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U.S. DEPARTMENT OF ENERGY  
BEFORE THE  
UNITED STATES SENATE HOMELAND SECURITY AND GOVERNMENT  
AFFAIRS COMMITTEE SUBCOMMITTEE ON OVERSIGHT OF  
GOVERNMENT MANAGEMENT, THE FEDERAL WORKFORCE, AND THE  
DISTRICT OF COLUMBIA**

**MARCH 13, 2007**

**INTRODUCTION**

Thank you, Mr. Chairman and members of the Committee, for giving me the opportunity to testify on the Department of Energy's (DOE) efforts to secure and recover vulnerable, high-risk radioactive sources outside the United States that pose a security risk to U.S. strategic assets at home and around the world. We very much appreciate the Committee's continued interest and leadership on the issue of securing vulnerable radiological sources both domestically and internationally.

I am pleased to report that, since its inception in 2002, the DOE International Radiological Threat Reduction program has completed security upgrades at more than 500 sites in over forty countries around the world. Radioactive materials such as cobalt-60, Cesium-137, Strontium-90, and Americium-241, which are used worldwide for many legitimate purposes, could be exploited by terrorists to produce a radiological dispersion device (RDD), or dirty bomb. The program's primary objectives are to (1) implement rapid physical security upgrades at vulnerable sites containing radioactive sources; (2) locate, recover and consolidate lost or abandoned high-risk radioactive sources; and (3) support the development of the infrastructure necessary to sustain security enhancements, including the development of regional partnerships to leverage international resources.

**THE RADIOLOGICAL THREAT**

Before I describe our progress in responding to the recommendations within the recent Government Accountability Office (GAO) report on our work in this area, I would like to address the radiological threat and why we are accelerating and expanding our efforts. The intent of terrorists to acquire radioactive materials for use in an RDD poses a significant risk to the American public and needs to be addressed. One of the many lessons learned from the attacks of September 11, 2001 is that some of the most common tools used in our daily lives, such as commercial airliners, can and will be used by terrorists in an attempt to wreak havoc on the U.S. and other democratic governments around the world. Radioactive materials, in particular, are used routinely for a variety of

medical, industrial and educational purposes. Commonly used sources available in sufficient quantities for an attractive RDD capable of causing harm of national significance include Cobalt-60, Cesium-137, Iridium-192, and Radium-226. Should terrorists acquire and use these materials in an RDD, the physical, psychological and economic impact could be significant.

Since September 11, we have witnessed several large-scale sophisticated terrorist attacks around the world. The terrorist attacks in Russia, Spain, Indonesia, Iraq and UK have all been well planned with no regard for the well being of innocent civilians. A terrorist act using an explosive RDD could result in a few immediate radiation induced-deaths, over the longer-term increased cancer induced deaths; and, substantial near and long-term economic losses due to the costs associated with environmental decontamination and the serious psychological impact upon the general population. Unlike a nuclear weapon, the explosion of an RDD would likely result in instant deaths only in the immediate vicinity of the explosion. However, the economic consequences of such an explosion could be severe, perhaps in the billions of dollars.

From various reports, Al Qaeda is known to be interested in acquiring the materials for a radiological weapon. In June 2005, Senator Lugar, polled dozens of nonproliferation experts around the world; the *Lugar Survey on Proliferation Threats and Responses* concluded that “the probability of a radiological attack...was twice as high as...” other potential WMD attacks such as biological and nuclear. Given the reality of this situation, the Department, this Administration, and Congress have taken important steps to increase radiological threat reduction efforts.

## **GLOBAL THREAT REDUCTION INITIATIVE**

In order to more effectively address the risk of terrorist use of an RDD, in 2004 DOE consolidated its radiological threat reduction efforts into the Global Threat Reduction Initiative (GTRI). The program’s primary approach to reducing the risk posed by vulnerable high-activity radiation sources abroad is to: (1) implement rapid physical security upgrades at vulnerable sites containing radioactive sources; (2) locate, recover and consolidate, into secure facilities, lost or abandoned high-risk radioactive sources; and (3) support the development of the infrastructure necessary to sustain enhanced security systems, including through the development of regional partnerships leveraging international resources. GTRI works with international partners to enhance security of vulnerable radiological material located at civilian sites worldwide that, if stolen or diverted, could be used in a RDD. GTRI is a vital part of the President’s *National Security Strategy of the United States of America* and the President’s July 2006 *Global Initiative to Combat Nuclear Terrorism* aimed at strengthening international cooperation to secure nuclear and radiological materials and to prevent the use of these materials in terrorist acts. In addition, GTRI directly addresses recommendations of the bipartisan 9/11 Commission.

DOE and the National Nuclear Security Administration (NNSA) are committed to securing and removing vulnerable radiological sources around the world. Over the past several years, DOE and NNSA have significantly accelerated efforts to secure vulnerable

sources. To date, DOE/NNSA has secured more than 500 vulnerable radiological sources worldwide since 2002. In fact, since we began our efforts to first secure sources internationally in 2002, we have accelerated these efforts each and every year. As of January 2007, DOE has spent approximately \$120 million to secure vulnerable radiological sources under its International Radiological Threat Reduction Program. This demonstrates both a strong commitment and a successful program that produces tangible results and reduces the risks that these vulnerable sources could be acquired by terrorists to make a “dirty bomb”.

