

Radiation Source Protection and Security Task Force, Recommendation 2

Background

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 Interagency Radiation Source Protection and Security 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 (RDD).

The NRC Office of Federal and State Materials and Environmental Management Programs (FSME) on the behalf of the Chairman coordinates the efforts of this interagency task force. Additional NRC offices including Nuclear Material Safety and Safeguards (NMSS), Nuclear Security and Incident Response (NSIR), International Programs (IP), Office of the General Counsel (OGC), and Office of Public Affairs (OPA) are involved in the development and implementation of the recommendations and actions. Other agencies involved in development and implementation are the Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA), Transportation Security Administration (TSA), Department of State (DOS), Department of Transportation (DOT), Department of Defense (DOD), Federal Bureau of Investigations (FBI), Central Intelligence Agency (CIA), Environmental Protection Agency (EPA), Department of Commerce (DOC), Department of Energy (DOE), Department of Justice, Food and Drug Administration, Department of Health and Human Services (HHS), and Office of the Director of National Intelligence (ODNI).

This Task Force evaluates and makes recommendations, which can include possible regulatory and legislative changes, on several specific topics related to the protection and security of radiation sources. For the purposes of the Task Force, the EPAct defines a radiation source as a "Category 1 Source or a Category 2 Source as defined in the Code of Conduct and any other material that poses a threat such that the material is subject to this section, as determined by the Commission, by regulation, other than spent nuclear fuel and special nuclear material."¹ The Task Force submits its reports to Congress and the President; it submitted its first report on August 15, 2006. The Task Force will submit subsequent reports not less than once every four years. The Task Force submitted its second report on August 11, 2010. The first report contained 10 recommendations and 18 actions and the second report contained 11 new recommendations that address the security and control of radioactive sources.

As part of the efforts to prepare the 2006 report, the Task Force reviewed available information on lists of radioactive sources that Government agencies have established for security or safety-related purposes. The Task Force concluded that agencies were protecting the appropriate radioactive sources (i.e., those sources requiring security based on the potential attractiveness of the source to terrorists and the extent of the threat to public health and safety). At the time, the Task Force did not recommend that additional radionuclides be added to the list of risk-significant sources, but encouraged the U.S. Government to continue the efforts underway internationally to better align transportation guidance with the Code of Conduct. Overall the programs appropriately address the sources consistent with the Code of Conduct.

¹ See 42 U.S.C. § 2210h.

The Code of Conduct serves as an appropriate framework for considering which sources may warrant additional protection. The Code of Conduct considers that a country should “define its domestic threat, and assess its vulnerability with respect to this threat for the variety of sources used within its territory, based on the potential for loss of control and malicious acts involving one or more radioactive source.” Since the threat environment is not static, but is continually changing, the Task Force recommended that the U.S. Government periodically reevaluate the list of radioactive sources that may warrant additional security and protection. This reevaluation should be coordinated within the Federal family and can be performed as part of the Task Force activities every four years. Therefore the report included 2006 Recommendation 3-1, which recommends that the U.S. Government periodically reevaluate the list of radioactive sources that warrant enhanced security and protection.

In preparation for the 2010 report, a subgroup of this Radiation Source Protection and Security Task Force reevaluated the list of radioactive sources and the Task Force endorsed its conclusion that the Code of Conduct Category 1 and 2 radionuclides and threshold values could result in a significant radiation exposure device (RED) or RDD event and therefore warrant enhanced security and protection. The Task Force also endorsed the identification of seven additional radionuclides that may be of concern when aggregated; however, because they are infrequently shipped or possessed in quantities likely to cause a significant RDD event, at the time, the Task Force proposed no recommendation about these radionuclides. Since the reevaluation was based on economic consequences and the Task Force did not evaluate whether additional security and protection were needed to protect against contamination and resultant economic consequences, the Task Force and subsequently the Commission approved Recommendation 2 of the 2010 Task Force report. That recommendation states that “U.S. Government agencies should re-evaluate their protection and mitigation strategies to protect against significant RED or RDD attack using both potential severe immediate or short-term exposure and contamination consequences to public health, safety, and the environment” Specifically, the report, proposed that U.S. Government agencies should reevaluate their current strategies using Task Forces assumptions and parameters that included economic consequences (or economic loss). The evaluation of economic consequences is consistent with the National Infrastructure Protection Plan (NIPP) framework that assesses risk as a function of consequences, vulnerability, and threat.

