet the requirements of Public Law 99-240 to provide long-term disposal for greater-than-Class-C radioactive waste. To address these objectives, we, among other things, visited the Off-Site Source Recovery Project office at the Los Alamos National Laboratory to observe the storage facilities and interview project officials, reviewed studies estimating the number of greater-than-Class-C sealed sources and DOE's budget documents, and analyzed data on the progress of recovery efforts. This report is the first of three we are preparing at your request to examine efforts to control sealed radiological sources. Forthcoming reports will review domestic and international efforts to control these sources beyond those of the Off-Site Source Recovery Project.

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## Results in Brief

The exact number of unwanted greater-than-Class-C sealed sources is unknown but DOE's Off-Site Source Recovery Project officials estimate they will recover about 14,300 unwanted greater-than-Class-C sealed sources by the end of fiscal year 2010, at an estimated total cost of about \$69 million. These officials told us that the number of unwanted greater-than-Class-C sealed sources that would be recovered is a rough estimate, which was derived by reviewing, among other information, studies completed by the Nuclear Regulatory Commission and DOE's Idaho National Engineering Laboratory and information provided by sealed source manufacturers. Although the Idaho National Engineering Laboratory study estimated that there currently could be about 250,000 to 500,000 greater-than-Class-C sealed sources in the United States, the actual number of greater-than-Class-C sealed sources that are no longer wanted is not known because no one kept track of this information. The estimate of the number of greater-than-Class-C sealed sources that DOE's project will recover is based on three assumptions—that a permanent disposal facility for greater-than-Class-C sealed sources will be available by fiscal year 2007; that the Off-Site Source Recovery Project will continue to recover sources from certain holders of sources during a transition period from fiscal year 2007 through fiscal year 2010; and that, after fiscal year 2010, all greater-than-Class-C sealed sources will be sent directly to the disposal facility and the Off-Site Source Recovery Project will cease operations.

As of February 2003, DOE's Off-Site Source Recovery Project had recovered more than 5,000 greater-than-Class-C sealed sources from about 160 sites across the United States; however, the project faces three problems that could hinder future recovery efforts. These problems include the questionable long-term commitment of DOE's Office of Environmental Management to the project, inadequate storage capacity

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that meets the higher security needs of sealed sources containing plutonium-239, and the lack of a means for temporarily storing sealed sources containing strontium-90 and cesium-137. With regard to the first problem, officials from DOE's Office of Environmental Management, which is responsible for the Off-Site Source Recovery Project, told us that they would like the responsibility for the project to be placed in another DOE office because the mission of the project is inconsistent with the mission of the Office of Environmental Management. They also told us that the project did not receive full funding, even after September 11, 2001, because of other higher priority projects, and current Office of Environmental Management budget documents specify future annual funding levels that, according to project officials, would limit the project's ability to recover additional greater-than-Class-C sealed sources. Without funding available to the Off-Site Source Recovery Project to recover additional sources, owners of unwanted greater-than-Class-C sealed sources will be forced to store and secure their sources on their premises until a disposal facility is available.

Further, the Off-Site Source Recovery Project cannot recover any additional greater-than-Class-C sealed sources containing plutonium-239 because there is no more space at the Los Alamos National Laboratory that meets DOE's security standards for storing these sources. As a result, about 150 holders of unwanted sources containing plutonium-239, most of which are universities, must retain them and keep them properly secured until space becomes available. Although this nuclear material requires special security measures because of its potential for use in a crude nuclear bomb, two holders of these sources have told us of instances in which doors to the rooms containing unwanted greater-than-Class-C sealed sources were left unlocked and open, and most holders expressed their desire to dispose of the sources as quickly as possible. In addition, DOE has not approved a means for temporarily storing strontium-90 and cesium-137 at a DOE facility until a permanent disposal facility is developed as DOE has done for the other types of radioactive materials contained in the sealed sources it needs to recover. According to DOE, it recognizes these problems and is developing options to resolve them. Our report recommends that DOE determine whether the priority that it is giving the project is commensurate with the risks these sealed sources pose, ensure adequate resources are devoted to the project, and provide, as soon as possible, storage space for sealed sources containing plutonium-239, strontium-90, and cesium-137 with the appropriate level of security.



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As of February 2003, DOE's Office of Environmental Management had not made progress toward providing for the permanent disposal of greater-than-Class-C radioactive waste, and it is unlikely to provide such a facility by fiscal year 2007, as previously assumed, because it is not a priority with the office. Specifically, the office had not begun the first step in developing a disposal facility—completing an appropriate analysis as required by the National Environmental Policy Act of 1969 and implementing regulations, which would likely be an Environmental Impact Statement. Officials from DOE's Office of Environmental Management told us that the office had provided funding for fiscal years 2002 and 2003 to develop such an analysis, but that after the office reviewed the budget in February 2002, it reallocated these funds to other priorities. These officials also told us that DOE is considering moving the responsibility for developing the analysis to another office within DOE, and they anticipate that this decision will be made some time in fiscal year 2003. In an Environmental Impact Statement, which Office of Environmental Management officials say could take 2 years to develop, DOE could propose that either a new disposal facility be built or an existing facility be used. If a new facility were decided upon, developing it could take at least 7 years, according to DOE's estimates. If an existing facility were selected, disposal services could be provided sooner, depending upon the availability of the facility. For example, DOE has been exploring the possibility of sending greater-than-Class-C sealed sources containing plutonium-239 to an existing facility, its Waste Isolation Pilot Plant located in Carlsbad, New Mexico, but it remains uncertain when or if this will be possible. Finally, according to Office of Environmental Management officials, DOE does not have a plan for recovering greater-than-Class-C sealed sources in the event that the disposal facility is delayed. Our report recommends that DOE initiate the process to provide a permanent disposal facility for greater-than-Class-C waste, develop a plan to help manage this process, and develop a plan to ensure the continued recovery and storage of greater-than-Class-C sealed sources in the likely event that availability of the disposal facility is delayed beyond fiscal year 2007.

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## Background

The Nuclear Regulatory Commission (NRC) regulates medical, industrial, and research uses of radioactive materials through a combination of activities, including regulatory requirements; licensing; and safety oversight, including inspection and enforcement. NRC issues licenses for the ownership of radioactive material and for the possession and use of this material in certain items, such as sealed sources. NRC licensees include medical, industrial, and academic organizations. In addition, NRC has delegated its licensing authority to 32 states, called "agreement states."

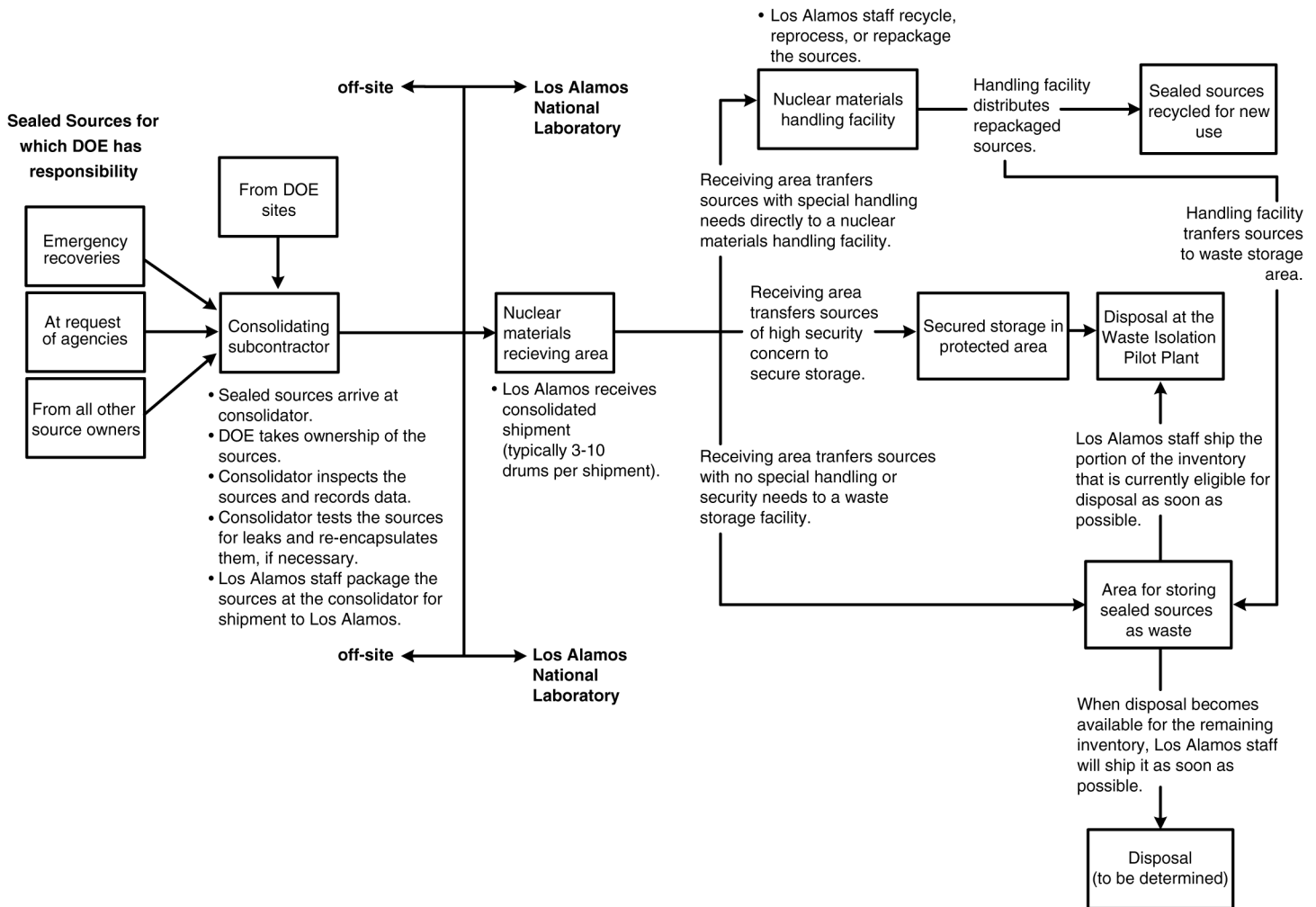
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These agreement states administer 76 percent of the licensees while NRC administers the remainder of the licensees.