I am also pleased to note that this Committee, and the U.S. Congress as a whole, have provided critical support to DOE’s radiological threat reduction efforts both domestically and internationally. I applaud the numerous Congressional actions that have helped make our efforts possible, including the establishment of legal authority for DOE to collect high-activity and high-risk radioactive sources (Greater-Than-Class-C) within the United States via the Low-Level Radioactive Waste Policy Amendments Act, the provision of emergency appropriations after the terrorists acts of “9/11” for the accelerated domestic recovery of radioactive sources; authorization and appropriations to carry out dirty bomb threat reduction efforts internationally; and emergency supplemental funding for DOE to carry out radiological threat reduction work in Iraq, resulting in the successful removal of nearly 1,000 high-risk radioactive sources from that country.

## **GAO RECOMMENDATIONS AND DOE ACTIONS**

I would also like to recognize GAO for conducting a comprehensive assessment of our efforts to secure and recover vulnerable high risk radioactive sources at various sites around the world. Their efforts and recommendations have helped us make adjustments to improve the effectiveness of the program.

We are pleased that the GAO report recognizes that “DOE has achieved noteworthy accomplishments in improving the security of radiological sources at hundreds of sites in more than 40 countries...” The GAO report also highlighted several notable DOE accomplishments, including the fact that DOE:

- secured or recovered radioactive sources at over 500 facilities in 43 countries under this program since 2002;
- removed more than 5,000 curies of radioactive Cobalt-60 and Cesium-137 from war-torn Chechnya;
- improved security in Greece prior to the 2004 Olympics;
- created secure storage facilities in Uzbekistan, Moldova, Tajikistan, and Georgia;

- removed or secured, in cooperation with our international partners, more than 30% of the radioisotope thermoelectric generators (RTGs) located in Russia;
- negotiated an agreement to obtain international funding (e.g. Government of Canada) to accelerate RTG security efforts in Russia;
- improved coordination with Department of State (DOS) and Nuclear Regulatory Commission (NRC) to secure radiological sources worldwide (the most prominent example is the cooperation and radiological sources in Iraq);
- improved cooperation and coordination with the International Atomic Energy Agency (IAEA) and several Key Donor States to the IAEA's Nuclear Security Fund to avoid duplication of effort; and,
- developed successful bilateral and multilateral partnerships to enhance physical protection of vulnerable radioactive material at various sites around the world.

As GAO notes, radioactive sources provide substantial medical, industrial, and agriculture benefits. Because radioactive materials are in widespread commercial use throughout the world, the GAO report acknowledged that we face a considerable challenge in securing other countries' most dangerous radiological sources given the number of these sources and how widely they are employed. While we believe that we have achieved a great deal of threat reduction in a short period of time, there remains an enormous amount of dangerous material left to secure or eliminate.

In their study, GAO identified areas that it believes need to be further addressed by DOE – prioritization, quality assurance/sustainability, coordination, and transportation. It is important to note that we already have in place substantial measures to address each of these areas. For example, during the past several months GTRI undertook a major program assessment aimed at establishing new prioritization guidelines for securing and recovering vulnerable nuclear and other radioactive material around the world. GTRI has further improved coordination by organizing the program regionally.

Regarding GAO's belief that we need to further address prioritization, we note that:

- NNSA and its international partners have made substantial progress by securing 742 sites. All of these sites are of the highest priority and contain vulnerable radiological sources. Specifically NNSA or its partners have completed:
  - 374 of 1,062 (35%) of the RTGs
  - 30 of 69 (43%) of the waste repositories
  - 82 of 229 (36%) of the research institutes and commercial/industrial sites
  - 256 of 1,951 (13%) of the medical facilities
- Total curies of radioactivity is just one of several critical factors that the program uses to determine priority. The others are (1) known terrorist threat in the country/region, (2) current level of security at the site, and (3) the proximity of

the site in relationship to potential strategic targets of U.S. interest. The first factor, terrorist threat, is significant because the majority of large scale attacks to date have been at U.S. assets (embassies, military bases/ships, etc) or western hotels and transportation systems in Africa, Middle East, Asia, and Europe using locally purchases/stolen materials to minimize the risk of detection prior to the attack.

- Because of this, specific types of medical sources are highly attractive to would-be terrorists. GAO's report highlights a 1,400 curie medical source in Brazil that, in an accident not a premeditated, planned attack, killed 4 people, caused widespread panic, and resulted in \$36 million in decontamination costs.
- Recent research conducted by Sandia National Laboratories that we shared with the GAO investigators, documents the ease with which a medical source could be stolen and helps to validate the significance of this risk.
- As GAO states, it is the small size, portability and potential value of sealed radiological sources make them vulnerable to misuse. At the same time, as GAO recommends, NNSA will continue to accelerate RTG recoveries but the program must also address these additional high priority medical and other radioactive sources.

