

STATEMENT SUBMITTED  
BY THE  
UNITED STATES NUCLEAR REGULATORY COMMISSION  
TO THE  
SUBCOMMITTEE ON EMERGING THREATS, CYBERSECURITY,  
SCIENCE AND TECHNOLOGY  
COMMITTEE ON HOMELAND SECURITY  
UNITED STATES HOUSE OF REPRESENTATIVES  
CONCERNING  
STATUS REPORT ON FEDERAL AND LOCAL EFFORTS  
TO SECURE RADIOLOGICAL SOURCES

PRESENTED BY  
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Chairwoman Clarke, Members of the subcommittee, Members of the House from the New York City area, I am here today representing the Nuclear Regulatory Commission (NRC) staff to provide a status report that describes our approach to improving safety and security of radioactive sources and our recent accomplishments in this important area. Thank you for the opportunity to provide you with an overview of the nation's regulatory programs to tighten security requirements for the highest risk radioactive sources.

## **BACKGROUND**

To put the radioactive source security improvement efforts into context, it is important to first provide some background on the 2003 International Atomic Energy Agency (IAEA) Code of Conduct on the Safety and Security of Radioactive Sources, which Congress, in the Energy Policy Act of 2005, directed NRC to implement. The NRC's program to tighten security and controls on the highest risk radioactive sources is founded in and consistent with the United States Government's commitment to the Code of Conduct. The Code of Conduct identifies 16 radionuclides of concern, along with a categorization by radioactivity levels for each

radionuclide, based upon the relative health hazards each radionuclide would present if not kept under adequate controls. Sources and devices containing Category 1 and 2 quantities of these materials are the most dangerous, and have been the focus of Federal and State efforts to put in place tighter controls for security. Of the 16 radionuclides, only four are widely used in civilian applications in this country: cobalt-60, cesium-137, iridium-192, and americium-241. Civilian applications include food and medical equipment sterilization, medical research, cancer treatment, oil and gas exploration, and inspecting materials for hidden flaws.

NRC has been a world leader in applying the Code of Conduct through strengthening the U.S. system of regulatory controls, including: imposing enhanced import/export controls in 2005; requiring users of the sources to upgrade their facilities, information controls, and control of personnel access to the radioactive sources since 2005; establishing and using an Interim Inventory of Nationally Tracked Sources since 2004, and upgrading the Interim Inventory via the deployment of the National Source Tracking System in 2009. In these initiatives, however, NRC coordinates in partnership with the 36 Agreement States that regulate the possession and use of certain radioactive material in their States pursuant to agreements between the NRC and the Governor of each State. These agreements are provided for by section 274 of the Atomic Energy Act, as amended. Under these agreements, NRC relinquishes its regulatory authority over radioactive materials in that State; NRC does retain responsibility for nuclear reactors, nuclear fuel cycle facilities, as well as for Federal facilities' material licensees, such as military and veterans hospitals. NRC and the Agreement States work very closely to implement consistent and compatible programs for regulating radioactive materials safety and security across the country. In addition, NRC provides oversight of each Agreement State program through a periodic performance evaluation program. New York is an Agreement State, and the regulators are the State Health Department and the New York City Health Department.

Nationwide, there are a total of 22,000 U.S. materials licenses. Of these, less than ten percent (approximately 1,300 licensees) possess IAEA Category 1 or 2 sources. There are also an estimated 30,000 active general licenses that permit possession of smaller quantities of radioactive material in devices (e.g. industrial gauges), which do not require a specific license application or regulatory review process because of the inherent safety of the devices and resulting low risk of an accident.

A key piece of legislation that has enabled regulatory enhancements to radioactive materials security is the Energy Policy Act of 2005. This law included provisions that expanded NRC's fingerprinting and background check authority, required study of radiation source use and replacement, mandated the creation of a national source tracking system, and created an interagency Radiation Source Protection and Security Task Force. I will use the remainder of my statement to address the progress made and continuing work in each of these areas.