In the 1970s, DOE began to recover unwanted greater-than-Class-C sealed sources containing plutonium-239. Through 1998, DOE recovered more than 1,300 such sealed sources, mainly from universities, and destroyed them by chemical processing. During this time, the Congress also enacted the Low-Level Radioactive Waste Policy Amendments Act of 1985, Public Law 99-240, which requires the Department of Energy (DOE) to provide a facility for disposing of all greater-than-Class-C radioactive waste, including all greater-than-Class-C sealed sources that are no longer wanted by their owners. However, DOE has not yet developed such a facility. Although DOE had no formal program to accept unwanted greater-than-Class-C sealed sources from their owners, in 1992, the agency established a working agreement with NRC to address greater-than-Class-C sealed sources that might cause potential health and safety problems. Between 1993 and 1999, DOE recovered over 40 greater-than-Class-C sealed sources at the request of NRC. By 1999, however, DOE determined that chemically processing greater-than-Class-C sealed sources was expensive, exposed laboratory workers involved in the chemical processing to unacceptable doses of radioactivity, and created problematic waste that needed disposal. In addition, DOE lacked sufficient capacity to process the growing numbers of greater-than-Class-C sealed sources that were being reported as unwanted. As a result, DOE determined in 1999 that chemical processing should be discontinued. That same year, DOE's Office of Environmental Management, whose main mission is to clean up DOE's contaminated weapons development facilities that DOE plans to close, created the Off-Site Source Recovery Project to recover and temporarily store unwanted greater-than-Class-C sealed sources until a disposal facility was available. The Office of Environmental Management funds and provides oversight and direction to the project; DOE's National Nuclear Security Administration Service Center in Albuquerque, New Mexico, provides project oversight and direction for the Los Alamos National Laboratory; and the University of California conducts planning and recovery operations for DOE at Los Alamos.

The greater-than-Class-C sealed source recovery process begins when a holder of a source notifies the project that it has no further use for its source or when NRC or state regulators notify the project that a source needs to be recovered because it might cause a potential health or safety problem (see fig. 1).

**Figure 1: The Off-Site Source Recovery Project's Process for Recovering Greater-Than-Class-C Sealed Sources**



Source: DOE.

Project officials obtain extensive descriptive information about the source, maintain the information in a database, and work with NRC to use the information to prioritize recoveries. Once a decision has been made to recover a greater-than-Class-C sealed source, the recovery effort can occur in one of three ways: (1) the source holder packages and ships the source to the Los Alamos National Laboratory; (2) project staff travel to the source's location to characterize, package, and ship the source to Los Alamos; or (3) project subcontractors accomplish the required work for the project. In any of these cases, the sources may be shipped directly to the Los Alamos National Laboratory for receipt and storage, or they may

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first be shipped to a subcontractor facility where they are consolidated and stored until a larger shipment to Los Alamos is prepared. Greater-than-Class-C sealed sources sent to the Los Alamos National Laboratory are either stored as nuclear material under appropriate security or, if security requirements are waived, may be stored as waste in some of the same structures as other radioactive waste stored by the laboratory (see fig. 2).

**Figure 2: Photograph of a Structure at the Los Alamos National Laboratory in Which Greater-Than-Class-C Sealed Sources Recovered by the Off-Site Source Recovery Project Are Stored as Waste**



Source: DOE.

At the request of the Secretary of Energy and NRC Chairman in June 2002, the DOE/NRC Interagency Working Group on Radiological Dispersal Devices was convened to identify any concerns with the nation's ability to adequately protect nuclear materials, including radiological sources, that can be used in a radiological dispersal device, or dirty bomb. The working group was tasked to provide a report to the Secretary of Energy and NRC Chairman detailing recommendations for protecting radioactive materials of concern. The objectives of the working group were to identify those radioactive materials of concern for use as a radiological dispersal device, examine the options for tracking these materials in a national database system, assess potential technologies for tagging these materials for tracking purposes, and identify actions needed to ensure that sources are secure and that storage and disposal is available for unsecured, excess,

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and unwanted sources. The report provides recommendations that DOE and NRC can pursue to enhance control of materials that could be used in radiological dispersal devices. These include coordination with the Department of Homeland Security and other federal agencies to establish national policies for defining threats and radiological dispersal device protection levels, implementing a national source tracking system, and developing national strategies for recovering and disposing of unsecured sources. As of February 2003, the report was still in draft.

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## The Exact Number of Unwanted Greater-Than-Class-C Sealed Sources Is Unknown, but DOE Plans to Recover About 14,000 Sealed Sources by the End of Fiscal Year 2010 at an Estimated Cost of About \$69 Million

Neither DOE nor any other government agency has kept track of the number of greater-than-Class-C sealed sources that are no longer wanted; therefore, this number is not known with certainty. Also, DOE created the Off-Site Source Recovery Project to enable DOE to comply with Public Law 99-240 until a disposal facility became available; hence, the project was never envisioned as a permanent solution. As a result, before DOE could estimate the number of greater-than-Class-C sealed sources that the project would recover, it had to estimate how long the project would be in operation. In fiscal year 2002, DOE estimated that the Off-Site Source Recovery Project would operate from fiscal years 1999 through 2010 and, during that time frame, the project would recover and temporarily store 14,309 unwanted greater-than-Class-C sealed sources.<sup>2</sup> DOE also estimated the total cost to complete the planned recovery effort at \$69.3 million.

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## DOE's Estimate of How Long the Off-Site Source Recovery Project Will Operate and How Many Sealed Sources DOE Plans to Recover

To develop its estimate of the number of unwanted greater-than-Class-C sealed sources it planned to recover, DOE first determined how long the Off-Site Source Recovery Project would operate. Prior to 1999, DOE's activity was limited to recovering and destroying unwanted greater-than-Class-C sealed sources. At the time, DOE was processing and destroying up to 100 sealed sources per year. According to a project official, the rate at which DOE estimated it could process and destroy sealed sources played a key role in determining the time frame for Off-Site Source Recovery Project operations. According to this official, prior to 1999, DOE planned to increase its processing capability to about 400 sealed sources

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<sup>2</sup> As of February 2003, DOE had not modified these estimates.

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annually, and in 1999, DOE estimated that a backlog of about 4,000 to 5,000 unwanted greater-than-Class-C sealed sources existed. As a result, DOE set the time frame for the Off-Site Source Recovery Project at 12 years (fiscal year 1999 through fiscal year 2010), which was approximately the amount of time DOE estimated it would take to manage the existing backlog. Although DOE plans to store the sources it recovers instead of destroying them, the time frame for the project has remained the same.

DOE then estimated the number of greater-than-Class-C sealed sources that would become unwanted from fiscal year 1999 through fiscal year 2010. To do this, DOE officials reviewed, among other information, its preliminary database of about 3,000 unwanted greater-than-Class-C sealed sources, discussions with representatives from the sealed source industry, and past studies by NRC and DOE's Idaho National Engineering Laboratory, which included surveys of source holders and manufacturers conducted by NRC and state regulatory agencies.<sup>3</sup> The study by the Idaho National Engineering Laboratory, completed in 1994 at the request of DOE, estimated that there could be about 250,000 to 500,000 greater-than-Class-C sealed sources currently in the United States and as many as 24,000 new greater-than-Class-C sealed sources are being produced each year. According to a project official, the estimate of how many of these sealed sources will become unwanted during the time period that the Off-Site Source Recovery Project is in operation represents a best guess based on all of the information available.

