

## **POLICY ISSUE (Information)**

December 7, 2012

SECY-12-0165

FOR: The Commissioners

FROM: Mark A. Satorius, Director  
Office of Federal and State Materials  
and Environmental Management Programs

SUBJECT: THE U.S. NUCLEAR REGULATORY COMMISSION IMPLEMENTATION  
PLAN FOR THE RADIATION SOURCE PROTECTION AND SECURITY  
TASK FORCE REPORT

PURPOSE:

The purpose of this paper is to provide the Commission with a summary of the enclosed annual update of the "U.S. Nuclear Regulatory Commission (NRC) Implementation Plan for the Radiation Source Protection and Security Task Force Report," in accordance with the Staff Requirements Memorandum (SRM) for SECY-06-0231, "NRC Implementation Plan for the Radiation Source Protection and Security Task Force Report," dated January 16, 2007. This plan highlights interagency efforts in the area of radiation source protection and security, including updates on progress toward a comprehensive approach to improve the security of cesium-137 chloride (CsCl) sources. This paper does not address any new commitments or resource implications.

SUMMARY:

The Energy Policy Act of 2005 (EPAct) created an interagency task force on radiation source protection and security under the lead of the NRC. After receiving the first draft report in June 2006 by the Radiation Source Protection and Security Task Force (Task Force), the Commission directed the staff in the SRM for COMSECY-06-0032, "Draft Report to the

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President and the U.S. Congress on the Radiation Source Protection and Security Task Force Report," dated August 3, 2006, to develop a plan, including prioritization, cost estimates, and the staff's view on how to proceed with implementation of the recommendations and actions in the report for which NRC has responsibility.

The staff submitted the first implementation plan to the Commission in SECY-06-0231 (November 22, 2006). This implementation plan addressed the recommendations and actions from the Task Force report that was provided to the President and Congress on August 15, 2006. The staff used this implementation plan to organize and track the efforts related to the Task Force recommendations and actions. The staff continues to provide the Commission with annual updates to the implementation plan.

#### BACKGROUND:

The EPAct mandates that not later than 1 year after the date of the legislative enactment of the Act, and not less than once every 4 years thereafter, the Task Force shall submit to the President and Congress a report and recommendations on materials source security. In 2006, the NRC submitted the first Task Force report to the President and Congress. The report contained 10 recommendations and 18 actions that addressed security and control of radioactive sources. In accordance with the EPAct, the Task Force also submitted its quadrennial report to the President and Congress on August 11, 2010. These reports are publicly available in the Agencywide Documents Access & Management System (ADAMS) (ML062190349 and ML102230141). The 2010 report presented the status of the first report's recommendations and actions, including the resolution of a number of significant recommendations and actions. This report also presented 11 new recommendations. Several of those new recommendations include actions related to the issue of CsCl sources. The implementation plan defines the recommendations as tasks to be completed by appropriate agency leads within the framework of their upcoming activities.

#### DISCUSSION:

Since the last update to the Commission in SECY-11-0167, "U.S. Nuclear Regulatory Commission Implementation Plan for the Radiation Source Protection and Security Task Force Reporting," dated December 7, 2011, the Task Force has continued its efforts to assign lead responsibilities for the new recommendations from the 2010 report and the remaining open recommendations and actions from the 2006 report. The updated plan presents a strategy for implementing these recommendations and actions, identifies issues that could complicate implementation, and identifies lead offices, resource estimates, and task breakdowns. Some of the recommendations and actions have no specific NRC implementation activities. The plan will remain as a living, publicly available document in ADAMS (ML12333A365). The staff has updated the plan to reflect progress through October 2012.

#### ACCOMPLISHMENTS

The following recommendations and actions were completed since the last update received by the Commission:

2006 Recommendation 3-1: "The Task Force recommends that the U.S. Government periodically reevaluate the list of radioactive sources that warrant enhanced security and protection to assess their adequacy in light of the evolving threat environment and consistent with current national consequences of concern in order to provide a consistent level of protection with other critical infrastructure."

Status: In preparation for the upcoming 2014 Task Force Report, the Radiation Sources Subgroup was reactivated and held its first meeting following the November 9, 2011, Task Force meeting. Subsequently, the Subgroup held a series of meetings (February 23, April 26, and June 13) to:

- Update the Subgroup charter to reflect the new scope of work for the 2014 Task Force report to the President and Congress;
- Review the Radioisotope Down-selection Methodology by Sandia National Laboratories used to determine the list of radionuclides of concern; and
- Obtain briefings from DHS concerning the current threat environment and the Radiological/Nuclear Terrorism Risk Assessment to determine the need to reevaluate the current list of radionuclides of concern.

