

**U.S. Nuclear Regulatory Commission
Implementation Plan for the Radiation
Source Protection and Security
Task Force Report**

Introduction

The Energy Policy Act of 2005 (EPAcT) created an interagency task force on radiation source protection and security under the lead of the U.S. Nuclear Regulatory Commission (NRC). The Radiation Source Protection and Security Task Force (Task Force) evaluates and makes recommendations to the President and Congress relating to the security of radiation sources in the United States from potential terrorist threats, including acts of sabotage, theft, or use of a radiation source in a radiological dispersal device or a radiation exposure device.

The Task Force submits its reports to Congress and the President every 4 years in accordance with the EPAcT. It submitted its first report on August 15, 2006, and subsequent reports were issued on August 11, 2010; August 14, 2014; and October 17, 2018. Since its inception, the Task Force has proposed 42 recommendations and actions. As of the date of issuance of this 2021 implementation plan, 35 recommendations and actions have been completed and seven recommendations and actions remain open. Based upon the Task Force's most recent evaluation as documented in the 2018 Task Force report, the Task Force concluded that there are no significant gaps in the area of source protection and security that are not already being addressed through the continued attention of appropriate Task Force agencies.

In order to facilitate the prioritization and implementation of activities related to open Task Force recommendations, the NRC staff, with input from its interagency Task Force partners, issues updates to the Task Force implementation plan every 2 years. The biennial implementation plan serves to maintain the Task Force focus on actionable strategies to advance radiological security in the United States. In addition, these updates communicate the status of recommendations and associated actions to the Commission and the public on a routine basis.

The implementation plan includes specific tasks and deliverables for implementing each of the open recommendations and actions of the Task Force. Where appropriate, the individual strategies include task breakdowns and a discussion of any known issues that could challenge implementation. The NRC Office of Nuclear Material Safety and Safeguards (NMSS); Office of Nuclear Security and Incident Response; Office of International Programs; Office of the General Counsel; and Office of Public Affairs are involved in the implementation of Task Force recommendations and actions. Other agencies involved in implementation include the U.S. Department of Homeland Security (DHS); Federal Emergency Management Agency; Transportation Security Administration (TSA); U.S. Department of State (DOS); U.S. Department of Transportation (DOT); U.S. Department of Defense (DOD); Federal Bureau of Investigation; Central Intelligence Agency; U.S. Environmental Protection Agency (EPA); U.S. Department of Commerce; U.S. Department of Energy (DOE); the National Nuclear Security Administration (NNSA), which is a separately organized agency within DOE; U.S. Department of Justice; U.S. Food and Drug Administration; U.S. Department of Health and Human Services (HHS); Office of Science and Technology Policy (OSTP); and the Office of the Director of National Intelligence (ODNI).

On January 31, 2020, the HHS declared a public health emergency (PHE) for the United States to aid the nation's healthcare community in responding to the Coronavirus Disease 2019 (COVID-19). The COVID-19 PHE resulted in U.S. government agencies maximizing the use of telework for their employees beginning March 2020. While Task Force agencies continue to fulfill their mission and core responsibilities, agency programs and policies have been temporarily re-aligned to focus on minimizing the spread of COVID-19 and to support the healthcare community during these unprecedented times. In the interim, NRC staff has remained in regular contact with the Task Force representatives, and the Task Force (including

its subgroups) have been proceeding with their Task Force related subtask activities whenever possible.

In the sections that follow, implementation strategies are provided for the seven recommendations and actions that remain in an open status. However, those subtasks that have not been discussed during a full Task Force meeting have been noted. The remaining open recommendations and actions include:

- 2006 Actions 9-1 and 10-2;
- 2010 Recommendations 4, 5, and 9; and
- 2014 Recommendations 1 and 3.

Implementation Strategies for Individual Recommendations and Actions

2006 Action 9-1	Greater-than-Class C (GTCC) Waste	Ongoing
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Task: “DOE should continue its ongoing efforts to develop GTCC [Low-Level Radioactive Waste (LLRW)] disposal capability.”