Past Commission Papers and Decisions

The economic consequences of an RDD are primarily driven by the costs to clean up the contaminated area. With regard to physical protection of radioactive sources (i.e. Category 1 and 2 sources), NRC uses a Security Assessment (SA) decision-making framework methodology as a tool for determining the need for additional security measures and currently it is based on deterministic effects (prompt fatalities). The SA framework methodology is discussed in SECY-04-0222, “Decision-making Framework for Materials and Research and Test Reactor Vulnerability Assessments.” Economic consequences from an RDD or RED were not considered in the decision making framework.

A summary of the recent Commission papers and decisions with respect to the use of existing economic consequence modeling processes for an RDD is briefly described below.

- SRM-SECY-04-0222, the Commission directed the staff to "...make a recommendation to the Commission if the existing NRC consequence criteria or methodologies for future vulnerability assessments should be modified."
- SECY-06-0045, "Results of Implementation of the Decisionmaking Framework for Materials and Research and Test Reactor Security Assessments," the staff's commits to "...provide feedback and appropriate recommendations to the Commission regarding the use of alternative consequence criteria" in SECY-06-0045.
- SRM-SECY-09-0051, "Evaluation of Radiological Consequence Models and Codes," the Commission directed NSIR staff to provide a policy paper on how guidance from the EPA Protective Action Guide (PAG) Manual could be incorporated into an economic consequence model. The staff explained how this could be done and in fact, was completed initially by DOE/NNSA and then DHS/DNDO as part of HSPD-18, a required bi-annual DHS risk assessment.
- SECY-10-0080, "Economic Consequence Modeling for Postulated Radiological Events," NSIR staff informed the Commission of the process by which PAGs had been incorporated into an interagency DHS' Radiological/Nuclear Terrorism Risk Assessment (RNTRA) economic consequence assessment model for potential radiological events. As explained in SECY-10-0080, DHS' RNTRA applied a modeling structure that provides consistent estimates of terrorism economic risk across CBRN threats. This approach also ensured that the assessment could be used as a comprehensive planning tool (if needed) by other Federal agencies, without duplicative federal efforts. The SECY also sought the Commission's agreement with the staff's recommendation to support the use of DHS processes and models, rather than developing its own economic consequence modeling processes.
- SRM-SECY-10-0080 the Commission approved the staff's recommendation to support the use of DHS processes and models, rather than developing its own economic consequence modeling processes. The Commission directed that the staff continue to support the Federal interagency (DHS) process regarding risk assessment and to limit its expenditure of resources (regarding economic consequence research and assessments) to those that support participation in the interagency working groups by the agency Senior Level Service staff already supporting those activities. The SRM also requested a TA briefing to be conducted upon completion of the DHS RNTRA which was conducted in May 2012.

Staff Efforts Regarding Recommendation 2 of the Radiation Source Protection and Security Task Force

The 2010 Task Force Recommendation 2 recommends that if agencies choose to implement the recommendation, then they should consider contamination consequences when reevaluating their protection and mitigation strategies currently in place. As stated previously, NRC uses an SA decision-making framework methodology (SECY-04-0222) as a tool for determining the need for additional security measures and currently it is based on deterministic effects. Considering contamination/economic consequences would constitute a significant change in the underpinning assumptions used by the NRC in its current SA framework.

Additional direction to the staff would be needed in order to consider relooking at the SA framework based on alternative (economic consequences or property damage) consequences.

FSME and NSIR have initiated an informal working group to conduct a high level assessment of whether consideration of economic consequences has an impact on the current security measures in place (via the Security Orders). The regulatory basis for 10 CFR Part 37 is to protect against prompt fatalities. If economic consequences are to be considered, then other scenarios beyond the original prompt fatality scenarios would also need to be evaluated. Consideration of these other consequences could prompt the need for additional requirements beyond those approved in 10 CFR Part 37.

This group's efforts commenced February 2012. Conclusions drawn from this group may be presented in the next Radiation Source Protection and Security Task Force report, as required by the Energy Policy Act of 2005, which is due to the President and Congress in August 2014.