Based on the information provided during the three Subgroup meetings, the Subgroup determined that the current list of radionuclides of concern is still valid and that the threat environment and market conditions have not changed significantly. Therefore, the Subgroup did not recommend a reevaluation of the list at this time. The Task Force approved the Subgroup's conclusion at the July 25, 2012, Task Force meeting.

The Subgroup also recommended changing the status of 2006 Recommendation 3-1, from "ongoing" to "complete," and proposed that the requirement to periodically review the list of radionuclides of greatest concern should be moved to the Task Force Charter, rather than maintaining an open recommendation indefinitely. The Task Force members approved changing the status of the recommendation, provided that the revised Task Force Charter includes specific triggers for initiation of a review of the list of radionuclides. The Subgroup revised the Task Force Charter to indicate that the periodicity of the re-evaluation of the list of sources will be directed by the Task Force. Specifically, the Task Force will direct reevaluation of the list based on changes in the national and international threat environment, changes in consequences of concern, and changes in commercial availability of certain sources. The revised Task Force Charter was approved by the Task Force in October 2012.

2006 Action 4-1: "The NRC should consider imposing additional measures to verify the validity of licenses before the transfer of risk-significant radioactive sources, on all licensees authorized to possess Category 1 and 2 quantities of radioactive material."

Status: This action is considered substantially complete. The NRC staff completed an important milestone by completing the final rule package for 10 CFR Part 37, "Physical Protection of Byproduct Material" which was sent to the Commission on December 8, 2011. The Commission approved the final rule on March 16, 2012. This rule requires that licensees must verify with the NRC's license verification system (LVS) or the license issuing authority that the transferee's license authorizes the receipt of the type, form, and quantity of radioactive material to be transferred—and that the licensee is authorized to receive radioactive material at the location requested for delivery—prior to

transferring Category 1 or Category 2 quantities of radioactive material to an NRC or Agreement State licensee.

The LVS is on track for completion in the spring of 2013, at which time 2006 Action 4-1 will be considered complete.

2006 Action 5-1: "The Transportation Security Subgroup should review the findings and conclusions of all research conducted on securing "high-hazard" hazardous materials transport to determine if any of the measures should be applied to the transport of risk-significant radioactive sources."

Status: This action is considered complete due to the NRC staff's completion of the 10 CFR Part 37, "Physical Protection of Byproduct Material," final rule on December 8, 2011 (SECY-11-0170). The Commission approved the final rule on March 16, 2012. The rule provides security requirements for licensees who transport IAEA Category 1 and 2 sources. The Task Force's Transportation Security Subgroup determined that the completion of 10 CFR Part 37 will provide adequate security requirements for licensees who transport IAEA Category 1 and 2 sources. Some elements of the security requirements include: license verification; coordination and tracking of shipments; response and notification procedures for overdue or missing shipments. Still stricter measures are required for shipments of Category 1 quantities of material, including continuous and active monitoring, redundant communications, coordination with State Governors and local law enforcement.

2006 Action 6-1: "The NRC should expeditiously complete its implementation of the fingerprinting provisions of the EPAct of 2005 for those applicants for, and licensees with, Category 1 and 2 quantities of radioactive material. The NRC should place a high priority on completing the EPAct Section 652 rulemaking. As part of the rulemaking, the NRC should require fingerprinting for any individual who could have access to Category 2 or above quantities of radioactive materials. The NRC should also require periodic reinvestigations of such persons."

Status: This action is considered complete, due to the NRC staff's completion of the 10 CFR Part 37, "Physical Protection of Byproduct Material," final rule on December 8, 2011 (SECY-11-0170). The Commission approved the final rule on March 16, 2012. The final rule incorporates the EPAct Section 652 fingerprinting requirements for Category 1 and 2 licensees that were imposed by NRC orders and Agreement State requirements. Licensees are required to conduct a reinvestigation every 10 years for any individual with unescorted access to Category 1 or Category 2 quantities of radioactive material. The reinvestigation shall consist of fingerprinting and a Federal Bureau of Investigation (FBI) identification and criminal history records check.