2018 Report Citation and Content: Chapter 2 – Status of the Recovery and Disposition of Radioactive Sealed Sources, states the following (p. 17):

Pursuant to the Low-Level Radioactive Waste Policy Amendments Act, the Federal Government is responsible for disposal of GTCC LLRW including sealed sources that are determined to be waste and classified as GTCC LLRW. DOE is the Federal Government agency responsible for GTCC LLRW disposal. Common examples of GTCC LLRW sources are Cs-137 sources greater than 957 Ci and Am-241, Pu-238, and Pu-239 sources greater than 27 millicuries. In 2006, the Task Force developed a recommendation to facilitate disposal capability for GTCC LLRW—namely, 2006 Action 9-1, which states that “The DOE should continue its ongoing efforts to develop GTCC [LLRW] disposal capability.” In February 2016, DOE issued its “Final Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste” (Final EIS). The Final EIS included a preferred alternative for disposal at generic commercial facilities or at the Waste Isolation Pilot Plant in Carlsbad, New Mexico. This preferred alternative could provide a disposal path for many Category 1 and 2 sealed sources.

In addition to completing the Final EIS, in November 2017, DOE submitted the Report to Congress, describing the alternatives considered in the Final EIS and other related information, as required by Section 631 of the EPA Act. While the Final EIS and Report to Congress do not constitute a final decision on GTCC LLRW disposal, their completion represents a major accomplishment in progress toward establishing a disposal pathway for certain risk-significant radioactive sources. 2006 Action 9-1 will remain ongoing until DOE issues its Record of Decision.

Potential Issues: Legislative and/or regulatory changes may be required for DOE to implement disposal alternatives identified in the Final GTCC LLRW EIS.

Agencies Involved: DOE.

NRC Program Office Action: No specific NRC role.

NRC Resources: This activity is not specifically budgeted; it is part of routine activities. The NRC will participate as appropriate.

2006 Action 9-1		
Tasked Office	Breakdown into Subtasks	Due Date
DOE	Issue Record of Decision.	Estimated 2021

2006 Action 10-2	Regulatory Impediments to the Return of Disused Sources	Ongoing
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Task: “The U.S. Government should encourage suppliers to provide arrangements for the return of disused sources and examine means to reduce regulatory impediments that currently make this option unavailable.”

2018 Report Citation and Content: Chapter 1 – Advances in the Security and Control of Radioactive Sources, states the following (pp. 8-9):

In 2006, the Task Force established a recommendation (2006 Action 10-2) for the U.S. Government to encourage suppliers to provide arrangements for the return of sources once they become disused and to examine means to reduce regulatory impediments that made that option unavailable. At the time, the recommendation focused on return to supplier within the context of imports and exports of radioactive material. While the Task Force has made progress in this area since 2006, further work remains to ensure that strategies have been fully considered to optimize end-of-life management for risk-significant sources in the United States, regardless of the sources’ origins.

As acknowledged in the Executive Summary of this report, the United States was instrumental in finalizing Supplementary Guidance to the [International Atomic Energy Agency] IAEA Code of Conduct on the Safety and Security of Radioactive Sources, “Guidance on the Management of Disused Radioactive Sources.” The United States participated in consultations with other IAEA Member States since October 2014 to draft the guidance and achieve alignment on its contents. The guidance, ultimately endorsed by the IAEA policymaking bodies in September 2017, contains specific, nonlegally binding guidance for IAEA Member States on managing their disused sources. IAEA is encouraging all Member States to make a political commitment in support of, and to act in accordance with, the guidance. Task Force member agencies are currently reviewing the guidance to recommend whether the United States should make such a commitment to the new guidance.

Notwithstanding the outcome of that process, given the continued challenges discussed in Chapter 2 regarding the recovery and disposition of radioactive sources and the importance of effective end-of-life management of radioactive sources, the Task Force members will continue to assess strategies for end-of-life management for risk-significant radioactive sources.

Potential areas of focus include evaluating the feasibility, benefits, and challenges of additional interagency efforts to reduce the number of sources in storage and the number of sources that meet the criteria for recovery through DOE/NNSA’s Off-Site Source Recovery Program (OSRP). Due to continuing efforts in these areas, 2006 Action 10-2 remains ongoing. These efforts will complement actions being taken to facilitate the management and disposition of sealed sources described in Chapter 2.

