

SAFETY EVALUATION REPORT

DOCKET NO: 70-398
LICENSE NO: SNM-362

LICENSEE: U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

SUBJECT: LICENSE AMENDMENT REQUEST REGARDING POSSESSION LIMIT
ADJUSTMENTS (COST ACTIVITY CODE L33436)

BACKGROUND

Special Nuclear material (SNM) License SNM-362 was first issued in 1960 by the Atomic Energy Commission to the National Bureau of Standards (renamed as the National Institute of Standards and Technology [NIST] in 1988). NIST is a federal agency within the Department of Commerce. NIST uses licensed materials for research, development, calibration, and testing activities. Under SNM-362, NIST develops, maintains, and disseminates national standards for ionizing radiation and radioactivity to support health care, industry, and homeland security at its Gaithersburg, Maryland site.

SNM-362 was last renewed in September 2013 (Agencywide Documents Access and Management System [ADAMS] Accession Number ML13207A206) and the last amendment was approved February 23, 2017 (ADAMS ML17033A306) to revise the training and experience requirements for the Radiation Safety Officer position. This License Amendment Request was submitted on January 5, 2017 (ADAMS ML17012A042), requesting to adjust the possession limits for license SNM-362. Specifically, the amendment requests to adjust amounts of radioactive material authorized for possession under the license.

REGULATORY REQUIREMENTS

Title 10 of the *Code of Federal Regulations* (10 CFR) Paragraph 70.22(a)(4) states that the application shall contain the name, amount, and specifications (including the chemical and physical form) of the SNM the applicant proposes to possess.

10 CFR 70.22(a)(6) states each application for a license shall contain the technical qualifications, including training and experience of the applicant and members of his staff to engage in the proposed activities in accordance with the regulations in this chapter.

PROPOSED CHANGES

NIST proposes to (1) add line items for new sealed curium sources, (2) increase the possession limits for three line items in the SNM-362 license, and (3) reduce the possession limit for plutonium sealed sources. The proposed changes to the possession limits are requested to accommodate scientific research needs in support of the NIST mission.

The following table identifies the material changes requested:

RADIONUCLIDE	FORM *	LICENSE REFERENCE	CURRENT LIMIT **	CHANGE	REQUESTED POSSESSION LIMIT **
AM-241	Any form	6.AA.		Increase	
Depleted Uranium	Any insoluble form except UF6	6.E.2		Increase	
Natural Thorium	Any form	6.O		Increase	
Plutonium	Sealed Sources	6.I		Reduction	
Curium-248 (Cm-248)	Sealed Sources	NEW		Addition	
Curium-244 (Cm-244)	Sealed Sources	NEW		Addition	

* For all increases to materials already possessed, there is no change in form requested.

** Units defined – Ci (Curie), mCi (milliCurie), kg (kilogram), g (gram)

DISCUSSION

NIST is requesting the addition of two line items to allow the possession of curium sealed sources (Cm-244 and Cm-248). These materials would be used by NIST scientists to measure their neutron flux as potential neutron standards. Increases to the possession limits for depleted uranium (license section 6.E.2.), americium 241 (license section 6.AA), and natural thorium (license section 6.O.) are needed to accommodate additional sources required by NIST operational needs. The decrease in sealed plutonium reflects a reduction in the current inventory of sealed plutonium (license section 6.I.).

The changes to materials on the license reflect changes in operational needs and work being conducted at NIST. New or proposed work involving radioactive materials will be reviewed by the Ionizing Radiation Safety Committee (IRSC). The IRSC provides oversight of the operations and activities of NIST's radiation safety programs. One of the primary responsibilities of the IRSC is approving requests for the acquisition and use, or changes in use, of radioactive material, Source Users, Source Custodian, and storage locations (i.e., Radiation Facilities). Another significant role of the IRSC is approving proposed program changes and revisions to procedures that are within the scope of the license approved by the U.S. Nuclear Regulatory Commission (NRC), without amendment of the license. Any such changes or revisions shall be documented and shall state the reason for the change and summarize the radiation safety matters that were considered prior to approval of the change.

FINDINGS

The NIST staff is required to submit and obtain approval for proposed uses of radioactive material. Only trained and authorized individuals may use the material in accordance with written operating instructions. A formal hazards assessment is required prior to new uses of radioactive material. Included in the assessment are consideration of dose rates to individuals

as well as the public, potential contamination and effluent releases. Concepts of As Low As Reasonably Achievable, such as use of shielding, ventilation controls, and contamination controls are evaluated.

The radiation safety office and the Radiation Safety Officer have evaluated the proposed changes and determined that the existing controls under safety evaluations of proposed uses approved by the IRSC are adequate to ensure the safe and compliant use of the materials requested. Other pertinent regulatory requirements of the license, such as inventory, leak testing, accountability, and storage are all applicable to these added materials.

ENVIRONMENTAL REVIEW

According to 10 CFR 51.22(c)(11), the issuance of amendments to licenses for fuel cycle plants which are administrative, organizational, or procedural in nature—or which result in a change in process operations or equipment—are eligible for categorical exclusion provided that:

- (i) There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.
- (ii) There is no significant increase in individual or cumulative occupational radiation exposure.
- (iii) There is no significant construction impact.
- (iv) There is no significant increase in the potential for or consequences from radiological accidents.

The changes in this amendment do not affect the scope or nature of the licensed activity and will not result in a significant change in the types or amounts of effluents released offsite. There will not be any significant increase in individual or cumulative occupational radiation exposure, and there will not be any significant increase in the potential or consequences from radiological accidents. There is no construction associated with these changes, so there will not be any impact from construction.

CONCLUSION

The NRC staff reviewed the licensee's amendment request as submitted on January 5, 2017. The NRC staff concludes that the information and regulatory commitments provided by NIST in their license application provide reasonable assurance of adequate safety of the proposed operations and will not have an adverse impact on the public health and safety, the common defense and security, or the environment; and meet the applicable requirements in 10 CFR Parts 19, 20, 36, 51, 70, 73, and 74.

RECOMMENDATION

The NRC staff recommends that the amendment request be approved.

PRINCIPAL CONTRIBUTOR

Tyrone D. Naquin, NMSS