

Recent Activities and Initiatives Related to Enhancing the Security of Radioactive Materials

Ernesto Quiñones
Office of Nuclear Material Safety and Safeguards

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Agenda

- Background
 - Source Management and Protection Functions
 - Basis for enhanced security
 - Evolution of source security
- Recent activities:
 - 10 CFR Part 37 Program Review
 - Re-evaluation of Category 3 Source Security and Accountability

Background

- **Source Management and Protection Functions**
 - Programmatic and technical leadership and support for the safety, security, and control of radioactive materials
 - Oversight of the development and nationwide implementation and integration of various initiatives to enhance source security
 - Management and continuous improvement of the National Source Tracking System, Web-Based Licensing System, and License Verification System

Background (cont'd)

- Basis for enhanced security
 - Endorsement of the International Atomic Energy Agency (IAEA) *Code of Conduct on the Safety and Security of Radioactive Sources*
 - The *Code of Conduct* identified 16 radionuclides and thresholds warranting additional protection. Thresholds are divided into categories (i.e., Category 1-5) of decreasing activity.

Background (cont'd)

- Category 1 quantity – would likely cause permanent injury in more than a few minutes; unshielded material would be fatal in few minutes to an hour (examples – irradiators, radiation teletherapy)
- Category 2 quantity – could cause permanent injury in minutes to hours; unshielded material could be fatal in hours to days (example – radiography devices)
- Category 3 quantity – could cause permanent injury in hours; unshielded material could possibly, although unlikely, be fatal in a period of days to weeks (examples – high dose rate brachytherapy, well-logging devices)

Background (cont'd)

- Evolution of Source Security:
 - 10 CFR Part 20
 - Post-September 11, 2001 Security Orders
 - 10 CFR Part 37
 - Government Accountability Office (GAO) audits and investigations (2007, 2012, 2014, 2016)



Background (cont'd)

- 10 CFR Part 37 objective:
 - To provide reasonable assurance of preventing the theft or diversion of Category 1 and Category 2 quantities of radioactive material
- Part 37 focus areas:
 - Access authorization
 - Physical security while in storage
 - Physical security while in transit

Recent Activities

- **10 CFR Part 37 Program Review**
 - Congressional mandate: Section 403, Public Law 113-25, Appropriations Act, 2015, directed NRC to assess the effectiveness of Part 37 to protect high-risk radioactive material based on the first 2 years of inspection results and event reports
- **Re-evaluation of Category 3 Source Security and Accountability**

10 CFR Part 37 Program Review

- Review areas:
 - Inspection results - first 2 years of rule implementation
 - Nuclear Material Events Database & Security Incident Database
 - Trustworthiness and reliability (T&R) program
 - Aggregation definition as it applies to well-logging sources
 - Adequacy of NRC and Agreement State inspector training
 - Enhanced tracking and accounting of radioactive sources
 - Regulatory comparison with international standards and guidance
 - Independent assessment by three consultants
 - Stakeholder outreach

10 CFR Part 37 Program Review (cont'd)

- **Results:**
 - Inspection results - first 2 years of rule implementation
 - Majority of violations cited were the result of inadequate understanding of certain rule requirements, especially where rule requirements differed from previously in force Orders
 - Nuclear Material Events Database & Security Incident Database
 - No thefts of Category 1 materials and six thefts of Category 2 materials since May 2006 (security Orders went into effect)
 - The theft events demonstrate that crimes of opportunity can occur when sources are not secured properly
 - Trustworthiness and reliability program
 - Thus far, T&R process provides reasonable assurance against insider threats
 - Aggregation definition as it applies to well-logging sources
 - Adequate protection is provided for well-logging sources in storage

10 CFR Part 37 Program Review (cont'd)

- **Results:**
 - Adequacy of NRC and Agreement State inspector training
 - Materials security training has improved since its inception
 - Enhanced tracking and accounting of radioactive sources
 - The current mechanisms for tracking and accounting of sources are effective
 - Regulatory comparison with international standards and guidance
 - Existing requirements provide appropriate level of security for risk-significant sources
 - Independent assessment by three consultants
 - Made multiple recommendations that were deliberated by the staff and considered for enhancements to the rule and its supporting guidance
 - 10 CFR Part 37 is a robust regulation

10 CFR Part 37 Program Review (cont'd)

- Conclusion:
 - 10 CFR Part 37 requirements are effective to protect Category 1 and 2 radioactive material
- Specific areas were identified to further enhance the clarity of the regulation and licensees' implementation of security measures
 - Revisions to the rule
 - Revision of guidance
 - Enhanced communication efforts with licensees
- Report to Congress -
<https://www.nrc.gov/docs/ML1634/ML16347A398.pdf>