Potential Issues: In the U.S., the NRC regulations allow for the return of disused sources to their suppliers without considering the sources to be radioactive waste. However, legal and technical frameworks that govern the repatriation of sources vary internationally and in some cases are unable to support source repatriation. In addition, if the return of disused sources to the initial supplier necessitates export to another country, the country of the shipping licensee

must take into consideration the existing regulatory and security infrastructure of the receiving country.

Agencies Involved: DOE/NNSA (co-lead), DOS (co-lead), NRC, and DOT.

NRC Program Office Action: The NRC participated in the U.S. interagency review of the IAEA “Guidance on the Management of Disused Radioactive Sources” issued September 2017. Following this review, in a letter dated March 2, 2020, from Ambassador Jackie Wolcott to Director General Rafael Grossi “the United States of America makes a political commitment to meet the intent of the supplementary Guidance on the Management of Disused Radioactive Sources to the extent consistent with relevant U.S. national laws and regulations, U.S. international obligations and arrangements, and in accordance with our national policies regarding nuclear nonproliferation, nuclear security, and the avoidance of malicious acts using radioactive sources.”

NRC Resources: This activity is not specifically budgeted; license and certificate reviews are part of routine activities.

2006 Action 10-2		
Tasked Office	Breakdown into Subtasks	Due Date
NNSA	Provide the IAEA with a 435-B container, ancillary equipment, and operating tools to facilitate the repatriation of U.S. origin sources back to U.S. suppliers.	Complete
DOS, DOE/NNSA, NRC	Complete U.S. interagency review of the “Guidance on Management of Disused Radioactive Sources,” and if appropriate, submit a letter to the IAEA expressing U.S. intent to work towards implementing the Guidance.	Pending Task Force decision ¹
Task Force	Identify and assess new, innovative actions or strategies appropriate for end-of-life management of risk-significant radioactive sources within the U.S.	2019-2020

¹ The Task Force will discuss a recommendation to close this subtask at its next meeting.

2010 Recommendation 4	Evaluation of Disposal Options for Disused Sources	Ongoing
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Task: “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.”

2018 Report Citation and Content: Chapter 2 – Status of the Recovery and Disposition of Radioactive Sealed Sources, states the following (p. 17):

With the issuance of the 2015 CA BTP and possible amendment of 10 CFR Part 61, the Task Force has made notable progress toward increasing the availability of disposal options for high-activity Class B and C sealed sources. Notwithstanding this progress, 2010 Recommendation 4 remains ongoing, pending completion of further actions in this area, including the rulemaking to amend 10 CFR Part 61, efforts to support implementation of the 2015 CA BTP, and continued efforts to communicate national disposal needs for disused sealed radioactive sources to Compacts and States that host LLRW disposal facilities.

Potential Issues: The Task Force continued to evaluate the impact of NRC’s revised 2015 Concentration Averaging Branch Technical Position (CA BTP) on disposal of high-activity sources to determine if additional actions are warranted to promote increased awareness and/or further usage of the BTP. In 2019, DOE/NNSA sponsored a second pilot demonstration using the CA BTP guidance to dispose of two high-activity Cs-137 sources at the Waste Control Specialists facility in Texas. In addition, DOE/NNSA and NRC conducted outreach in 2019 to regulatory officials in the states of Texas and Washington as well as operators of the commercial low-level waste (LLW) disposal facilities in these states. The purpose of this outreach was to obtain insights regarding CA BTP implementation to date, particularly with respect to disposal of any Category 1 or 2 sources at these facilities. In 2020, DOE/NNSA sponsored a study by the LLW Forum Disused Sources Working Group on CA BTP use and ongoing disposal challenges for high-activity sources. This study found that, while the CA BTP has improved the process for classifying sealed sources for disposal, it has not resulted in a significant increase in sources being disposed. Cost and the limited availability of Type B containers were cited as the main barriers to disposal. While NRC does not recommend additional regulatory actions to promote the usage of the CA BTP, DOE/NNSA continues to assess whether other activities such as completing an assessment that details the economic factors that hinder commercial disposal (e.g., out of compact fees, waste surcharges, Type B container rental costs) could be beneficial in determining any potential actions that may be taken to facilitate commercial disposal.

Agencies Involved: DOE/NNSA (co-lead), NRC (co-lead), Organization of Agreement States (OAS) (co-lead), Conference of Radiation Program Directors, DHS, and EPA.