#### SIGNIFICANT DEVELOPMENTS

Since the last update to the Commission in SECY-11-0167 (December 2011), the following significant developments occurred related to other Task Force recommendations and actions:

Disposal of Greater than Class C Waste

The U.S. Department of Energy (DOE) is finalizing its environmental impact statement (EIS) providing disposal options for Greater-Than-Class C (GTCC) low-level radioactive waste (LLRW). This effort is responsive to two items identified in the Task Force reports:

2006 Action 9-1: "The DOE should continue its ongoing efforts to develop GTCC disposal capability." and

2010 Recommendation 4: "The U.S. Government, regional compacts, and States should continue to evaluate disposal options for disused radioactive sources including options for handling a potentially large number of disused cesium chloride sources that may be replaced once viable alternatives are available."

Status: The DOE published its draft GTCC EIS for public review and comment on February 18, 2011. Approximately 4,000 comments were received on the draft EIS. The final EIS is expected to be complete by the end of calendar year 2012, and issued in early 2013, along with a report of recommendations to Congress. The scope of the GTCC EIS includes most Category 1 and 2 sealed sources including approximately 1,400 cesium chloride sources. A notable exception is Cobalt-60 sources, which are regulated as Class B LLRW. The GTCC EIS and public outreach material highlight the national security concerns over disused sealed sources and the need for permanent disposal.

The DOE report to Congress is intended to identify the waste involved, identify Federal and non-Federal disposal options, propose actions to ensure safe disposal of the waste, describe the projected costs, identify options for ensuring that those who benefit from activities associated with the generation of the waste bear all reasonable costs of disposing of the waste, and identify statutory authority required for disposal of the waste. Once Congress has taken action on the DOE report, DOE will issue the Record of Decision and begin implementation of the alternative(s) selected. The potential disposal options may include the Waste Isolation Pilot Plant and Nevada Test Site; however, legislative changes are necessary to allow these sites to accept commercial waste.

Update on Cesium Chloride Issues

This plan highlights interagency efforts in the area of radiation source protection and security, including updates on progress toward a comprehensive approach to improve the security of cesium-137 chloride (CsCl) sources. Consequently, this paper also provides the Commission with information requested in the SRM for SECY-08-0184, "Strategy for the Security and Use of Cesium-137 Chloride Sources," dated April 15, 2009. As noted in the last update to the Commission, for efficiency, the staff will continue to report on the development of CsCl issues in the periodic updates of the implementation plan. Specifically, status updates on initiatives related to the SRM for SECY-08-0184 are provided for the following:

- Development of a government-facilitated disposal pathway,
- Short-term and long-term research and development of alternative technologies, and
- Development of a government incentivized program for the replacement of existing sources with effective alternatives.

The status of these initiatives is tracked in the implementation plan under the following recommendations:

2010 Recommendation 4: "The Task Force recommends that the U.S. Government, regional compacts, and States continue to evaluate disposal options for disused radioactive sources, including options for handling a potentially large number of disused CsCl sources that may be replaced once viable alternatives are available."

Status: The National Nuclear Security Administration (NNSA) Global Threat Reduction Initiative (GTRI) funded a working group of sited and non-sited State and Compact representatives under the auspices of the Low-Level Waste Forum Disused Source Working Group to examine ways to expand commercial sealed source disposal options. Specifically, the focus of the group is to examine the "back-end solutions" (disposal) with desire that the regulatory authorities could assist in examining possible "front-end solutions" (e.g. licensing, financial assurances).

Recent developments have resulted in increased disposal capability for disused sealed sources. Specifically, on April 25, 2012, the Waste Control Specialists' (WCS) Compact Waste Facility (CWF) located in Andrews County, Texas was authorized to collect and dispose of sealed sources. In addition, the Energy Solutions LLRW disposal facility in Clive, Utah, can currently accept Class A sources recovered as part of a program coordinated by the Conference of Radiation Control Program Directors.

2010 Recommendation 9: "The Task Force recommends that the U.S. Government enhance support of short-term and long-term research and development for alternative technologies."

Status: With respect to CsCl, the Final Policy Statement on the Protection of Cesium-137 Chloride Sources indicates that while it is outside the scope of the NRC's mission to conduct developmental research, the Commission encourages research to develop alternative chemical forms for large activity Cs-137 sources. Also, while the current security requirements and measures are adequate, the NRC encourages the source and device manufacturers to implement design improvements that further mitigate or minimize the radiological consequences of misusing these sources. The Task Force has begun its efforts to develop the next quadrennial report to the President and Congress, due in August 2014. Any new developments in the area of alternative technologies will be examined as part of this effort.

