



RADIATION SOURCES

DOE, GAO disagree about sealed-source recovery

THE DEPARTMENT OF Energy on May 16 said a report issued by the federal government's General Accounting Office on the recovery of radioactive sources was flawed because it failed to consider the DOE's efforts to recover and secure these materials.

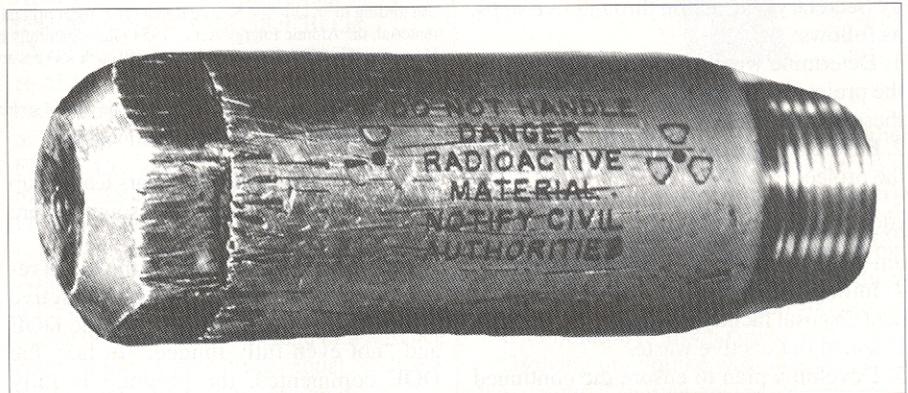
The GAO report, "Nuclear Proliferation: DOE Action Needed to Ensure Continued Recovery of Unwanted Sealed Radioactive Sources" (GAO-03-483), is dated April 2003, but was not released publicly until May 13.

The report noted that the DOE has estimated it will recover about 14 300 "greater-than-Class-C" sealed sources in the United States by end of fiscal year 2010. The radioactive material in the sealed sources is encapsulated in metal—such as stainless steel, titanium, or platinum—to prevent dispersal. According to the report, however, the "small size and portability of the sealed sources make them susceptible to misuse, improper disposal, and theft." Further, the report warned, 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.

Certain sealed sources are considered "particularly attractive," the report noted, 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, plutonium-239, and strontium-90. 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.

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Example of a radioactive sealed source that contains americium-241 (Source: DOE via GAO-03-483)

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
Total	5 294*	1 920	9 816

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

(Source: DOE via GAO-03-483)

*Total includes 16 greater-than-Class-C sealed sources that DOE recovered before Off-Site Source Recovery Project operations began.

C sealed sources, according to the report.

Through February of this year, the DOE's Off-Site Source Recovery Project had recovered more than 5000 greater-than-Class-C sealed sources from about 160 sites across the nation. According to the GAO report, however, the project faces three problems that could hinder future recovery efforts.

The first problem, said the report, is that the project is not a priority within the DOE's Office of Environmental Manage-

ment because the project does not conform with the mission of the office. The report noted that 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 funding levels that would be insufficient to enable the project to recover additional sealed sources.

The second problem is that the DOE cannot recover any additional sealed sources

containing plutonium-239 because the project has already run out of space at Los Alamos National Laboratory, in New Mexico, which meets the DOE's higher security standards for storing these sources.

Third, the DOE has not approved a means for storing sealed sources containing strontium-90 and cesium-137 until a permanent disposal facility is available.

The report noted that as of last February, the DOE has not made progress toward providing for the permanent disposal of greater-than-Class-C sealed sources, as required by a 17-year-old law. Specifically, the report said, the DOE "had not assigned responsibility to an office with DOE to begin developing such a facility." In addition, the 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, according to the report.

The report recommended that the Energy Secretary take action through five steps, as follows:

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 sealed radioactive waste.
5. Develop a plan to ensure the continued recovery of greater-than-Class-C waste until a disposal facility is available.

The GAO said that the DOE had failed to comment on the report's findings.

The GAO report is available on line at <www.gao.gov/cgi-bin/getrpt?GAO-03-483>.

DOE's retort

The DOE called the GAO's report flawed because it does not consider the DOE's efforts to recover and secure radioactive materials. In addition, according to the DOE, the GAO failed to fully consider the substantial progress made in the recovery effort by the DOE, as well as "a major inter-agency initiative" between the DOE and the Nuclear Regulatory Commission "to aggressively reduce the risks posed by radioactive sources."

Working with the NRC, which licenses radioactive sources, the DOE had already recovered and secured 6000 radioactive sources to date, including 1600 sources in fiscal year 2003 alone, according to the DOE.

Since September 11, the DOE noted, it had "significantly enhanced its efforts to aggressively secure and recover radioactive sources." In fact, since September 11th, the agency continued, it had recovered 4451

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 ^a	3	15	22	Less than 1
Cesium-137 ^b	9	21	3 435	57
Cobalt-60 ^b	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 ^c	5	5	2	2
Strontium-90	8	46	3 971 315	62 786
Total	440^d	4 380	3 999 801	80 308^e

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

(Source: DOE via GAO-03-483)

^aAccording 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.

^bAccording 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.

^cAccording 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.

^dSome holders of sources have more than one type of source.

^eTotal does not add to 80 308 because of rounding.

sources—while in the four years leading up to September 11th, only 1594 sources were recovered.

The DOE found fault with the GAO report's assertion that securing radioactive sources was "not a priority" for the DOE and "not even fully funded." In fact, the DOE commented, the program is fully funded to identify and recover all the sealed sources that the DOE and the NRC have identified as priorities.

The DOE noted that in June 2002, Energy Secretary Spencer Abraham met with Richard Meserve, who was NRC chairman at the time, to discuss the nation's ability to adequately protect inventories of radioactive sources that could be used in a dirty bomb. At that June meeting, according to the DOE, the NRC and the DOE agreed to convene an interagency working group on radioactive dispersal devices to address four areas of concern:

1. Relative hazards of radioactive materials.
2. Options for a national source tracking system.
3. Potential technological methods to tag and monitor sources in use, storage, or transit.
4. Actions to secure and dispose of unsecured, excess, and unwanted sources.

Contrary to the GAO's claim that the DOE did not care to comment on the GAO report, the DOE said that in fact a separate report was prepared by the DOE in conjunction with the NRC, and that the GAO "refused to adequately consider it in their own report." Therefore, according to the DOE, the joint DOE-NRC report was made

public on May 16, just days after the release of the GAO report. The DOE-NRC report is titled "Radioactive Dispersal Devices: An Initial Study to Identify Radioactive Materials of Greatest Concern and Approaches to Their Tracking, Tagging, and Disposition."

According to the DOE-NRC report, the radioactive sources of concern were identified and prioritized based on their risk to public health and safety. "This approach has helped the DOE and the NRC to focus their efforts on the limited number of high-risk radioactive sources that require enhanced protection as opposed to the vast majority of sources that do not pose a significant risk to the public," the DOE said. "DOE and NRC are enhancing the security of the priority sources accordingly."

Most, if not all, of the private sector radioactive sealed sources are stored at NRC-licensed facilities, such as universities or commercial sites, according to the DOE-NRC report. "As NRC licensees, universities and commercial entities have accepted the responsibility and liability for the safe and secure storage of radioactive sealed sources, based on NRC requirements," according to the DOE. There are no instances where universities are "stuck" with dangerous materials they did not request to be licensed to obtain, the DOE said. There are also commercial waste storage facilities that can accept certain waste should a university or other entity decide that it wants to remove the material.

The DOE-NRC report is available on line at <www.energy.gov/press/RDDRPTF14MAY.pdf>.

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