Category 3 Source Security and Accountability Re-evaluation

- GAO-16-330 Licensing Audit and Investigation
 - Recommendations:
 - Include Category 3 sources in NSTS
 - Require verification of licenses through the regulator before transfers of Category 3 materials
 - Require onsite security review for all unknown applicants of licenses before taking possession of Category 3 materials
 - NRC response to GAO-16-330
 - Short and longer term actions performed
 - Self-assessments
 - Communication to Agreement States
 - Refresher training
 - Formation of two NRC/Agreement State working groups (see <https://www.nrc.gov/docs/ML1634/ML16344A109.pdf> for results of WG activities)

Category 3 Source Security and Accountability Re-evaluation (cont'd)

- SRM-COMJMB-16-0001 – Staff Re-evaluation of Category 3 Source Accountability (October 2016)
 - Evaluate whether it is necessary to revise regulations or processes governing source protection and accountability to continue to ensure adequate protection of public health and safety
- Category 3 Source Security and Accountability Working Group (C3WG) principal activities:
 - Expand on analysis and recommendations developed by previous working groups in response to GAO-16-330
 - Perform a vulnerability assessment
 - Perform a regulatory impact/cost benefit analysis
 - Solicit feedback from affected communities

Category 3 Source Security and Accountability Re-evaluation (cont'd)

- **Concerns to address:**
 1. The ability to obtain a valid license using a fictitious company or by providing false information (pre-licensing)
 2. The ability to alter a valid license to obtain more or different radioactive material than authorized or to counterfeit a license to obtain radioactive materials illicitly (license verification)
 3. The ability to accumulate or aggregate Category 3 sources to a Category 2 quantity of radioactive material requiring enhanced security (NSTS, Part 37)
 4. The limited accountability, lack of pre-licensing evaluations, and lack of routine oversight of Category 3 sources contained within generally licensed devices

Category 3 Source Security and Accountability Re-evaluation (cont'd)

- **Conclusions:**
 1. The ability to obtain a valid license using a fictitious company or by providing false information (pre-licensing)
 - Enhancements to guidance
 - Require safety/security equipment to be in place for all new unknown applicants prior to issuing a license (rulemaking)
 2. The ability to alter a valid license to obtain more or different radioactive material than authorized or to counterfeit a license to obtain radioactive materials illicitly (license verification)
 - No change to current requirements
 - Update outdated license verification requirements (rulemaking)
 - Continue to encourage Agreement State adoption of WBL

Category 3 Source Security and Accountability Re-evaluation (cont'd)

3. The ability to accumulate or aggregate Category 3 sources to a Category 2 quantity of radioactive material requiring enhanced security (NSTS, Part 37)
 - No change to current requirements

4. The limited accountability, lack of pre-licensing evaluations, and lack of routine oversight of Category 3 sources contained within generally licensed devices
 - No change in current requirements due to security and accountability
 - Conduct re-evaluation to ensure continued protection of health and safety in current environment

Category 3 Source Security and Accountability Re-evaluation (cont'd)

- **Commitments**
 - Update integrated rulemaking plan outlined in SECY-17-0025 to include any Commission recommendations
 - Conduct additional technical evaluation to verify that the existing General Licensing program continues to provide protection of public health and safety in the current environment
 - If rulemaking needed, include with integrated rulemaking plan

- **Recommendations:**
 1. Approve potential rulemaking to amend 10 CFR Parts 30, 40, and 70 to require safety and security equipment to be in place before granting a license for an unknown entity

Category 3 Source Security and Accountability Re-evaluation (cont'd)

Recommendations, cont'd.

2. Not direct the NRC staff to amend regulations to:

- Require license verification through regulatory authorities for transfers of Category 3 quantities of radioactive material;
- Require inclusion of Category 3 sources in NSTS;
- Impose security requirements to prevent aggregation of Category 3 sources to a Category 2 quantity of radioactive material;
- Limit the quantity of byproduct material in a generally licensed device to ensure the security of radioactive materials.

3. Approve potential rulemaking to amend 10 CFR Parts 30, 40, and 70 to clarify license verification methods for transfers involving quantities of radioactive material below Category 2

Category 3 Source Security and Accountability Re-evaluation (cont'd)

- **Additional Information on Category 3:**
 - Evaluation and results documented in SECY-17-0083 (see <https://www.nrc.gov/docs/ML1718/ML17188A249.html>)
 - Website: <https://www.nrc.gov/security/byproduct/category-3-source-security-accountability-reevaluation.html>
 - Contacts:
 - Duncan White: duncan.white@nrc.gov; 301-415-2598
 - Irene Wu: irene.wu@nrc.gov; 301-415-1951

Questions