NRC Program Office Action: The NRC conducted extensive training on how to implement the methods in the CA BTP, including training for NRC regional inspectors and Agreement State inspectors. In offering this training, the NRC staff focused on States that host LLRW disposal facilities.

NRC Resources: This activity is not specifically budgeted; it is part of routine activities. The NRC will participate as appropriate.

2010 Recommendation 4		
Tasked Office	Breakdown into Subtasks	Due Date
NRC	Issue draft regulatory basis for GTCC disposal through means other than deep geologic disposal, including near-surface disposal, and provide this regulatory basis to the Commission for information.	Complete
DOE/NNSA, NRC	Evaluate impact of the CA BTP to determine if additional actions are needed to promote its usage.	Pending Task Force decision ¹
NRC	Risk-inform the regulation for the disposal of LLRW, including sealed sources. Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) Part 61 rulemaking would provide flexibility to better manage disposal capacity consistent with the risks of disposal of LLRW streams.	TBD – decision on publication of final 10 CFR Part 61 “Licensing Requirements for Land Disposal of Radioactive Waste”

¹ The Task Force will discuss a recommendation to close this subtask at its next meeting.

2010 Recommendation 5	Disposal Options for Foreign-Origin Americium-241 Sources	Ongoing
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Task: “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 radioactive material, so that these sources can be recovered now, and increase efforts to investigate options for disposal of these sources.”

2018 Report Citation and Content: Chapter 2 – Status of the Recovery and Disposition of Radioactive Sealed Sources, states the following (p. 18):

Since the publication of the 2014 Task Force report, DOE/NNSA has continued to investigate options for disposal of certain radioactive sealed sources that may be recovered by DOE/NNSA for which there is currently no identified disposal path, including foreign-origin Am-241, Pu-238, and Pu-239 sealed sources. This recommendation will remain ongoing as such options are being investigated and pursued.

Potential Issues: Sealed sources manufactured with foreign-origin americium-241 (Am-241), plutonium-238 (Pu-238), and plutonium-239 (Pu-239) present unique disposal challenges. DOE/NNSA has the authority to recover sealed sources under the OSRP; however, the OSRP is not currently recovering foreign-origin Am-241, Pu-238, and Pu-239 sources without there first being an identified path to disposal. Although disposal options under consideration may include disposal in a future GTCC LLRW disposal facility, there currently are not any commercial or Federal options for disposal.

Agencies Involved: DOE/NNSA.

NRC Program Office Action: No specific NRC role.

NRC Resources: This activity is not specifically budgeted; it is part of routine activities. The NRC will participate as appropriate.

2010 Recommendation 5		
Tasked Office	Breakdown into Subtasks	Due Date
DOE	Investigate options to enable recovery of foreign-origin Am-241, Pu-238, and Pu-239 sealed sources and increase efforts to investigate options for disposal of these sources.	TBD

2010 Recommendation 9	Alternative Technologies Research and Development	Ongoing
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Task: “The Task Force recommends that the U.S. Government enhance support of short-term and long-term research and development for alternative technologies.”

2018 Report Citation and Content: Chapter 3 – Progress in the Area of Alternative Technologies, states the following (p. 20):

Specific actions are planned with respect to 2010 Recommendation 9 over the coming years. For example, DOE/NNSA will conduct additional research, development, and testing during fiscal years 2018, 2019, and 2020 to advance the development of alternative technologies. DOE/NNSA will also perform analyses to identify the remaining technological gaps that prevent the adoption of alternative technologies in specific applications, as appropriate (e.g., industrial radiography and industrial sterilization). Because further efforts are underway to research alternative technologies and address challenges that currently impede the use of alternative technologies in specific applications, 2010 Recommendation 9 remains ongoing.

Potential Issues: The feasibility of replacement technologies will depend primarily upon technical, operational, and financial factors. There may also be challenges related to disposal of the radioactive sealed sources replaced by alternatives.

Agencies Involved: DOE/NNSA (co-lead), DHS (co-lead), EPA, and NRC.

NRC Program Office Action: The NRC supports the continued research into advances in technology and maintains awareness of the various activities, both domestic and international, regarding the conversion to alternative technologies.

