



POLICY ISSUE

(Information)

February 01, 2023

SECY-23-0011

FOR: The Commissioners

FROM: John W. Lubinski, Director
Office of Nuclear Material Safety
and Safeguards

SUBJECT: 2023 IMPLEMENTATION PLAN UPDATE FOR THE RADIATION
SOURCE PROTECTION AND SECURITY TASK FORCE REPORT

PURPOSE:

The purpose of this paper is to provide the Commission with the status of open items from the Radiation Source Protection and Security Task Force (Task Force) report, the most recent of which was issued in August 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. [ML22199A290](#)). The U.S. Nuclear Regulatory Commission (NRC) staff provides these updates every two years, in coordination with the Task Force reports that are issued to the President and Congress every four years. This paper does not address any new commitments or resource implications.

BACKGROUND:

The Energy Policy Act of 2005 (EPAAct), Public Law 109-58, 119 Stat. 594, created the Task Force under the lead of the NRC. This Task Force provided its first draft report to the Commission in June 2006 in COMSECY-06-0032, "Draft Report to the President and the U.S. Congress on the Radiation Source Protection and Security Task Force" ([ML061770130](#), non-public). In addition to approving the report, the Commission directed the staff in the Staff Requirements Memoranda (SRM) to COMSECY-06-0032 ([ML062150520](#), non-public) to develop an implementation plan for Commission consideration, subsequent to finalization of the

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Task Force report, that included prioritization, cost estimates, and the staff's view on how to proceed with implementation of the recommendations and actions¹ in the Task Force report for which the NRC has responsibility.

Each subsequent implementation plan is publicly available in ADAMS and accessible from the NRC website (<https://www.nrc.gov/security/byproduct/task-force.html>). The implementation plan is used to prioritize and facilitate implementation of efforts related to the Task Force recommendations and actions, and to communicate the status of recommendations and actions to the Commission and the public on a routine basis.

The 2006 Task Force report ([ML062190349](#)) contained 10 recommendations and 18 actions that addressed security and control of radioactive sources. The 2010 report ([ML102230141](#)) presented 11 new recommendations, several of which included actions related to cesium-137 chloride (CsCl) sources; it also closed 14 recommendations and actions.² The 2014 report ([ML14219A642](#)) closed 17 recommendations and actions and added three new recommendations. The 2018 ([ML14219A642](#)) report closed four recommendations and actions, and there were no new proposed recommendations. The 2022 report ([ML22213A157](#)) closed one recommendation, and there were no new proposed recommendations. As a result, 36 recommendations and actions have been completed, and six recommendations and actions remain open.

DISCUSSION:

The enclosed 2023 implementation plan includes a strategy for implementing open Task Force recommendations and actions; potential issues that could complicate implementation of the recommendations and actions; identifies lead agencies, supporting agencies, resource estimates where appropriate; and details tasks necessary to implement the open recommendations and actions.

Since the 2021 implementation plan ([ML21005A229](#)), one recommendation was closed in the 2022 Task Force report, as noted above.

2014 Recommendation 1:

The Task Force recommends that U.S. Government agencies assess the adequacy of and coordinate strategies for preventing and mitigating cybersecurity vulnerabilities related to Category 1 and 2 radioactive sources.

¹ Actions are items identified by the Task Force that did not rise to the level of recommendations because they were underway or planned in the near term, but that were important to track and complete.

² CsCl sources with activity levels associated with Categories 1 and 2 thresholds established by the International Atomic Energy Agency in its *Code of Conduct on the Safety and Security of Radioactive Sources* (i.e., above 27 curies) are widely used in self-shielded irradiators in three major modes of application: Blood sterilization, bio-medical research, and calibration. CsCl is used because of the properties of cesium-137, including its desirable energy spectrum, long half-life, low cost, and moderate shielding requirements relative to other nuclides. In irradiators, CsCl is found in a compressed powder form that is double-encapsulated in a stainless steel capsule. This physical form is used because of its high specific activity (gamma emission per unit volume) and manufacturability. However, because it is highly soluble in water and is dispersible in aerosol form, it also presents security concerns. As such, the use and security of CsCl sources has been a matter of concern for the NRC and a subject of focus for the Task Force. Significant progress has been made in adequately securing and finding alternatives to these sources, as evidenced in Task Force reports and the Policy Statement issued by the NRC on this subject ([76 FR 44378](#)).