As such, DOE officials estimated that about 18,000 greater-than-Class-C sealed sources would become unwanted from fiscal years 1999 through 2010. DOE initially developed a plan detailing how many of the 18,000 unwanted greater-than-Class-C sealed sources it planned to recover each fiscal year. However, DOE later modified the plan to recover 14,309 unwanted greater-than-Class-C sealed sources on the basis of three key assumptions: (1) that a permanent disposal facility for the sources would be available by fiscal year 2007; (2) that the Off-Site Source Recovery Project would continue to recover sources from certain holders of sources

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<sup>3</sup> Nuclear Regulatory Commission, *Above Class C Source/Device Inventory Survey* (Washington, D.C.: Nov. 1989) and Idaho National Engineering Laboratory, *Characterization of Greater-Than-Class-C Sealed Sources, Volumes 1, 2, and 3*, DOE/LLW-163 (Idaho Falls, Idaho: Sept. 1994).

during a transition period from fiscal year 2007 through fiscal year 2010;<sup>4</sup> and (3) that after fiscal year 2010, all greater-than-Class-C sealed sources would be shipped by their owners to the disposal facility and the Off-Site Source Recovery Project would cease operations.<sup>5</sup> Table 1 shows DOE's plan for recovering 14,309 unwanted greater-than-Class-C sealed sources through the end of fiscal year 2010.

**Table 1: Estimated Number of Greater-Than-Class-C Sealed Sources DOE Plans to Recover Annually, Fiscal Years 1999 through 2010**

Fiscal years												Total number of sources
1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
53	39	2,915	1,325	2,130	2,470	2,332	1,680	675	412	203	75	<b>14,309</b>

Source: DOE.

Note: GAO's presentation of DOE's data.

According to DOE's estimates, about 85 percent of the 14,309 greater-than-Class-C sealed sources that the project plans to recover would contain americium-241, with the remainder containing plutonium-238, plutonium-239, and various other radioactive materials (see table 2). DOE did not specify the number of sealed sources containing cesium-137 or strontium-90 that it planned to recover.

<sup>4</sup> According to a project official, DOE assumed that, based on past experience, owners of small numbers of unwanted greater-than-Class-C sealed sources initially might have difficulty shipping their sources directly to a disposal facility without the assistance of the Off-Source Recovery Project. DOE assumed that by the end of the transition period these difficulties would be resolved.

<sup>5</sup> At 14,309, the number of greater-than-Class-C sealed sources that DOE plans to recover appears more precise than it is because DOE reduced the number of sealed sources it initially planned to recover during the transition years, fiscal years 2007 through 2010, by a certain percentage each year.

**Table 2: Number of Each Type of Greater-Than-Class-C Sealed Source that DOE Plans to Recover by the End of Fiscal Year 2010**

Type of greater-than-Class-C sealed source	Number of sources DOE plans to recover
Americium-241	12,176
Plutonium-238	1,722
Plutonium-239	364
Other	47
<b>Total</b>	<b>14,309</b>

Source: DOE.

Note: GAO's analysis of DOE's data.

**DOE Estimates the Total Cost to Recover 14,309 Sealed Sources at \$69.3 Million**

In fiscal year 2002, DOE estimated that it would cost about \$56.5 million to complete the recovery of 14,309 greater-than-Class-C sealed sources from fiscal years 2002 through 2011 (see table 3).<sup>6</sup> In addition, since DOE had already spent about \$12.7 million on recovery activities from fiscal years 1999 through 2001, DOE estimated the total cost to recover the 14,309 sealed sources at about \$69.3 million.<sup>7</sup>

**Table 3: Estimated Annual Cost to Complete the Recovery of 14,309 Greater-Than-Class-C Sealed Sources, Fiscal Years 2002 through 2011**

(Dollars in millions)

Fiscal years										Total cost to complete activities
2002	2003	2004	2005	2006	2007	2008	2009	2010	2011 <sup>a</sup>	
\$5.1	\$7.1	\$6.7	\$8.7	\$8.0	\$6.7	\$4.9	\$4.4	\$4.5	\$0.4	\$56.5

Source: DOE.

Note: GAO's presentation of DOE's data.

<sup>a</sup>The \$400,000 cost estimated for fiscal year 2011 is for project closeout activities.

<sup>6</sup> Although DOE planned to cease project operations by the end of fiscal year 2010, DOE planned project closeout activities for fiscal year 2011. As of February 2003, DOE had not changed its estimate of the cost to complete the planned recovery activities.

<sup>7</sup> DOE's \$56.5 million estimate of the cost to complete the recovery of 14,309 greater-than-Class-C sealed sources and the \$12.7 million that DOE had spent from fiscal years 1999 through 2001 do not add to \$69.3 million because of rounding.



Table 4 shows how DOE plans to spend the \$56.5 million the agency estimates it will need to complete remaining project activities.

**Table 4: Estimated Total Cost to Complete Remaining Recovery and Closeout Activities, as of Fiscal Year 2002**

(Dollars in millions)

Activity	Estimated cost
Recovering, inspecting, and storing greater-than-Class-C sealed sources, including planning recoveries, maintaining contracts with subcontractors, and preparing waste for future permanent disposal	\$24.2
Upgrading equipment at Los Alamos and designing, testing, and acquiring tools and containers for packaging, transporting, and storing greater-than-Class-C sealed sources	9.0
Conducting other activities supporting project operations, including overseeing and controlling the quality of project performance, complying with applicable regulations and requirements, maintaining project data, training staff, disseminating information, and paying the project's share of the costs associated with the Los Alamos National Laboratory's management and support staff	11.2
Conducting activities related to planning a disposal facility and transitioning project operations to this facility, including facilitating the recovery of nuclear material leased to federal agencies and universities, characterizing and certifying greater-than-Class-C waste stored at Los Alamos, transferring the waste to a disposal facility, and closing out project operations	12.1
<b>Total estimated cost to complete remaining recovery and closeout activities</b>	<b>\$56.5</b>

Source: DOE.

Note: GAO's analysis of DOE's data.

## DOE Has Recovered a Large Number of Sources, but Unresolved Problems Could Hinder Future Recovery Efforts

As of February 2003, DOE's Off-Site Source Recovery Project had recovered 5,294 unwanted greater-than-Class-C sealed sources, but the project faces three problems that could hinder future recovery efforts. These problems include the questionable long-term commitment of DOE's Office of Environmental Management to the project, the lack of storage capacity needed to allow the recovery of sealed sources containing plutonium-239, and the lack of an approved means for temporarily storing sealed sources containing strontium-90 and cesium-137.

## The Off-Site Source Recovery Project Has Recovered a Large Number of Unwanted Greater-Than-Class-C Sealed Sources

As of February 2003, the Off-Site Source Recovery Project had identified and recovered 5,294 unwanted greater-than-Class-C sealed sources, and owners of an additional 4,380 greater-than-Class-C sealed sources had reported to DOE that they no longer wanted their sources, but DOE had not yet recovered them. According to DOE's estimates, these 4,380 sealed sources and another 4,635 greater-than-Class-C sealed sources that DOE estimates are either currently in use or not yet reported as unwanted will need to be recovered by the end of fiscal year 2010.

About 65 percent of the 5,294 unwanted greater-than-Class-C sealed sources that DOE had recovered contained the radioactive material americium-241, either alone or in combination with cesium-137, and about 35 percent of the sources recovered contained plutonium-238 (see table 5). As table 5 shows, DOE had recovered 15 of the 364 sealed sources containing plutonium-239 it planned to recover before running out of storage capacity and had recovered no sealed sources containing strontium-90. All together, the project has secured almost 2 kilograms of unwanted radioactive material.

**Table 5: Number of Each Type of Greater-Than-Class-C Sealed Source Recovered and Associated Grams and Curies of Radioactive Material, as of February 2003**

Type of greater-than-Class-C sealed source	Number of sources recovered	Number of grams of radioactive material recovered	Number of curies of radioactive material recovered
Americium-241	3,004	730	2,513
Americium-241 and Cesium-137	411	5	24
Curium-244	2	Less than 1	Less than 1
Plutonium-238	1,862	489	7,235
Plutonium-239	15	696	44
<b>Total</b>	<b>5,294<sup>a</sup></b>	<b>1,920</b>	<b>9,816</b>

Source: DOE.

Note: GAO's analysis of DOE's data.

<sup>a</sup>Total includes 16 greater-than-Class-C sealed sources that DOE recovered before Off-Site Source Recovery Project operations began.

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These greater-than-Class-C sealed sources were recovered from 157 sites nationwide. Figure 3 shows the number of unwanted greater-than-Class-C sealed sources that DOE recovered from each state. These recoveries include sealed sources contained in

- 1,632 gauges that had been used by the construction industry for testing the moisture content of soil from a manufacturer in North Carolina who is consolidating these sources for shipment to Los Alamos and another 231 gauges from a manufacturer in California;
- 1,500 gauges used for petroleum exploration from a DOE subcontractor that is consolidating sources for shipment to Los Alamos and various companies in Texas; and
- 588 medical pacemakers from a manufacturer in Minnesota, 483 from a manufacturer in Pennsylvania, 233 from a manufacturer in Florida, and 219 from DOE's Oak Ridge research facility in Tennessee.

**Figure 3: Greater-Than-Class-C Sealed Sources Recovered by State, as of February 2003**



Source: DOE.

Note: GAO's presentation of DOE's data. In addition, the project recovered one source from a site in Puerto Rico.