NRC Resources: This activity is not specifically budgeted; it is part of routine activities. The NRC will participate as appropriate.

2010 Recommendation 9		
Tasked Office	Breakdown into Subtasks	Due Date
DHS, DOE/NNSA	Publication of “Non-Isotopic Alternative Technologies White Paper” to identify advantages and disadvantages of alternative technologies for the replacement of Category 1 and 2 radioactive sources.	Pending Task Force discussion ¹
DOE/NNSA	Complete existing feasibility studies comparing Cs-137 and cobalt-60 with X-ray technologies in biological research.	December 2021
DOE/NNSA	Perform a study on the impact of different radiation sources on materials that are commonly used in sterilized medical devices.	December 2021

2010 Recommendation 9		
DOE/NNSA	Complete existing Phase 1 and Phase 2 Small Business Innovative Research (SBIR) projects to develop advanced particle accelerators to replace radioactive sources used in well logging and radiotherapy applications. ²	August 2021
DOE/NNSA	Complete existing Phase 3 Small Business Innovative Research projects to develop alternative technologies to Cs-137-based blood and medical research irradiators.	May 2021
DOE/NNSA	Perform an analysis to identify the technology gaps that prevent the adoption of alternative technologies in well logging or industrial sterilization applications.	May 2021
DOE/NNSA	Develop and execute proposal requests for Alternative Technology Research, Development, Test and Evaluation in Fiscal Years 2019, 2020, and 2021; and assess the potential impact of the proposed studies on radioactive source security. ²	October 2021

¹ The Task Force will discuss a recommendation to close this subtask at its next meeting.

² DOE/NNSA conducts research, development, testing, and evaluation of promising alternative technologies through SBIR, university, and national laboratory grants. The Congressionally-mandated SBIR program supports private sector commercialization of technology, and is the program most often utilized by DOE/NNSA for alternative technologies research and development.

2014 Recommendation 1	Assessment of the Adequacy of and Strategies for Preventing and Mitigating Cybersecurity Vulnerabilities	Ongoing
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Task: “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.”

2018 Report Citation and Content: Chapter 1 – Advances in the Security and Control of Radioactive Sources, states the following (pp. 6-7):

In an effort to leverage best practices developed for other facility types and to enhance licensee awareness and protection against cybersecurity vulnerabilities, the NRC is developing a generic communication to relay effective cybersecurity practices for licensees’ consideration.

Additionally, DOE/NNSA is analyzing, from a cybersecurity perspective, those facilities that have received voluntary security enhancements to ensure that cybersecurity vulnerabilities are not introduced to partner sites and to determine appropriate risk-reduction strategies. DOE/NNSA is also analyzing potential vulnerabilities that could be posed by a blended cyber/physical attack on such a facility and best practices that would help sites mitigate potential cyber vulnerabilities. The primary cybersecurity scenarios being considered by DOE/NNSA include a cyberattack overriding a facility’s existing network controls and physical security measures, facilitating a physical attack that could result in theft of radioactive sources; exploitation of digital assets to gain access to a site’s network(s) to carry out a cyberattack (e.g., installing ransomware or stealing proprietary or other sensitive information); and use of social engineering (e.g., phishing e-mails or phony Web pages) to exploit unknowing insiders to gain access to physical security systems, networks, and related subsystems without the need to hack or conduct a cyberattack using cyber tools. The goal of this effort is to promote cybersecurity best practices, which will be informed by the results from the pilot cybersecurity reviews.

Task Force member agencies will continue to coordinate cybersecurity strategies and actions such as the sharing of best practices and training materials, as well as the coordination of outreach efforts with Federal and State partners and stakeholders. In addition, the Task Force will leverage, as appropriate, and not be duplicative of, the efforts associated with ongoing Federal initiatives such as EO 13800. As a result of the many initiatives related to cybersecurity being pursued by Task Force member agencies, 2014 Recommendation 1 remains ongoing, pending completion of the above-described activities.

Potential Issues: No known issues.

Agencies Involved: DOE/NNSA (lead), NRC, OAS, and DHS.

NRC Program Office Action: The NRC continues to monitor and support Federal activities related to ensuring cybersecurity.

NRC Resources: This activity is not specifically budgeted; it is part of routine activities.

