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[Home](#)
[Who We Are](#)
[What We Do](#)
[Nuclear  
Reactors](#)
[Nuclear  
Materials](#)
[Radioactive  
Waste](#)
[Facility Info  
Finder](#)
[Public  
Involvement](#)
[Home](#) > [Electronic Reading Room](#) > [Document Collections](#) > [General Communications](#) > [Information Notices](#) > [1999](#) > IN 9

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

December 21, 1999

### NRC INFORMATION NOTICE 99-33: MANAGEMENT OF WASTES CONTAMINATED WITH RADIOACTIVE MATERIALS

- [Addressees:](#)
- [Purpose:](#)
- [Description of Circumstances:](#)
  - [Case 1: Incident involving a medical waste incinerator](#)
  - [Case 2: Incident involving a landfill](#)
  - [Case 3: Incident involving housekeeping](#)
  - [Case 4: Incident involving a transfer station](#)
  - [Case 5: Incident involving a transfer station](#)
- [Discussion:](#)

#### Addressees:

All medical licensees.

#### Purpose:

The U.S. Nuclear Regulatory Commission ([NRC](#)) is issuing this information notice to remind medical use licensees to carefully monitor all waste that may be contaminated with radioactive materials. Waste management facilities not authorized to receive licensable materials are finding wastes contaminated with detectable levels of radioactive materials in waste shipments from hospitals and other medical facilities. It is expected that recipients will review this information for applicability to their facilities and consider actions, as appropriate, to address these issues. However, suggestions contained in this information notice are not new NRC requirements; therefore no specific action nor written response is required.

#### Description of Circumstances:

In January 1991, NRC issued [Information Notice 91-03](#), entitled "Management of Wastes Contaminated with Radioactive Materials ("Red Bag" Waste and Ordinary Trash)". Since the 1991 information notice, many operators of medical waste incinerators and landfills have been monitoring waste shipments for radioactivity. In several cases, waste shipments from hospitals have contained radioactive materials, with radiation levels that exceeded the waste disposal operators' preset detection levels. In some cases, operators of landfills or medical waste incinerators have rejected the shipments and returned them to the generators. In general, operators of landfills and medical waste incinerators are not authorized to receive or manage radioactive waste.

#### Case 1: Incident involving a medical waste incinerator

A representative from the Connecticut Department of Environmental Protection (CTDEP) notified the NRC

Region I staff that radioactive material had been detected in a dumpster at an incinerator facility. The personnel at the incinerator notified CTDEP that waste in the dumpster, measuring 20 milliroentgen per hour, had tripped their radiation monitors. CTDEP personnel determined that the radioactive waste was localized in a small area within the dumpster and identified the radioactive material as iodine-131. CTDEP personnel tracked the source of the waste to an NRC medical licensee. Because all sources were accounted for during the previous week, the licensee believed that the material was patient generated and not therapeutic. After being contacted by NRC Region I, the licensee segregated the waste from the dumpster and brought the radioactive material back to its facility.

### **Case 2: Incident involving a landfill**

Browning Ferris Industries (BFI) received a load of solid waste from a hospital in New York City and took it to a transfer station in Brooklyn, NY. The waste was then moved to a landfill in Pennsylvania, where it set off a radiation portal monitor alarm. The waste was rejected by the landfill and returned to the BFI transfer station in Brooklyn. Personnel determined that the waste contained approximately 11.1 gigabecquerel (300 mCi) of technetium-99m and returned it to the hospital.

### **Case 3: Incident involving housekeeping**

The University of Pittsburgh reported the loss of a brachytherapy ribbon containing 0.15 gigabecquerel (4 mCi) of iridium-192 seeds. A Patient Service Technician removed soiled linen from the room of a brachytherapy patient and placed them in the hallway. The linen contained the ribbon with the iridium-192 seeds, which had become displaced from the patient. The technician stated that she was not familiar with the standard precautions of keeping trash and linen in the room until they have been surveyed. For corrective actions, the licensee retrained the nursing staff who have primary care responsibilities for patients receiving brachytherapy in the applicable radiation safety policies, procedures, and precautions. In addition, a written test was administered to each individual to evaluate and assure comprehension of the training information.

### **Case 4: Incident involving a transfer station**

The Virginia Bureau of Radiological Health reported that a radiation monitor at a trash transfer station, located in Washington, D.C., had alarmed, indicating the presence of radioactive material. The waste hauler contractor stated that the waste was from a hospital licensee. The material was identified as a paper cup and a crushed bed pan contaminated with iodine-131. The waste hauler contractor took custody of the radioactive material and held it for decay.

### **Case 5: Incident involving a transfer station**

The licensee reported that a BFI truck in Delray Beach, Florida set off a radiation portal monitor alarm at a transfer station. The container was returned to the licensee, who found a bag containing radioactive medical waste. The radioactive waste was inadvertently placed in the container because of a mix-up during a survey of trash bags. The mix-up occurred when two bags were being transferred to the waste container and the licensee monitor alarm tripped. The first bag was surveyed and found to contain radioactive waste. The employee set both bags aside and went to find a supervisor. While he was gone, another staff member placed the bags into the normal trash container and the container was taken to the transfer station.

### **Discussion:**

Since operators of landfills and medical waste incinerators have installed radiation detection systems, they have become more aware of radioactive materials being shipped to these facilities.

NRC medical licensees are advised that operators of most landfills and medical waste incinerators are not licensed to manage low-level radioactive materials, and may simply reject any shipment that contains detectable levels of radioactivity, regardless of the source.

If a licensee detects radioactivity in its waste, or if an operator of a landfill or medical waste incinerator returns a waste shipment containing detectable levels of byproduct, source or special nuclear material to a licensee, absent an exemption, the licensee must manage the waste as licensed material. The licensee must

evaluate the waste in accordance with [10 CFR 20.1501](#), "Surveys," and manage the storage/disposal of the waste in accordance with the applicable regulations and license conditions. In addition, licensees are reminded that compliance with NRC regulations does not relieve NRC licensees from complying with other local, state, and federal requirements on waste disposal.

Medical use licensees should be aware that radioactive materials may enter their waste-handling process through mechanisms largely beyond their control. Patients undergoing diagnosis and therapy, who are not required to be hospitalized, may discard contaminated items with low, but detectable, levels of radioactivity into waste containers. Therefore, detection of radioactive material in nonradioactive waste streams does not necessarily indicate poor management of radioactive waste or noncompliance with NRC requirements.

Licensees should be aware of areas in which radiation is used to ensure proper disposal of the medical radioactive waste generated. When patients are placed in temporary areas of a medical facility due to unusual circumstances, licensees should have survey systems in place to properly manage the waste. It is suggested that licensees review their programs to assure that radioactive waste is secured, and that workers are adequately trained in safety procedures.

Licensees may want to consider taking further precautions in preventing the improper disposal of radioactive material, since there are still reports of unauthorized recipients receiving nuclear material. Improper transfer of licensed materials to unauthorized recipients is a violation of NRC requirements and will be considered for enforcement action.

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

Original signed by

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

Technical Contact: Anita L. Turner, NMSS  
301- 415 - 5508  
E-mail: [alt@nrc.gov](mailto:alt@nrc.gov)

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