The 4,380 unwanted greater-than-Class-C sealed sources that awaited recovery as of February 2003, were estimated to contain about 80.3 kilograms of radioactive material (see table 6). About 80 percent of these unwanted greater-than-Class-C sealed sources (3,495 out of 4,380) contained the radioactive material americium-241, either alone or in combination with cesium-137. Table 6 also shows that the Off-Site Source Recovery Project has identified 85 more sealed sources containing plutonium-239 that need to be recovered than it initially estimated

(currently totaling 449 as compared to the 364 initially estimated). In addition, the project has identified 46 unwanted strontium-90 sealed sources that need to be recovered, which contain about 78 percent (about 62.8 kilograms) of the total amount of radioactive material that needs to be recovered.

**Table 6: Number of Each Type of Greater-Than-Class-C Sealed Source Awaiting Recovery and Associated Number of Holders and Grams and Curies of Radioactive Material, as of February 2003**

Type of source	Number of holders	Number of sources	Curies	Grams
Americium-241	193	3,343	11,904	3,542
Americium-241 and Cesium-137	19	152	23	3
Californium-252 <sup>a</sup>	3	15	22	Less than 1
Cesium-137 <sup>b</sup>	9	21	3,435	57
Cobalt-60 <sup>b</sup>	1	8	363	2
Curium-244	6	59	Less than 1	Less than 1
Plutonium-238	47	282	11,925	881
Plutonium-239	149	449	812	13,034
Radium-226 <sup>c</sup>	5	5	2	2
Strontium-90	8	46	3,971,315	62,786
<b>Total</b>	<b>440<sup>d</sup></b>	<b>4,380</b>	<b>3,999,801</b>	<b>80,308<sup>e</sup></b>

Source: DOE.

Note: GAO's analysis of DOE's data.

<sup>a</sup>According to an Off-Site Source Recovery Project official, because californium-252 is expensive to make, all greater-than-Class-C sealed sources containing californium-252 are recycled.

<sup>b</sup>According to an Off-Site Source Recovery Project official, owners of 29 sealed sources containing cesium-137 or cobalt-60 have reported to the project that their sources are no longer wanted. Although most of these sources are not greater than Class C and could be sent to an existing commercial disposal facility, the owners for various reasons have been unable to dispose of them.

<sup>c</sup>According to an Off-Site Source Recovery Project official, because radium-226 is a naturally occurring radioactive material, the Atomic Energy Act of 1954 places naturally occurring radioactive material outside of federal jurisdiction. However, this official told us that although such sources are the responsibility of the states, few states currently have the ability to recover these sources.

<sup>d</sup>Some holders of sources have more than one type of source.

<sup>e</sup>Total does not add to 80,308 because of rounding.

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The 4,380 unwanted greater-than-Class-C sealed sources that awaited recovery were held by 328 different owners located across the United States.<sup>8</sup> As figure 4 shows, about 59 percent of these unwanted sealed sources are located in the state of Texas in gauges that had been used for petroleum exploration.

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<sup>8</sup> The number of different holders of unwanted greater-than-Class-C sealed sources that awaited recovery is lower than the number in table 6 because some holders of sources have more than one type of source.

**Figure 4: Greater-Than-Class-C Sealed Sources in Need of Recovery by State, as of February 2003**



Source: DOE.

Note: GAO's presentation of DOE's data.

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## The Off-Site Source Recovery Project Is Not a Priority of DOE's Office of Environmental Management

The Office of Environmental Management's most recent budget plan, which was completed in fiscal year 2001, showed DOE providing about \$3 million annually to the Off-Site Source Recovery Project from fiscal year 2002 through fiscal year 2030.<sup>9</sup> Consequently, the amount of funding that the Office of Environmental Management authorized for the Off-Site Source Recovery Project in fiscal year 2002 was about \$2.2 million less than the \$5.1 million that the project estimated it needed.

In February 2002, the Office of Environmental Management conducted a review of its priorities with the goal of improving program performance. The review recommended that the office realign its priorities in a manner more consistent with its main mission to accelerate the cleanup and closure of contaminated DOE weapons development facilities. Office of Environmental Management officials told us that they questioned whether it is appropriate that the Off-Site Source Recovery Project be assigned to their office and they are looking into the possibility of moving responsibility for managing the project to another office in DOE. These officials told us that the Office of Environmental Management planned to allocate more funding to cleaning up and closing contaminated DOE nuclear weapons production facilities, which the office considered a higher priority, and only provide the project funding to store sealed sources that already had been recovered. Consequently, DOE's Office of Environmental Management reduced its request for funding for the project for fiscal years 2003 and 2004 to \$2.2 million and \$2 million, respectively. However, a DOE official told us that the office plans to reduce future requests further to \$1 million annually beginning in fiscal year 2005, a funding level that, according to this official, would be insufficient to keep current project staff assigned to the project.

In August 2002, the Congress appropriated an additional \$10 million for DOE's Off-Site Source Recovery Project, as part of the 2002 Supplemental Appropriations Act for Further Recovery from and Response to Terrorist Attacks on the United States, Public Law 107-206. According to a DOE official, the Congress may have appropriated these funds, in part, as a result of a January 2002 letter from the NRC Chairman to the Secretary of Energy requesting an acceleration of efforts to recover greater-than-Class-C sealed sources. In the letter, the NRC Chairman noted that NRC

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<sup>9</sup> The Office of Environmental Management's budget plan was completed before DOE finalized the time frame for the Off-Site Source Recovery Project, which, as currently planned, will cease operations by the end of fiscal year 2010.



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had completed an evaluation that concluded that—in light of the events of September 11, 2001—the possession or storage of unwanted radioactive sealed sources with no disposal outlet presents a potential vulnerability to terrorist threats. The letter urged DOE to recover, within 18 months, all greater-than-Class-C sealed sources currently known to be unwanted.

Rather than accelerating DOE's recovery efforts, however, these funds will be needed to keep DOE's recovery efforts on track through fiscal year 2004. The Off-Site Source Recovery Project had planned recovery activities for fiscal years 2003 and 2004 with a total cost of \$13.8 million, but DOE's Office of Environmental Management had requested from the Congress a total of \$4.2 million for these years, leaving a funding shortfall of \$9.6 million. Prior to fiscal year 2003, the Off-Site Source Recovery Project was able to make up for funding shortfalls by carrying over unspent funds from prior fiscal years. However, by the end of fiscal year 2002, the size of the shortfall far exceeded the amount of funding available to carry forward. Therefore, almost all of the supplemental funding appropriated by the Congress will go toward helping the Off-Site Source Recovery Project make up the funding shortfall and continue recovering greater-than-Class-C sealed sources as planned through the end of fiscal year 2004. Beyond fiscal year 2004, however, it remains unclear whether the Off-Site Source Recovery Project will receive the funding it needs to continue its planned recovery activities. The Secretary of Energy publicly stated in November 2002 that securing and reducing radiological materials that could be fabricated into dirty bombs is DOE's highest priority and an urgent problem. However, without funding available to the Off-Site Source Recovery Project to recover additional sources, owners of unwanted greater-than-Class-C sealed sources will be forced to store and secure their sources on their premises until a disposal facility is available.

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### DOE Lacks Storage Capacity Meeting the Security Requirements for Storing Additional Sealed Sources Containing Plutonium-239

The Off-Site Source Recovery Project has not been able to recover additional greater-than-Class-C sealed sources containing plutonium-239 since mid-2002 because DOE lacks storage capacity at the Los Alamos National Laboratory that meets the security requirements for this material. Because plutonium-239 can be used to make a crude nuclear bomb, as well as a dirty bomb, DOE regulations require that any DOE facility storing 6 kilograms or more of this material must meet DOE's most stringent security requirements. Meeting these requirements means that, among other things, the sources containing plutonium-239 must be stored in a vault-like room in a facility protected by two layers of physical barriers (e.g., an outer and an inner fence) providing access controls and intrusion detection; armed guards who are capable of responding to an intrusion;

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inspections of personnel, vehicles, and hand-carried items entering and exiting the facility; and exits that are alarmed or controlled at all times. As of February 2003, the greater-than-Class-C sealed sources in storage at the Los Alamos National Laboratory contain a total of less than 1 kilogram of plutonium-239. DOE's security requirements for this smaller amount of material are less stringent and have already been met in the locations at the Los Alamos National Laboratory where it is being stored. However, according to a DOE official, these storage locations have also been used to store radioactive material associated with other programs operating at Los Alamos. As a result, by mid-2002, the Off-Site Source Recovery Project had reached the limits of its capacity to store additional plutonium-239 at Los Alamos without needing to meet DOE's most stringent security requirements. As of February 2003, the project had identified an additional 449 unwanted greater-than-Class-C sealed sources containing about 13 kilograms of plutonium-239 that it will not be able to recover until storage space meeting DOE's most stringent security requirements is made available.<sup>10</sup>

DOE is currently pursuing two parallel efforts to allow the Off-Site Source Recovery Project to recover and store additional greater-than-Class-C sealed sources containing plutonium-239. First, DOE is evaluating two options for physically increasing the amount of storage space available that meets the stringent security requirements for the additional plutonium-239 that the project plans to recover. These options include packaging and placing the sources in a secure trailer at the Los Alamos National Laboratory in such a way that they are stored at least as securely as if they were in a vault and creating secured storage space at the Nevada Test Site in Nye County, Nevada. DOE is developing these options but is not yet able to provide us with a time frame for how long it will take to select and implement an alternative. An official from the Off-Site Source Recovery Project told us that the project budgeted \$1.5 million to cover the initial cost of creating additional secure storage space for plutonium-239 but was unable to provide a plan for ensuring that the project received the additional funding that would be needed to continue to maintain this storage space for as long as it was needed.