Status: Complete. Task Force agencies have completed significant activities and initiatives since the last update of the Implementation Plan pertaining to preventing and mitigating cybersecurity risks for radioactive sources. Specifically, the U.S. Department of Energy (DOE) National Nuclear Security Administration (NNSA) Office of Radiological Security (ORS) used cyber-attack scenarios to identify procurement requirements when funding physical security enhancements at NRC and Agreement State licensees' facilities to adequately address postulated blended cyber-physical attack threats. ORS also developed cybersecurity best practices and training for site security officers responsible for the security of radioactive material and vendors that install ORS-funded security enhancements. In addition, ORS completed a template to be considered when developing facility security plans, addressing how to identify, assess, and respond to potential cyber-attack scenarios. Lastly, ORS has taken actions to implement insider threat mitigation measures (e.g., two-person controls on the Sentry-Remote Monitoring System) to address cyber insider threats.

The recommendation is considered complete with the completion of the subtasks identified in the Implementation Plan; however, Task Force member agencies will continue to coordinate cybersecurity strategies and actions as threats continue to evolve. The Task Force will continue to report pertinent cybersecurity-related coordinating actions in future Task Force reports.

Since the 2021 implementation plan, the Task Force agencies made progress in addressing one of the open recommendations, as noted in the 2022 Task Force report.

2010 Recommendation 5:

The Task Force recommends that Federal and State Governments investigate options such as providing short-term secured storage of sources recovered from U.S. owners that contain foreign-origin americium-241 [Am-241] radioactive material, so that these sources can be recovered now, and increase efforts to investigate options for disposal of these sources.

Status: The Conference of Radiation Control Program Directors (CRCPD) completed the "CRCPD Technical White Paper: Disposition of Foreign Origin Radioactive Material, Revision 1," issued in May 2021 (CRCPD White Paper), which outlines the disposal issues and possible solutions for sources containing foreign-origin material. Options include maintaining the sources at licensee sites, returning the sources to the manufacturer, aggregating the sources at the State radiation control program facilities or commercial waste brokers, developing a greater-than-Class C (GTCC) disposal facility, and developing a legislative solution allowing for disposal of foreign-origin sources at a Federal disposal facility. Task Force member agencies continue to review the options offered in the CRCPD White Paper. The Task Force determined that 2010 Recommendation 5 would remain open while these and other options for management of sources containing foreign-origin radioactive material are being investigated and pursued.

The SRM for SECY-08-0184 directed the staff to report back to the Commission on progress made toward a comprehensive approach to improve the security of CsCl sources. The following three Task Force recommendations remain open, as discussed in the 2022 Task Force report.

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 cesium chloride sources that may be replaced once viable alternatives are available.

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.

2014 Recommendation 3:

The Task Force recommends that the U.S. Government, as appropriate³, investigate options such as voluntary, prioritized, incentivized, programs for the replacement of Category 1 and 2 radioactive sources with effective alternatives. The Task Force further recommends that U.S. Government agencies, where appropriate, lead by example in the consideration of and transition to alternative technologies that meet technical, operational, and cost requirements.

The Task Force continues to evaluate the impact of the Concentration Averaging and Encapsulation Branch Technical Position (CA BTP) guidance on disposal of high-activity sources. A DOE/NNSA sponsored study found that while the CA BTP has improved the process for classifying sealed sources for disposal, the revised guidance has not resulted in a significant increase in the number of sources being disposed. The NRC Commission issued SRM-SECY-20-0098, "Path Forward and Recommendations for Certain Low-Level Radioactive Waste Disposal Rulemakings" ([ML20143A165](#)). The SRM supports providing disposal options for sources that are classified as GTCC low-level radioactive waste. The National Academy of Sciences published "Radioactive Sources: Applications and Alternative Technologies" and recommended funding for research and development projects that aim to develop alternatives to the use of radioactive sources. Task Force member agencies plan to take specific actions to enhance support of short-term and long-term research and development for alternative technologies in the coming years. The 2022 Task Force report documented that the DOE/NNSA replaced 229 Cs-137 blood and research irradiators under the Cesium Irradiator Replacement Project (CIRP), with more than 170 additional replacements in process. Although the NRC does not advocate for or against alternative technologies in its role as an independent regulator, NMSS does supply DOE/NNSA with national source data to support their CIRP efforts.

³ The NRC's statutory mandate precludes it from promoting one technology over another for non-safety or security reasons. The NRC would review in accordance with its procedures, any license application forces CI new technologies.

COORDINATION:

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



Signed by Lubinski, John
on 02/01/23

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Enclosure:
U.S. NRC Implementation Plan for
the Radiation Source Protection
and Security Task Force Report

SUBJECT: 2023 IMPLEMENTATION PLAN UPDATE FOR THE RADIATION SOURCE
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