2010 Recommendation 10: "The Task Force recommends that the U.S. Government, contingent upon the availability of alternative technologies and taking into consideration the availability of disposal pathways for disused sources, investigate options such as a voluntary, prioritized, Government-incentivized program for the replacement of Category 1 and 2 sources with effective alternatives, with an initial focus on sources containing CsCl."

Status: The Final Policy Statement on the Protection of Cesium-137 Chloride Sources indicates that there are currently no alternative technologies that can effectively replace CsCl sources in all fields of application. However, while it is outside the scope of the NRC's mission to conduct developmental research, the Commission encourages research to develop alternative chemical forms for large activity Cs-137 sources.

Also, with the implementation of this recommendation, the availability of disposal pathways for discussed sources must be considered. Many of the Category 1 and 2 sources qualify as GTCC LLRW, for which there is no current disposal capacity. However, DOE is finalizing an EIS to evaluate potential disposal options for GTCC waste. This effort is being tracked in 2006 Action 9-1.

In addition to the CsCl activities discussed in the above recommendations and actions, the Task Force also maintains awareness of the DOE NNSA/GTRA voluntary program to retrofit existing CsCl irradiators with additional physical security enhancements and to incorporate these improvements into the designs of newly manufactured units.

Status: As of September 30, 2012, 496 buildings containing nuclear and/or radioactive materials have undergone voluntary security enhancements (this includes completed enhancements at 15 non-power reactors). Also, the specialized in-device delay hardening kits for the most widely used models of CsCl blood and research irradiators, which are funded by GTRI, have been installed on 360 of the 827 devices within the scope of the initiative. These efforts are often also complemented by assist visits and tabletop exercises conducted by NNSA experts, partnered with the FBI, at licensee facilities. These visits and exercises allow participants to share best practices. As of September 30, 2012, 24 table-top exercises have been completed. These continuing initiatives will be updated in the next Task Force report.

#### Consideration of Economic Consequences

2010 Recommendation 2: “The Task Force recommends that the U.S. Government agencies reevaluate their protection and mitigation strategies to protect against a significant radiation exposure device or radiological dispersal device attack based on the Task Force-endorsed definitions, radionuclides, thresholds, and the associated assumptions and parameters referenced in the 2010 report (related to 2006 Recommendation 3-1).”

Status: As noted in the last implementation plan update to the Commission in SECY-11-0167, the NRC uses a Security Assessment (SA) decision-making framework<sup>1</sup> methodology, which is based on the consequence of deterministic effects (prompt fatalities). Considering land contamination or economic impacts in the evaluation of consequences would constitute a significant change in the underpinning assumptions used by the NRC in its current SA framework.

In order to address the Task Force recommendation, the NRC staff formed an internal working group in 2012, with representatives from the Office of Federal and State Materials and Environmental Management Programs and the Office of Nuclear Security and Incident Response. The working group is in the process of reviewing the current basis used for the protection of radioactive materials (potential severe immediate or short-term exposure) and evaluating that basis as it applies to the additional consequence recommended by the Task Force (contamination consequences to public

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<sup>1</sup> Attachment 2 of SECY-04-0222, “Decision-making Framework for Materials and Research and Test Reactor Vulnerability Assessments,” provides details on the SA decision-making framework.

health, safety, and the environment). If the staff identifies any potential policy implications during this review, the staff will recommend appropriate next steps and communicate with the Commission. The staff recognizes that SECY-12-0110, "Consideration of Economic Consequences within the U.S. Nuclear Regulatory Commission's Regulatory Framework" is currently before the Commission, and will maintain awareness of Commission direction as it applies to this recommendation.

Similar activities are underway among other relevant Task Force member agencies. The Task Force Radiation Sources Subgroup is chartered to compile agency inputs in response to 2010 Recommendation 2, which will be prepared as input to the pertinent sections of the 2014 Task Force report to the President and Congress.

Finally, the Task Force has begun to mobilize the subgroups necessary to prepare the next quadrennial report to the President and Congress, which is due in August 2014. The Task Force will meet regularly during the coming months, as the content of the report is developed and refined.

**COORDINATION:**

The Office of the General Counsel has reviewed this paper and has no legal objection.

/RA/

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Enclosure:

NRC Implementation Plan for the Radiation  
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Force Report

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Enclosure:

NRC Implementation Plan for the Radiation  
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**ML12333A365**

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