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<sup>10</sup> The Off-Site Source Recovery Project also identified greater-than-Class-C sealed sources containing another 15 kilograms of plutonium-239 that are currently in use. According to an official from the Off-Site Source Recovery Project, DOE will eventually need to recover these sources as well. Consequently, DOE could need to provide the capacity to securely store a total of an additional 28 kilograms of this material, if a disposal facility were not made available beforehand.

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Concurrent with efforts to increase physical storage capacity, DOE is also exploring whether all of the sealed sources containing plutonium-239 that the Off-Site Source Recovery Project plans to recover meet the legal and regulatory requirements for disposal at the Waste Isolation Pilot Plant. Currently, by law, only radioactive waste resulting from the development of nuclear weapons, referred to as defense waste, can be disposed of at the Waste Isolation Pilot Plant. Any greater-than-Class-C sealed sources containing plutonium-239 that were used in this manner can be disposed of at this facility; however, most of the plutonium-239 sources that the Off-Site Recovery Project plans to recover were not directly used for defense purposes. DOE is exploring whether a case can be made that, although these sources were used for research and other purposes, the plutonium-239 that they contain was originally manufactured for use in weapons development and thus can be disposed of at the Waste Isolation Pilot Plant. In this way, DOE could potentially bypass the plutonium-239 storage problem entirely by establishing a permanent disposal facility. However, DOE regulations specify that no amount of plutonium-239 requiring secured storage can be discarded, whether or not the material is defense-related, without special approval to terminate the security requirements. In March 2003, DOE approved the termination of the security requirements for less than 2 kilograms of plutonium-239 so that the Off-Site Source Recovery Project can dispose of the defense-related plutonium-239 it is storing at the Los Alamos National Laboratory, but it has not yet approved such a termination for non-defense-related plutonium-239 in storage at Los Alamos.

Until DOE is able to increase its capacity to store greater-than-Class-C sealed sources containing plutonium-239, 149 holders of unwanted sources containing this radioactive material must continue to store and secure their sources on their premises. About 77 percent of the holders of unwanted plutonium-239 sources are universities. Six of the universities we contacted told us that they received the sources during the 1950s and 1960s as part of a national effort to promote research related to nuclear physics and they have not used these sources for many years. As a result, these universities each told us that they are storing and securing from 1 to 10 sealed sources of plutonium-239 that they no longer want. In general, the sources are stored in rooms or closets, typically without windows, and access to the rooms can only be gained by passing through one or more locked doors. Access to the keys to the doors is controlled, and doors are checked periodically by campus safety personnel to ensure that they are locked. In addition, NRC or state regulatory agencies review how the universities are securing their sealed sources as part of the agencies' reviews of the universities' nuclear safety programs. However,

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representatives from two universities told us of instances in which the doors to the sources had been found unlocked or open, and representatives from six of the universities told us that they wanted the Off-Site Source Recovery Project to recover their sources immediately.<sup>11</sup> We also talked to officials from a Department of Defense facility, a DOE facility, and a decommissioned nuclear power plant about their plutonium-239 sources, one of which had as many as 60 plutonium-239 sealed sources on-site. Officials at these facilities told us that their sources were secure, and no instances of concern were mentioned. The official at the nuclear power plant told us that the facility would like the Off-Site Source Recovery Project to recover its sources as soon as possible because it was in the process of shutting down operations.

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### DOE Lacks an Approved Means for Temporarily Storing Sealed Sources Containing Strontium-90 and Cesium-137

The Off-Site Source Recovery Project cannot recover unwanted greater-than-Class-C sealed sources containing strontium-90 and cesium-137, because DOE has not approved a means for temporarily storing these types of sealed sources at a DOE facility until a permanent disposal facility is developed as it has done for the other types of sealed sources it needs to recover.<sup>12</sup> In deciding how and where sealed sources containing strontium-90 and cesium-137 will be stored, DOE must do an appropriate analysis as required by the National Environmental Policy Act of 1969 (NEPA) and implementing regulations. Once DOE completes and approves the NEPA analysis process for each type of source, it could begin to implement a storage alternative. DOE prepared its NEPA analysis for strontium-90 in December 2001, which offered nine alternatives for storing sealed sources containing this radioactive material until a disposal facility is available. As of February 2003, the Office of Environmental Management had not approved its analysis for strontium-90 and had not begun its analysis for cesium-137, and DOE was unable to provide us with an estimate of how long it might take. According to Off-Site Source Recovery Project data, almost all of the greater-than-Class-C sealed sources containing strontium-90 that need to be recovered are currently being stored at facilities

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<sup>11</sup> Representatives from two universities told us that they wanted to keep their sealed sources even though these sources were listed as unwanted on the project's database.

<sup>12</sup> Strontium-90 and cesium-137 are nuclear materials that remain radioactive for a long period of time, can contaminate property, and require an extensive clean-up. These nuclear materials can also be absorbed in the food chain and are potential cancer causing risks. According to an Off-Site Recovery Project official, the project is able to store the unwanted greater-than-Class-C sealed sources that contain both americium-241 and cesium-137 because the americium-241 in the sources determines how the sources must be stored.

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operated by the Department of Defense and DOE. Also, while, according to a project official, most unwanted sealed sources containing cesium-137 that have been reported to the project do not contain a greater-than-Class-C amount of radioactive material, this official told us that there are about 100 medical devices currently in use for treating blood that contain cesium-137 sealed sources and that some of these sources may contain a greater-than-Class-C amount of the radioactive material. The owners of these medical devices have told project officials that they would like to replace the devices with new technology.

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## DOE Has Not Made Progress toward Providing a Permanent Disposal Facility

As of February 2003, DOE had not made progress toward providing a permanent disposal facility for greater-than-Class-C radioactive waste, as required by Public Law 99-240. Specifically, DOE had not decided which office within the agency would begin the first step in developing such a facility, completing the appropriate NEPA analysis, which would likely be an Environmental Impact Statement. According to DOE officials, it is unlikely that DOE will be able to provide a permanent disposal facility by fiscal year 2007 unless the agency makes it a priority. Furthermore, the agency lacks a plan for recovering and storing unwanted greater-than-Class-C sealed sources in the event that the disposal facility is delayed.

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## DOE Is Unlikely to Provide a Disposal Facility by Fiscal Year 2007

According to officials from the Off-Site Source Recovery Project, DOE is unlikely to be able to provide a disposal facility by fiscal year 2007, as it had assumed, unless the agency makes it a priority. As of February 2003, DOE had not decided which DOE office would be assigned the responsibility for beginning the first step in providing a disposal facility for greater-than-Class-C radioactive waste—completing the appropriate NEPA analysis. Public Law 99-240 gave DOE responsibility for providing for the disposal of greater-than-Class-C radioactive waste. In developing a disposal facility, DOE must determine, as required by NEPA and implementing regulations, whether an Environmental Impact Statement is necessary. If an Environmental Impact Statement is necessary, DOE would have to propose a number of disposal alternatives, and the public would have an opportunity to comment. Following completion of the Environmental Impact Statement and a mandatory 30-day waiting period, DOE would initiate a Record of Decision, in which the agency would select the alternative to be implemented. After the Record of Decision is completed, approved, and made public, DOE may begin to implement the decision. Whether the alternative selected is to construct a new facility or modify an existing facility, funding would need to be identified, and after the facility was built, it would need to be licensed by NRC. All together,

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developing a new disposal facility could take at least 7 years, not including the time to physically build the facility.

Also, DOE had neither provided funding nor produced a timeline for completing the NEPA analysis. Officials in DOE's Office of Environmental Management told us that the office had identified funding for completing the Environmental Impact Statement for fiscal years 2002 and 2003; however, after office management reviewed the budget in February 2002, the office redirected the funding to other higher priority projects. They also told us that they anticipated that DOE would decide which DOE office would be responsible for the NEPA analysis some time in fiscal year 2003, and the Office of Environmental Management's most recent budget plan for the Off-Site Source Recovery Project mentioned the office's intention to defer the development of the facility.

DOE officials told us that it typically takes about 2 years to complete an Environmental Impact Statement and as long as 3 years or more to complete a Record of Decision. If the Record of Decision indicates that a new facility is needed, funding would need to be secured, and construction activities completed. The officials told us that there was not enough information available at this time to estimate how long construction activities would take. However, they told us that the NRC licensing process that would follow could take at least 2 years. In a 1987 report to the Congress, DOE estimated that providing a new facility, including construction, could require at least 7 to 9 years to complete.<sup>13</sup>

In the 1987 report, DOE also stated that if an existing facility could be used for disposal of greater-than-Class-C sealed sources, disposal services could be provided sooner, depending upon the availability of the facility. However, it remains uncertain when or if this will be possible. DOE has been exploring whether the acceptance criteria for the Waste Isolation Pilot Plant in Carlsbad, New Mexico, can be broadened to include more of the sealed sources that the project is recovering. Currently, the Waste Isolation Pilot Plant can only accept certain types of radioactive waste resulting from DOE's defense-related activities, which would preclude it

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<sup>13</sup> Public Law 99-240 also requires DOE to submit a report to the Congress setting forth the agency's recommendations for ensuring the safe disposal of greater-than-Class-C radioactive waste, which the agency completed in February 1987. See U.S. Department of Energy, *Recommendations for Management of Greater-Than-Class-C Low-Level Radioactive Waste, Report to Congress in Response to Public Law 99-240* (Washington, D.C.: Feb. 1987).

