

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS  
WASHINGTON, D.C. 20555-0001

March 26, 2001

NRC INFORMATION NOTICE 2001-01: THE IMPORTANCE OF ACCURATE INVENTORY CONTROLS TO PREVENT THE UNAUTHORIZED POSSESSION OF RADIOACTIVE MATERIAL

Addressees:

All material licensees.

Purpose:

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) to alert addressees to potential hazards associated with the failure to maintain accurate inventories of licensed material. The circumstances described below involve the failures to maintain accurate inventories of licensed material, which led to unauthorized possession of several sealed and/or unsealed sources of radiation. In one case, an unsealed source created a significant contamination problem at a small university. The contamination apparently had been present for several years.

It is expected that recipients will review this information for applicability to their operations and consider actions, as appropriate. However, information contained in this IN does not constitute new NRC requirements; therefore, no specific action nor written response is required.

Description of Circumstances:

NRC recently performed a routine inspection of a small university authorized to possess and use millicurie (megabecquerel) quantities of phosphorous-32, sulfur-35, carbon-14, hydrogen-3, and iodine-125, and a 20-millicurie (740 megabecquerel) strontium-90 sealed source. During the inspection, a locked safe labeled as containing radioactive materials was identified. When the safe was opened, several radionuclides were found, including a small empty vial labeled as 5 millicuries (185 megabecquerel) of americium-241, and two americium-241 sealed sources.

Surveys of the safe and the floor around the safe identified removable contamination. Additional contamination was identified in an unrestricted area outside the room where the safe was stored. The licensee reported the contamination to NRC and indicated that it suspected the radionuclide to be americium-241. Using alpha detection equipment, extensive contamination was identified in several areas outside the storage room and in a classroom on the second floor. Using gamma spectroscopy, NRC confirmed the radionuclide to be americium-241. The university has had to expend significant resources in assessing and remediating contaminated areas. Preliminary assessments of personnel exposure indicate that at least two individuals have had intakes of americium-241.

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The inspection identified that 5 millicuries (175 megabecquerel) of unsealed americium-241 had been authorized on the university's license in 1970. The material had been placed in storage and not used since 1980. University staff apparently failed to maintain an accurate inventory of the licensed material, and University management was not aware it was still in possession of the material in the safe. In 1991 a license amendment removed the americium-241 and several other radionuclides from the license.

A separate inspection at a different university also identified radioactive material that was not identified on current inventories, and was not authorized on the university's NRC license. In this case, the licensee had maintained physical control of the material and no contamination was identified.

Discussion:

In the cases discussed here, NRC believes that the licensees relied on specific individuals involved with using radioactive material as the basis for source accountability. The failure to maintain accurate accountability of the material led to removal of authority to possess the material from subsequent licenses. Possession of unauthorized material is a violation of NRC regulations. Loss of control can result in significant accidental radiation exposure to occupational workers and members of the public, as well as affect public confidence in licensee programs.

Licensees are required to perform an annual review of their radiation safety programs (10 CFR 20.1101). Such a review should include an inventory of radioactive material to verify that possession (both types and quantities) of material is as authorized on the NRC license. Maintaining accurate running inventories of licensed material is always a prudent practice, and is required by many types of NRC licenses.

This IN requires no specific action nor written response. If you have any questions about the information in this notice, please contact the technical contact below or the appropriate regional office.

**/RA/**

Donald A. Cool, Director  
Division of Industrial and  
Medical Nuclear Safety  
Office of Nuclear Material Safety  
and Safeguards

Technical Contact: Kevin G. Null, Region III  
630-829-9854  
E-mail: kgn@nrc.gov

Attachments:

1. List of recently issued NMSS Information Notices
2. List of recently issued NRC Information Notices

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Discussion:

In the cases discussed here, NRC believes that the licensees relied too much on specific individuals involved with using radioactive material as the basis for source accountability. The failure to maintain accurate accountability of the material led to removal of authority to possess the material from subsequent licenses. Possession of unauthorized material is a violation of NRC regulations. Loss of control can result in significant accidental radiation exposure to occupational workers and members of the public, as well as affect public confidence in licensee programs.

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LIST OF RECENTLY ISSUED  
 NMSS INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
2000-22	Medical Misadministrations Caused by Human Errors Involving Gamma Stereotactic Radiosurgery (GAMMA KNIFE)	12/18/00	All medical use licensees authorized to conduct gamma stereotactic radiosurgery treatments
2000-19	Implementation of Human Use Research Protocols Involving U.S. Nuclear Regulatory Commission Regulated Materials	12/05/2000	All medical use licensees
2000-18	Substandard Material Supplied by Chicago Bullet Proof Systems	11/29/2000	All 10 CFR Part 50 licensees and applicants All category 1 fuel facilities All 10 CFR Part 72 licensees and applicants
2000-16	Potential Hazards Due to Volatilization of Radionuclides	10/5/2000	All licensees that process unsealed byproduct material
2000-15	Recent Events Resulting in Whole Body Exposures Exceeding Regulatory Limits	9/29/2000	All radiography licensees
2000-12	Potential Degradation of Firefighter Primary Protective Garments	9/21/2000	All holders of licenses for nuclear power, research, and test reactors and fuel cycle facilities
2000-11	Licensee Responsibility for Quality Assurance Oversight of Contractor Activities Regarding Fabrication and Use of Spent Fuel Storage Cask Systems	8/7/2000	All U.S. NRC 10 CFR Part 50 and Part 72 licensees, and Part 72 Certificate of Compliance holders
2000-10	Recent Events Resulting in Extremity Exposures Exceeding Regulatory Limits	7/18/2000	All material licensees who prepare or use unsealed radioactive materials, radio-pharmaceuticals, or sealed sources for medical use or for research and development

LIST OF RECENTLY ISSUED  
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
IN 2000-17, Supp. 2	Crack in Weld Area of Reactor Coolant System Hot Leg Piping at V.C. Summer	02/28/01	All holders of operating licenses for nuclear power reactors except those who has ceased operations and have certified that fuel has permanently removed from reactor vessel
2000-22	Medical Misadministrations Caused by Human Errors Involving Gamma Stereotactic Radiosurgery (GAMMA KNIFE)	12/18/00	All medical use licensees authorized to conduct gamma stereotactic radiosurgery treatments
2000-21	Detached Check Valve Disc not Detected by Use of Acoustic and Magnetic Nonintrusive Test Techniques	12/15/00	All holders of OLs for nuclear power reactors except those who have ceased operations and have certified that fuel has been permanently removed from the reactor
2000-20	Potential Loss of Redundant Safety Related Equipment Due to Lack of a High-Energy Line Break Barrier	12/11/2000	All holders of operating licenses or construction permits for nuclear power reactors
2000-19	Implementation of Human Use Research Protocols Involving U.S. Nuclear Regulatory Commission Regulated Materials	12/05/2000	All medical use licensees
2000-18	Substandard Material Supplied by Chicago Bullet Proof Systems	11/29/2000	All 10 CFR Part 50 licensees and applicants. All category 1 fuel facilities. All 10 CFR Part 72 licensees and applicants
2000-17 S1	Crack In Weld Area of Reactor Coolant System Hot Leg Piping At V.C. Summer	11/16/2000	All holders of OLs for nuclear power reactors except those who have ceased operations and have certified that fuel has been permanently removed from the reactor vessel