Regarding the GAO's recommendations on quality assurance/sustainability, we note that:

Our standard protection upgrade implementation practice ensures quality assurance. This is accomplished by (1) having the development of a protection upgrade design reviewed and approved by NNSA physical protection experts prior to payment for the contracted design document; (2) insisting the approved design document is a precondition to proceeding with procurement of protection equipment and installation; (3) conducting post-installation visits by our technical experts for the purpose of assuring all equipment and systems are installed as agreed upon in the design document (if installations are performed incorrectly, payments are withheld until corrections are made). We are further investigating this process to identify and implement additional improvements.

- GTRI already has been implementing a short-term sustainability program that includes a 3-year warranty as well preventative maintenance contracts and training on newly installed equipment for operational staff at the sites. In order to ensure effective long-term security upgrades at facilities around the world, we agree with GAO's recommendation to expand this into a long-term sustainability plan of the security measures. We agree that additional work needs to be done to develop a **long-term** sustainability plan and we are in the process of developing this plan. We are currently re-examining our sustainability policies and procedures to assure ourselves that security upgrades can and will function effectively over the long term, especially in those countries that lack reliable communications and electric power systems.

Regarding GAO's recommendation to further address coordination, we note that NNSA is closely cooperating with other offices within the DOE, other Government Agencies, and international partners. In fact, the GAO report notes that DOE has improved coordination with the State Department and the Nuclear Regulatory Commission (NRC) to secure sources in other countries. The GAO report also acknowledges that DOE has involved State and NRC in its international radiological threat reduction activities more often and has increased information sharing with the agencies since GAO last reported on this matter in 2003. Additional examples of coordination include:

- Working closely with the U.S. Nuclear Regulatory Commission (NRC) and the Massachusetts Department of Public Health's (MDPH) Radiation Control Program in removing radioactive materials from Massachusetts in December 2006;
- Teaming with DOE's Office of Nonproliferation and International Security to secure and recover large quantities of orphaned nuclear materials and radioactive materials in Iraq under Project Maximus in 2004;
- Continuing to work closely with the Department of State and NRC to develop and implement physical protection programs internationally;
- Closely cooperating and coordinating with the International Atomic Energy's (IAEA). Specific programs include: successful Tripartite Initiative with the IAEA and the Government of the Russian Federation to identify, locate and secure disused and orphaned sources in the Former Soviet Republics, including the recovery of a large quantity of vulnerable radioactive sources from Chechnya this past year; teaming with the Department of State to assist the IAEA in development and implementation of a major upgrade to its Radiological Authority Information System (RAIS), and teaming with NRC and DOS to develop IAEA consensus guidance for use by member states;
- Providing technical experts to support the IAEA's Office of Nuclear Security's programs to assist countries in the areas of regulatory infrastructure support, physical protection training and inspections; providing technical experts to assist the IAEA in the recovery of vulnerable at risk radioactive sources, and providing technical experts to IAEA missions to assess the status of radiological security in member states;
- Working with select donor countries to assist the IAEA in addressing the most significant challenges to source security first.
- Teaming with the IAEA and the Government of South Africa to recover and disposition sixty-eight (68) disused or orphaned sources from other African countries to mitigate security concerns; assisting the IAEA and the Nuclear Energy Corporation of South Africa (NECSA) in development of a mobile Spent High Activity Radioactive Source (SHARS) conditioning facility to aid in the

recovery of vulnerable, high-risk orphaned and disused sources around the world. This system is scheduled to be used to recover several high activity sources in Africa during the fourth quarter of FY2007;

- Teaming with the Government of Australia and the IAEA in developing the infrastructure to support increased source security in Southeast Asia , that complements GTRI's bi-lateral physical security upgrade work
- As an indication of the importance and effectiveness of our RTG security and recovery program, the Government of Canada is preparing to provide NNSA approximately \$2 million to augment the work currently being done by GTRI to secure and recover RTG's in Russia.

Regarding the GAO's recommendation to further address transportation, we note that:

- NNSA staff and technical experts from our national laboratories have been working with the U.S. Department of Transportation, the IAEA's Office of Nuclear Security, and key IAEA Donor States to strengthen transport security regulations and procedures to mitigate the risks of theft or diversion of nuclear and other radioactive materials in transit.
- We have also been working bilaterally with the Government of the Russian Federation to enhance the security of radioactive materials during their transport from the end-user's site to a location of final material disposition. Because the vast majority of all waste shipments within the Russian RADON system are handled by the RADONs located at Sergev Posad and Moscow, most of the funds we provided to upgrade transport security within Russia, including cargo trucks and escort vehicles, were in support of shipments to and from these two sites.

We appreciate the efforts made by the GAO report to reinforce the importance of DOE nuclear and radiological security programs in support of U.S. national security. GAO's independent validation of our successes and recommendations for further strengthening of our efforts is very helpful.

In conclusion, we welcome this opportunity to focus attention on the very urgent and pressing issue of securing vulnerable radiological sources around the world. Thanks to your support, we have made significant progress to reduce the likelihood that terrorists will be able to acquire radiological sources for use in a dirty bomb. However, much work remains to be done and we look forward to working closely with Congress to continue to accelerate these efforts in the outyears.