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from taking the majority of the sources recovered by the project. Furthermore, although the Environmental Protection Agency has certified the Waste Isolation Pilot Plant, the facility did not require an NRC license because the waste sent there did not result from NRC-licensed activities. However, Public Law 99-240 requires DOE to dispose of any greater-than-Class-C radioactive waste that resulted from NRC-licensed activities, which includes most of the sealed sources that the Off-Site Source Recovery Project is recovering, at a facility licensed by NRC. These legal matters would need to be resolved before the Waste Isolation Pilot Plant could be considered a viable option.

Another possibility being explored is the potential for disposing of greater-than-Class-C sealed sources at DOE's planned repository for waste resulting from the nuclear power industry. For example, the Environmental Impact Statement for building a disposal facility at Yucca Mountain discussed the potential for disposing of greater-than-Class-C radioactive waste at this facility. The purpose of such a repository is to enable DOE to meet the requirements of the Nuclear Waste Policy Act, which establishes DOE's responsibility for providing for the permanent disposal of high-level radioactive waste. However, the Nuclear Waste Policy Act limits the amount of high-level waste that can be disposed of at a facility built to satisfy the requirements of the Act and does not explicitly state whether greater-than-Class-C waste could also be disposed of at the same facility. As with the Waste Isolation Pilot Plant, these legal matters would need to be resolved before sending unwanted greater-than-Class-C sealed sources to DOE's planned repository could be considered a viable option.

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### DOE Lacks a Plan for Recovering Sealed Sources if the Disposal Facility Is Delayed

As of February 2003, DOE's Office of Environmental Management did not have a plan for continuing the recovery of greater-than-Class-C sealed sources in the event that the disposal facility is delayed. The Off-Site Source Recovery Project was originally envisioned as providing DOE with the means of recovering and temporarily storing unwanted greater-than-Class-C sealed sources until a permanent disposal facility was available. However, DOE still plans to begin phasing out the Off-Site Source Recovery Project's operations in fiscal year 2007 and cease operations altogether in fiscal year 2010 as originally assumed. As a result, under the current plan, any delays in providing a disposal facility could begin to hinder DOE's efforts to ensure unwanted greater-than-Class-C sealed sources are properly secured as early as fiscal year 2007.

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## Conclusions

Since September 11, 2001, recovering and disposing of greater-than-Class-C radioactive sealed sources has taken on added significance because doing so would secure nuclear materials that have the potential for being misused and that pose a threat to national security. The Secretary of Energy publicly stated in November 2002 that securing and reducing radiological materials that could be fabricated into dirty bombs is DOE's highest priority and an urgent problem. We believe that continuing the recovery efforts of the Off-Site Source Recovery Project and providing a permanent disposal facility for greater-than-Class-C radioactive sealed sources should be key elements in any DOE strategy to address this problem. However, responsibility for these efforts is currently located in an office within DOE where they are not a priority. As a result, the Off-Site Source Recovery Project has not received adequate funding; key decisions about how and where to temporarily store and ultimately dispose of greater-than-Class-C sealed sources have not been made; and future progress toward permanently securing unwanted sealed sources is likely to be limited.

The Off-Site Source Recovery Project has made progress recovering greater-than-Class-C sealed sources, but future progress will depend on whether DOE gives the project the priority that is commensurate with the risks that these sealed sources pose to the public; ensures adequate resources are devoted to the project; and provides, as soon as possible, sufficient space to store, at an appropriate level of security, any sealed sources that it needs to recover. Ultimately, however, all unwanted greater-than-Class-C sealed sources will need to be placed in a permanent disposal facility. Since already more than 17 years have passed since the enactment of Public Law 99-240, we believe it is time that DOE initiate the process to provide such a facility. DOE will have difficulty ensuring the success of this effort, however, without a plan that would, at a minimum, assign responsibility for developing the facility; establish milestones by which progress could be measured; evaluate potential disposal options; estimate costs and schedules; and address legislative, regulatory, and licensing considerations. Also, because it is unlikely that such a facility will be operational by fiscal year 2007 when the Off-Site Source Recovery Project is scheduled to begin phasing out operations, a plan to ensure the continued recovery and storage of greater-than-Class-C sealed sources until a disposal facility is available would help DOE prevent any gaps in its ability to secure unwanted greater-than-Class-C sealed sources.

As sealed sources currently in use wear out or become obsolete, the proliferation of unwanted greater-than-Class-C sealed sources of all types across the United States will continue to increase. Unless action is taken,



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DOE's efforts to recover, temporarily store, and ultimately dispose of unwanted greater-than-Class-C sealed sources will be severely impeded, ultimately forcing owners of these dangerous materials to continue storing and securing them on their premises where they will remain susceptible to misuse, improper disposal, and theft.

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## Recommendations for Executive Action

Because of the risk that unwanted greater-than-Class-C sealed sources could be used as weapons of terror, we recommend that the Secretary of Energy determine whether the priority given to the Off-Site Source Recovery Project is commensurate with the threat posed by these sealed sources. Once this determination has been made, the Secretary should ensure that adequate resources are devoted to the project to cover the costs of recovering and storing these sealed sources as quickly as possible. To ensure that unwanted greater-than-Class-C sealed sources containing plutonium-239, strontium-90, and cesium-137 are properly secured to prevent their use in dirty bombs or, in the case of sources containing plutonium-239, nuclear weapons, we further recommend that the Secretary of Energy take immediate action to provide storage space for these sources at a secure DOE facility and establish milestones by which progress can be measured to ensure that the storage space is provided as soon as possible.

In addition, we recommend that the Secretary of Energy initiate the process to develop a permanent disposal facility for greater-than-Class-C radioactive waste to carry out the requirements of Public Law 99-240. To help manage the process, the Secretary should develop a plan that would, at a minimum, assign responsibility for developing the facility; establish milestones by which progress can be measured; evaluate potential disposal options; estimate costs and schedules; and address legislative, regulatory, and licensing considerations. Because it is unlikely that a permanent disposal facility for such waste will be operational by fiscal year 2007 when the Off-Site Source Recovery Project is scheduled to begin phasing out operations, we recommend that the Secretary of Energy develop a plan to ensure the continued recovery and storage of greater-than-Class-C sealed sources until a disposal facility is available.

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## Agency Comments

During a discussion of our report with DOE officials, including the Associate Deputy Assistant Secretary for Integration and Disposition, agency officials expressed general agreement with our findings, conclusions, and recommendations. In a subsequent March 31, 2003, letter, which is reproduced in appendix II, DOE provided written comments on

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our report and raised three issues. Specifically, DOE asserted that (1) our report did not mention a joint DOE and NRC working group that was chartered to address the issue of unwanted sealed sources and their potential use in radiological dispersal devices; (2) the project baseline we reviewed had not been revised to incorporate the results of the working group's draft report and the need to change the recovery effort from a general health-and-safety-driven program to a national-security-and-nuclear-nonproliferation-driven program; and (3) we did not interview any policy executives within DOE in preparing our report.

Regarding the first issue, we have added to the report a discussion of the purpose and objectives of this working group and its preliminary recommendations to DOE and NRC. Although the efforts of this working group are broader than the scope of the Off-Site Source Recovery Project, in our view, the working group's preliminary findings, conclusions, and recommendations generally support the conclusions and recommendations in our report. Regarding the second issue, our report states that the greater-than-Class-C sealed sources that are being recovered by the project are a national security concern because they are particularly attractive for potential use in producing dirty bombs. In addition, DOE has been required to provide a facility for disposing of these sources for more than 17 years. Finally, regarding the third issue, it is unclear to us why this point is being raised. During the course of our review, we met with the Director and then the Acting Director for Technical Program Integration, and on February 20, 2003, we met with the Associate Deputy Assistant Secretary for Integration and Disposition to obtain her comments on our written findings and discuss our preliminary conclusions and potential recommendations. Furthermore, on March 26, 2003, at her request, we met with the Assistant Secretary for Environmental Management. During the meeting, we offered to accept any additional information she wanted to provide and make appropriate changes to the draft as needed. During this meeting, no changes were suggested to our findings, conclusions, or recommendations.