### **INCREASED CONTROLS AND FINGERPRINTING**

The licensees that possess Category 1 or 2 materials as defined by the IAEA Code of Conduct have all had to comply with new requirements called "increased controls," which were issued in 2005-2006 by the NRC or Agreement State regulators. The increased controls have required licensees to upgrade their facilities and procedures to ensure detection and prevention of unauthorized access to radioactive material, advance coordination with local law enforcement, enhanced security during transportation, and enhanced and frequent accounting of sources. These measures also require licensees to establish and implement trustworthiness and reliability standards to determine who will have unescorted access to the radioactive material. Those that are not approved to have unescorted access must be within line of sight of an approved individual when accessing the material. NRC and Agreement States verify compliance through inspections of licensees. The first round of increased controls inspections for all licensees has been completed and compliance issues corrected.

From 2007-2008, the increased controls were supplemented by additional requirements for fingerprinting and Federal criminal history records checks of all individuals with unescorted access to Category 1 or 2 quantities of radioactive material to further improve the tools available to determine trustworthiness and reliability. The NRC and all of the Agreement States are now in the process of verifying compliance through the inspection process. Since December 2007, an estimated 90,000 fingerprint forms have been submitted and processed.

The NRC and Agreement States are jointly developing new materials security regulatory requirements that reflect the experience gained through implementation of the increased controls and fingerprinting requirements. Draft regulatory text was made available for public review on Regulations.gov and we expect a proposed rule to be published in the *Federal Register* for public comment by early 2010.

## **STRATEGY FOR THE SECURITY AND USE OF CESIUM CHLORIDE SOURCES**

In 2006, the Radiation Source Protection and Security Task Force provided the President and Congress a report, as mandated by the Energy Policy Act of 2005. One of the key recommendations in the report focuses on the security of radioactive sources containing cesium chloride in a highly dispersible form. Since that time, there have been a number of recent Federal studies to assess options for the continued use of cesium chloride as the chemical form for radioactive cesium-137 sources. Cesium chloride is a salt that is sealed into a welded, doubly encapsulated stainless steel capsule, and used to irradiate blood and tissue, conduct bio-medical and materials science research, and calibrate emergency response radiation detection equipment. Cesium chloride has long received increased attention from both a safety and security perspective because of its potential dispersibility if removed from the irradiator and the source capsule, which could spread radioactivity. Approximately 550 licensees in the U.S. possess about 1,100 self-contained cesium chloride irradiators. These devices contain a Category 1 or 2 quantity of cesium-137 as defined by the IAEA Code of Conduct. The NRC's and Agreement States' increased controls and fingerprinting requirements have been implemented for all of these devices.

In February 2008, the National Academies issued a report on Source Use and Replacement that emphasized replacement technologies should be considered for cesium chloride because the National Academies considered this radioactive source a greater concern under certain attack scenarios than others based on its dispersibility, solubility, penetrating radiation, source activity, and presence in population centers across the country. In light of multiple views on alternative technologies and replacement, NRC convened a public workshop on September 29-30, 2008, to obtain input on the use and potential phase-out of cesium chloride. The workshop had 210 participants and we received 141 written comments after the workshop. We also asked NRC's Advisory Committee on Medical Uses of Isotopes (ACMUI) to complete a study comparing cesium chloride blood irradiation to other technologies, particularly x-ray irradiation.

In light of the various stakeholder comments, the ACMUI study, and its own analyses, NRC concluded that near-term replacement of cesium chloride sources or devices in existing blood, research, and calibration irradiators is not practicable and would be disproportionately detrimental to the delivery of medical care, the continuity of longstanding research, and the

provision of emergency response capabilities. Therefore, NRC believes it is imperative to develop a viable alternative technology and a disposal option for these sources before considering a phase-out.

Research to develop an alternative chemical form for large activity cesium-137 sealed sources could provide a pathway to long-term phase-out of these sources in favor of those with diminished utility in a radiation dispersal device. While it is not the NRC's role to conduct such research, we are engaging our Federal partners in efforts to identify a lead agency or agencies to conduct research and/or to provide incentives to facilitate development of alternative chemical forms for cesium-137. Because all cesium-137 chloride is currently produced at one facility overseas and given the extensive use of irradiators outside of the U.S., international engagement and cooperative efforts towards exploring new international standards for such sources are a necessary part of any long-term solution.