2014 Recommendation 1		
Tasked Office	Breakdown into Subtasks	Due Date
NRC/NMSS	Issuance of generic communication related to cybersecurity for materials licensees.	Complete
DOE/NNSA	Map the Office of Radiological Security (ORS) "Cyber Security Best Practice for Users of Radioactive Sources," to be consistent with the National Institute of Standards and Technology (NIST) Cybersecurity Framework. ¹	Complete
DOE/NNSA	Map the ORS potential cyberattack scenarios to the Office of the Director of National Intelligence (ODNI) Common Cyber Threat Framework (CTF). ²	Pending Task Force discussion ³
DOE/NNSA	Identify insider and technical cyberattack scenarios that could be used against ORS voluntary security enhancements installed at licensee facilities and assess how to protect against these cyberattack scenarios.	Pending Task Force discussion ³
DOE/NNSA	Development of ORS cybersecurity training material.	Pending Task Force discussion ³
DOE/NNSA	Develop template for facility security plans that address how to identify, assess, and respond to potential cyberattack scenarios.	Pending Task Force discussion ³

¹ NIST's Cybersecurity Framework's provides a consistent methodology to identify, protect, detect, respond, and recover from cyberattacks. This mapping is intended to aid to licensees when applying the NIST Cybersecurity Framework to assess the risk from their cybersecurity activities.

² ODNI's Common CTF provides a common language for describing and communicating information about cyber threat activity including scope and magnitude. This mapping is intended to aid licensees when sharing cybersecurity information and threats by using a common reference framework established by ODNI.

³ The Task Force will discuss a recommendation to close this subtask at its next meeting.

2014 Recommendation 3	Alternative Technologies	Ongoing
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Task: “Task Force recommends that the U.S. Government, as appropriate,¹ 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.”

2018 Report Citation and Content: Chapter 3 – Progress in the Area of Alternative Technologies, states the following (p. 24):

2014 Recommendation 3 remains ongoing given the continued focus that will be placed on implementation of DOE/NNSA’s [Cesium Irradiator Replacement Project] CIRP in the coming years and the fact that efforts are currently underway by Task Force member agencies to: (1) ensure full consideration of alternative technologies in their agency activities, and (2) facilitate broad awareness and information sharing related to alternative technologies.

The Task Force agreed that an inclusive partnership among Federal and State agencies, manufacturers, industry, end users, standard-setting bodies, and technical consultants is important for the evaluation, demonstration, regulation, and promotion of innovative alternative technologies. Thus, Task Force member agencies will continue to pursue initiatives to share information related to alternative technologies with private and public partners. These efforts may include educational workshops to facilitate common understanding of alternative technologies, along with the development of a publicly available online repository of information on alternative technologies (e.g., capabilities, limitations) across applications.

Potential Issues: No known issues.

Agencies Involved: DOE/NNSA (lead), NRC, HHS, DHS, EPA, DOD, DOS, and OSTP.

NRC Program Office Action: NMSS continues to participate in the Interagency Working Group on Alternatives to High-Activity Radioactive Sources, which is co-chaired by DOE/NNSA and HHS/National Institutes of Health (NIH), to further identify and support Federal efforts related to alternative technologies.

NRC Resources: This activity is not specifically budgeted; it is part of routine activities. The NRC will participate as appropriate.

¹ 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 for new technologies.

2014 Recommendation 3		
Tasked Office	Breakdown into Subtasks	Due Date
DOE/NNSA	Continue to implement voluntary program to provide Federal incentives for the replacement of Cs-137 irradiators with alternative, non-radioactive source-based devices. Per the FY19, National Defense Authorization Act, support the voluntary replacement of all U.S. Cs-137 blood irradiators by December 2027.	December 2027
DOE, DHS, DOD, HHS/NIH	In the case of Federal agencies procuring Category 1 and 2 sealed sources and devices or non-radioactive alternatives, provide information on their decision-making process between available source-based and alternative technology to other Federal agencies.	Ongoing
DOE, DOE/NNSA, HHS, DHS, DOD, DOS	In the case of Federal research grants that require procurement of Category 1 and 2 sealed sources and devices or non-radioactive alternatives, provide documentation of their assessment of available source-based and alternative technology to Federal agencies.	Ongoing