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## Scope and Methodology

We performed our review at the Off-Site Source Recovery Project office at the Los Alamos National Laboratory in Los Alamos, New Mexico; DOE's Albuquerque Operations Office in Albuquerque, New Mexico; and DOE's and NRC's headquarters in Washington, D.C. We reviewed statutes, regulations, and appropriate guidance as well as interviewed agency officials to determine the relevant statutory framework. We reviewed cost and schedule estimates from DOE and interviewed appropriate officials to determine how much DOE had spent to date recovering and storing

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unwanted greater-than-Class-C sealed sources and how DOE estimated the number of sealed sources it planned to recover from fiscal years 1999 through 2010 and the cost to complete the remaining project activities. We also obtained and reviewed the studies and other information on which DOE based its estimates. We reviewed data from the Off-Site Source Recovery Project on the number of greater-than-Class-C sealed sources recovered to date and the number still awaiting recovery. In addition, we visited the Los Alamos National Laboratory to see how sealed sources that the project had recovered were being stored. We reviewed budget data and interviewed headquarters officials from DOE's Office of Environmental Management to assess the level of the office's commitment to the Off-Site Source Recovery Project. We also interviewed appropriate officials to determine what efforts DOE was undertaking to provide safe and secure storage capacity for greater-than-Class-C sealed sources containing plutonium-239, strontium-90, and cesium-137. To understand how owners of unwanted sources containing plutonium-239 were managing their sources until they were recovered, we spoke with representatives from eight universities, a Department of Defense facility, a DOE facility, and a decommissioned nuclear power plant, which were located throughout the United States and listed on the project's database as having unwanted sources awaiting recovery. Finally, we interviewed headquarters officials from DOE's Office of Environmental Management to determine the progress DOE had made toward providing a permanent disposal facility.

We conducted our work from June 2002 through April 2003 in accordance with generally accepted government auditing standards.

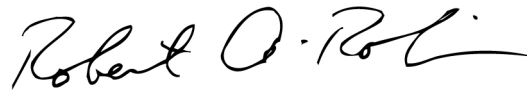
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As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution of it until 30 days from the date of this letter. We will then send copies to the Secretary of Energy, the Acting Administrator, National Nuclear Security Administration, the Director, Office of Management and Budget, and interested congressional committees and other interested parties. We will also make copies available to others who request them. In addition, the report will be available at no charge at GAO's web site at <http://www.gao.gov>.

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If you or your staff have any questions about this report, I can be reached at (202) 512-3841. Major contributors to this report include Gene Aloise, Stephen Cleary, and Ilene Pollack.

Sincerely yours,

A handwritten signature in black ink that reads "Robert A. Robinson". The signature is written in a cursive style with a long, sweeping tail on the final letter.

Robert A. Robinson  
Managing Director, Natural  
Resources and Environment

# Appendix I: Sections 1, 2, and 3 of the Low-Level Radioactive Waste Policy Amendments Act of 1985, Public Law 99-240

99 STAT. 1842

PUBLIC LAW 99-240—JAN. 15, 1986

Public Law 99-240  
99th Congress

An Act

Jan. 15, 1986  
[H.R. 1083]

To amend the Low-Level Radioactive Waste Policy Act to improve procedures for the implementation of compacts providing for the establishment and operation of regional disposal facilities for low-level radioactive waste; to grant the consent of the Congress to certain interstate compacts on low-level radioactive waste; and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

State and local governments.

Low-Level Radioactive Waste Policy Amendments Act of 1985.  
42 USC 2021b note.

## TITLE I—LOW-LEVEL RADIOACTIVE WASTE POLICY AMENDMENTS ACT OF 1985

### SEC. 101. SHORT TITLE.

This Title may be cited as the "Low-Level Radioactive Waste Policy Amendments Act of 1985".

### SEC. 102. AMENDMENT TO THE LOW-LEVEL RADIOACTIVE WASTE POLICY ACT.

The Low-Level Radioactive Waste Policy Act (42 U.S.C. 2021b et seq.) is amended by striking out sections 1, 2, 3, and 4 and inserting in lieu thereof the following:

42 USC 2021b-2021d, 2021b note.

42 USC 2021b note.

#### "SECTION 1. SHORT TITLE.

"This Act may be cited as the 'Low-Level Radioactive Waste Policy Act'.

42 USC 2021b.

#### "SEC. 2. DEFINITIONS.

"For purposes of this Act:

"(1) AGREEMENT STATE.—The term 'agreement State' means a State that—

"(A) has entered into an agreement with the Nuclear Regulatory Commission under section 274 of the Atomic Energy Act of 1954 (42 U.S.C. 2021); and

"(B) has authority to regulate the disposal of low-level radioactive waste under such agreement.

"(2) ALLOCATION.—The term 'allocation' means the assignment of a specific amount of low-level radioactive waste disposal capacity to a commercial nuclear power reactor for which access is required to be provided by sited States subject to the conditions specified under this Act.

"(3) COMMERCIAL NUCLEAR POWER REACTOR.—The term 'commercial nuclear power reactor' means any unit of a civilian light-water moderated utilization facility required to be licensed under section 103 or 104b. of the Atomic Energy Act of 1954 (42 U.S.C. 2133 or 2134(b)).

"(4) COMPACT.—The term 'compact' means a compact entered into by two or more States pursuant to this Act.

PUBLIC LAW 99-240—JAN. 15, 1986

99 STAT. 1843

“(5) COMPACT COMMISSION.—The term ‘compact commission’ means the regional commission, committee, or board established in a compact to administer such compact.

“(6) COMPACT REGION.—The term ‘compact region’ means the area consisting of all States that are members of a compact.

“(7) DISPOSAL.—The term ‘disposal’ means the permanent isolation of low-level radioactive waste pursuant to the requirements established by the Nuclear Regulatory Commission under applicable laws, or by an agreement State if such isolation occurs in such agreement State.

“(8) GENERATE.—The term ‘generate’, when used in relation to low-level radioactive waste, means to produce low-level radioactive waste.

“(9) LOW-LEVEL RADIOACTIVE WASTE.—The term ‘low-level radioactive waste’ means radioactive material that—

“(A) is not high-level radioactive waste, spent nuclear fuel, or byproduct material (as defined in section 11e.(2) of the Atomic Energy Act of 1954 (42 U.S.C. 2014(e)(2))); and

“(B) the Nuclear Regulatory Commission, consistent with existing law and in accordance with paragraph (A), classifies as low-level radioactive waste.

“(10) NON-SITED COMPACT REGION.—The term ‘non-sited compact region’ means any compact region that is not a sited compact region.

“(11) REGIONAL DISPOSAL FACILITY.—The term ‘regional disposal facility’ means a non-Federal low-level radioactive waste disposal facility in operation on January 1, 1985, or subsequently established and operated under a compact.

“(12) SECRETARY.—The term ‘Secretary’ means the Secretary of Energy.

“(13) SITED COMPACT REGION.—The term ‘sited compact region’ means a compact region in which there is located one of the regional disposal facilities at Barnwell, in the State of South Carolina; Richland, in the State of Washington; or Beatty, in the State of Nevada.

South Carolina.  
Washington.  
Nevada.

“(14) STATE.—The term ‘State’ means any State of the United States, the District of Columbia, and the Commonwealth of Puerto Rico.

“SEC. 3. RESPONSIBILITIES FOR DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTE. 42 USC 2021c.

“SECTION 3(a)(1) STATE RESPONSIBILITIES.—Each State shall be responsible for providing, either by itself or in cooperation with other States, for the disposal of—

“(A) low-level radioactive waste generated within the State (other than by the Federal Government) that consists of or contains class A, B, or C radioactive waste as defined by section 61.55 of title 10, Code of Federal Regulations, as in effect on January 26, 1983;

“(B) low-level radioactive waste described in subparagraph (A) that is generated by the Federal Government except such waste that is—

Vessels.

“(i) owned or generated by the Department of Energy;  
“(ii) owned or generated by the United States Navy as a result of the decommissioning of vessels of the United States Navy; or

Appendix I: Sections 1, 2, and 3 of the Low-Level Radioactive Waste Policy Amendments Act of 1985, Public Law 99-240

99 STAT. 1844

PUBLIC LAW 99-240—JAN. 15, 1986

Research and development.

Post, pp. 1846, 1855.

Vessels.

Research and development.

Health Safety.

42 USC 2011 note.

Report.

“(iii) owned or generated as a result of any research, development, testing, or production of any atomic weapon; and

“(C) low-level radioactive waste described in subparagraphs (A) and (B) that is generated outside of the State and accepted for disposal in accordance with sections 5 or 6.

“(2) No regional disposal facility may be required to accept for disposal any material—

“(A) that is not low-level radioactive waste as defined by section 61.55 of title 10, Code of Federal Regulations, as in effect on January 26, 1983, or

“(B) identified under the Formerly Utilized Sites Remedial Action Program.

Nothing in this paragraph shall be deemed to prohibit a State, subject to the provisions of its compact, or a compact region from accepting for disposal any material identified in subparagraph (A) or (B).

“(b)(1) The Federal Government shall be responsible for the disposal of—

“(A) low-level radioactive waste owned or generated by the Department of Energy;

“(B) low-level radioactive waste owned or generated by the United States Navy as a result of the decommissioning of vessels of the United States Navy;

“(C) low-level radioactive waste owned or generated by the Federal Government as a result of any research, development, testing, or production of any atomic weapon; and

“(D) any other low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the Commission for class C radioactive waste, as defined by section 61.55 of title 10, Code of Federal Regulations, as in effect on January 26, 1983.