The NRC and Agreement States, along with the Department of Homeland Security's (DHS) Domestic Nuclear Detection Office, are working in close cooperation with the Department of Energy's National Nuclear Security Administration's (NNSA) voluntary program to install hardware improvements that are retrofitted to existing irradiators and incorporated into the designs of newly manufactured irradiators. These modifications to enhance security extend beyond current regulatory requirements. Also, these efforts are often complemented by expert security guidance to licensees (called assist visits) and table-top exercises with a view towards sharing best practices.

The NRC is continuing to work with Federal, State, and international partners to assess the risk environment and to encourage further technological developments for alternative forms of cesium-137. The increased controls required by the NRC and Agreement States and implemented by licensees, along with voluntary additional facility and device hardening measures, have significantly improved the security of these sources.

## **NATIONAL SOURCE TRACKING SYSTEM**

NRC has maintained an Interim Inventory of Nationally Tracked Sources since 2004, which was an annual accounting of licensees authorized to possess Category 1 and 2 sources. The Energy Policy Act of 2005 included a provision for the National Source Tracking System

(NSTS), which supersedes the interim inventory. The NSTS is a secure, Web-based database that is readily accessible to appropriate personnel and is designed to enhance the accountability for radioactive sources. The NSTS directly enhances the ability of the NRC and Agreement States to, 1) verify legitimate ownership and use of nationally tracked sources; 2) conduct inspections and investigations; and 3) communicate information to other government agencies. Since NSTS was deployed in January of this year, all transactions involving Category 1 or 2 sources, such as manufacture, transfer, and disassembly, have been required to be reported to this system. Over 55,000 sources are currently tracked in the system. This greater accountability for these sources helps strengthen the national security framework from initial production through final disposition of these sources.

The NSTS also directly demonstrates our leadership to other countries in applying the IAEA Code of Conduct by complying with its recommendations to have a national registry of radioactive sources. In the coming years, the NRC is planning to further improve the functionality of the NSTS. We will integrate NSTS data with nationwide licensing information to further enhance our capabilities to track compliance and authorize transfers of radioactive material.

## **INTERAGENCY COOPERATION AND COMPLEMENTARY EFFORTS ON RADIOACTIVE SOURCE SECURITY**

The NRC has several major efforts underway with regard to U.S. interagency coordination.

The government-wide Radiation Source Protection and Security Task Force, which was established by the Energy Policy Act of 2005, has been one of the primary vehicles for discussing and addressing issues relating to the security of radiation sources. This Task Force has senior representatives from 14 Federal and State agencies that have a role in radiation source security. In August 2006, the Task Force delivered a report to the President and to Congress that included 10 recommendations and 18 actions, addressing areas such as alternative technologies, cesium chloride, public communications, and the use of better tools to identify sources of concern. Progress has been made on each of these recommendations and actions. The next report is due to the President and Congress in August 2010, and will provide an integrated view of the various activities that have been completed within the last four years or are underway.

DHS is responsible for convening Government Coordinating Councils for critical infrastructure, including the nuclear sector. NRC routinely coordinates with, and provides updates of agency activities to, Federal partners through the Nuclear Government Coordinating Council. Both the Agreement States and the non-Agreement States also participate.

NRC also participates in periodic trilateral meetings with DHS and NNSA to coordinate source security activities. These trilateral meetings enhance coordination and awareness of each agency's activities and initiatives regarding source security.

The activities described above demonstrate that there is a coordinated U.S. government approach to source security.

## **CONCLUSION**

The NRC recognizes the direct role that radioactive source security plays in the agency's mission to protect public health, safety, and the environment. NRC and Agreement State requirements serve as a firm foundation for security that ensures that all licensees provide a common baseline level of security that is adequate to protect public health, safety, and the environment. The application of increased controls, the deployment of the National Source Tracking System, and the NRC's cooperative efforts across the Federal community have comprehensively and significantly improved the security of radioactive sources.

Thank you for the opportunity to testify today at this hearing. I look forward to responding to your questions.