“(2) All radioactive waste designated a Federal responsibility pursuant to subparagraph (b)(1)(D) that results from activities licensed by the Nuclear Regulatory Commission under the Atomic Energy Act of 1954, as amended, shall be disposed of in a facility licensed by the Nuclear Regulatory Commission that the Commission determines is adequate to protect the public health and safety.

“(3) Not later than 12 months after the date of enactment of this Act, the Secretary shall submit to the Congress a comprehensive report setting forth the recommendations of the Secretary for ensuring the safe disposal of all radioactive waste designated a Federal responsibility pursuant to subparagraph (b)(1)(D). Such report shall include—

“(A) an identification of the radioactive waste involved, including the source of such waste, and the volume, concentration, and other relevant characteristics of such waste;

“(B) an identification of the Federal and non-Federal options for disposal of such radioactive waste;

“(C) a description of the actions proposed to ensure the safe disposal of such radioactive waste;

“(D) a description of the projected costs of undertaking such actions;

“(E) an identification of the options for ensuring that the beneficiaries of the activities resulting in the generation of such radioactive wastes bear all reasonable costs of disposing of such wastes; and

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Appendix I: Sections 1, 2, and 3 of the Low-Level Radioactive Waste Policy Amendments Act of 1985, Public Law 99-240

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PUBLIC LAW 99-240—JAN. 15, 1986

99 STAT. 1845

“(F) an identification of any statutory authority required for disposal of such waste.

“(4) The Secretary may not dispose of any radioactive waste designated a Federal responsibility pursuant to paragraph (b)(1)(D) that becomes a Federal responsibility for the first time pursuant to such paragraph until ninety days after the report prepared pursuant to paragraph (3) has been submitted to the Congress.

Prohibition.  
Report.



# Appendix II: Comments from the Department of Energy

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



## Department of Energy

Washington, DC 20585

March 31, 2003

Mr. Robert A. Robinson  
Managing Director, Natural Resources  
and Environment  
United States General Accounting Office  
Washington, D.C. 20548

Dear Mr. Robinson:

We have reviewed your draft report entitled *Nuclear Nonproliferation: Department of Energy (DOE) Action Needed to Ensure Continued Recovery of Unwanted Sealed Radioactive Sources* (GAO-03-483). The Office of Environmental Management (EM) believes your draft report does not adequately consider a number of issues that the DOE is addressing concerning nonproliferation of sealed sources.

The DOE takes seriously the new national security aspects of this source recovery program. In June 2002 the Secretary of Energy and the Chairman of the U.S. Nuclear Regulatory Commission (NRC) chartered a working group to address the issue of unwanted sealed sources and their potential use in radiological dispersal devices (a copy of that group's charter is enclosed). The working group has drafted a report, currently undergoing internal agency review, that makes a number of recommendations which, when implemented, will make considerable improvements in how the DOE and NRC are addressing the issue of unwanted sealed sources. One major focus of this effort is to ensure DOE's resources are spent wisely, to focus recovery efforts on those sealed sources which pose the greatest concern.

The project baseline that your team reviewed was approved in April 2002. That baseline was prepared to reflect the work necessary to address unwanted sources from a general health and safety perspective. The baseline has not been revised to incorporate the results of the working group report and the need to change the recovery effort from a general health and safety driven program to a national security and nuclear nonproliferation driven program. The baseline proposes a budget for fiscal year (FY) 2005 that will be considered, along with the working group report, during DOE's FY 2005 budget request preparation, which is ongoing. EM further believes the results of this effort provide the DOE with a technical context within which to conduct proper analysis under the National Environmental Policy Act for disposal of the necessary range of sources.



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See comment 1.

See comment 1.

See comment 2.

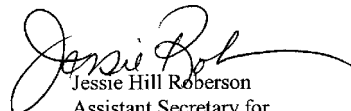
See comment 3.

2

I appreciate the opportunity to comment on this report. However, the report should focus on DOE's policy approach to addressing this initiative. Furthermore, the General Accounting Office (GAO) failed to interview any policy executives within DOE in preparing this report, and the draft report reflects this fact.

If you have any questions, please call me at (202) 586-7709 or Ms. Patrice M. Bubar, Associate Deputy Assistant Secretary, Office of Integration and Disposition, at (202) 586-5151.

Sincerely,

  
Jessie Hill Roberson  
Assistant Secretary for  
Environmental Management

Enclosure

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The following are GAO's comments on the Department of Energy's (DOE) letter dated March 31, 2003.

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## GAO Comments

1. DOE commented that our draft report does not adequately consider a number of issues that DOE is addressing concerning nonproliferation of sealed sources. Specifically, DOE mentions a joint DOE and Nuclear Regulatory Commission (NRC) working group that was chartered to address the issue of unwanted sealed sources and their potential use in radiological dispersal devices. A discussion of the working group and its draft report will be addressed in our forthcoming report on the control of domestic radiological sources. However, we have added, in the background section of this report, a discussion of the purpose of the working group, the objectives it was addressing, and its preliminary recommendations to DOE and NRC regarding the disposal of radiological sources. The efforts of this working group are broader than the scope of the Off-Site Source Recovery Project in that they include a discussion of all radiological materials not just greater-than-Class-C sealed sources. In our view, the working group's preliminary findings, conclusions, and recommendations generally support our conclusions and recommendations regarding the need for DOE to (1) provide sufficient resources to ensure the continued operations of the Off-Site Source Recovery Project; (2) provide secure storage space for greater-than-Class-C sealed sources that DOE needs to recover; (3) initiate the process to provide a permanent disposal facility for greater-than-Class-C waste; and (4) develop a plan to ensure continued recovery of these sources in the likely event that a permanent facility is delayed.

DOE also makes the point that one major focus of this DOE and NRC working group's effort is to ensure DOE's resources are spent wisely and to focus recovery efforts on those sealed sources that pose the greatest concern. However, greater-than-Class-C sealed sources have already been identified as particularly attractive for potential use in producing dirty bombs. Among other things, they contain concentrated amounts of high-risk nuclear materials, such as americium-241, cesium-137, plutonium-238, plutonium-239, and strontium-90. Furthermore, Public Law 99-240 specifically requires that DOE provide for the permanent disposal of greater-than-Class-C sealed sources, a task even more important now, following the events of September 11, 2001, than when the law was enacted.

2. DOE commented that the project's baseline that we reviewed had not yet been revised to incorporate the results of the working group's draft report and the need to change the recovery effort from a general health-and-safety-driven program to a national-security-and-nuclear-nonproliferation-driven program. In addition, the project's baseline proposes a budget for fiscal year 2005 that will be considered, along with the working group's report, during DOE's fiscal year 2005 request preparation, which is ongoing. Regarding DOE's comment that the project's baseline will be revised to focus on national security and nonproliferation, greater-than-Class-C sealed sources are a concern because they are particularly attractive for potential use in producing dirty bombs. Furthermore, for more than 17 years, DOE has been required by Public Law 99-240 to provide a facility for disposing of all greater-than-Class-C waste, including greater-than-Class-C sealed sources that are no longer wanted by their owners. To date, however, DOE has not developed such a facility. Regarding DOE's point about the budget, DOE's comments indicate that the project's future estimated budget needs will be considered along with the recommendations of the working group. However, there is still no indication that the Off-Site Source Recovery Project will get the funding it needs to recover greater-than-Class-C sealed sources beyond fiscal year 2004. As stated in our report, DOE's Office of Environmental Management reduced its request for funding for the Off-Site Source Recovery Project for fiscal years 2003 and 2004 to \$2.2 million and \$2 million, respectively, to provide the funds necessary to store sealed sources that had already been recovered. In addition, a DOE official told us that the office plans to reduce future requests further to \$1 million annually beginning in fiscal year 2005, a funding level that, according to this official, would be insufficient to keep current project staff assigned to the project.
3. DOE commented that we failed to interview any policy executives within DOE in preparing this report and that the draft report reflects this fact. It is unclear to us why this point is being raised. During the course of our review, in addition to meeting with a variety of project managers, we met with the Director and then the Acting Director for Technical Program Integration. These officials are directly responsible for the management of the Off-Site Source Recovery Project. On February 19, 2003, we provided DOE with our written findings, prior to sending the draft to DOE for agency comment, to confirm that the critical facts and key information used to formulate our analyses and findings were current, correct, and complete. On February 20, 2003, we met with a variety of program officials, including the Associate

Deputy Assistant Secretary for Integration and Disposition to discuss our findings, preliminary conclusions, and potential recommendations that flowed from the factual information we collected. These officials agreed with our findings and preliminary conclusions and recommendations. They did provide us technical changes, which we made to the draft report as appropriate. In addition, on March 26, 2003, at her request, we met with the Assistant Secretary for Environmental Management. At this meeting, we said that we were willing to accept any information regarding the findings, conclusions, and recommendations in our draft report that the Assistant Secretary may have. In addition, we said that we were willing to make appropriate changes to the draft. The Assistant Secretary did not dispute the findings, conclusions, or recommendations in our draft report but said that our draft did not mention the working group and its resulting draft report dated February 2003. As stated above, we included a discussion of the working group's efforts in the background section of this report.

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Jeff Nelligan, managing director, [NelliganJ@gao.gov](mailto:NelliganJ@gao.gov) (202) 512-4800  
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