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

January 7, 1991

NRC INFORMATION NOTICE NO. 91-03: MANAGEMENT OF WASTES CONTAMINATED WITH RADIOACTIVE MATERIALS ("RED BAG" WASTE AND ORDINARY TRASH)

Addressees: All medical licensees.

Purpose:

This information notice is intended 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 radioactive materials are finding wastes contaminated with detectable levels of radioactive materials in waste shipments from hospitals.

It is expected that licensees will distribute this information notice to the responsible radiation safety officer and other appropriate staff, review this information for application to their own programs for radioactive waste management, and consider actions, if appropriate, to prevent radioactive materials from inadvertently being included with nonradioactive waste shipments. However, suggestions contained in this information notice do not constitute Nuclear Regulatory Commission (NRC) requirements; therefore, no specific action or written response is required.

Description of circumstances:

A growing number of operators of landfills and medical waste incinerators are monitoring waste shipments, with certain preset detection levels on the monitors, for radioactivity. In several cases, waste shipments from hospitals have contained radioactive materials, with radiation levels that exceeded the waste disposal operator's preset detection level. In some cases, landfills or medical waste incinerators have rejected the shipments and returned them to the generators. In general, landfills and medical waste incinerators are not authorized to receive or manage radioactive waste.

Case 1: Incident involving a medical waste incinerator

Several shipments of biohazardous waste sent to a medical waste incinerator in the State of South Carolina contained detectable levels of radioactive materials. South Carolina imposed civil penalties on the generators of the waste and prohibited shipments of radioactive wastes from these generators into South Carolina until such time as the generators can demonstrate compliance with applicable requirements and obtain the required permits.

IN 91-11C



Updated on 2/25/91

Case 2: Incident involving a medical waste incinerator

The Oklahoma Department of Health notified NRC that a package of medical waste received at a incinerator read 11 milliroentgens per hour at the package surface. The Oklahoma Department of Health was notified in accordance with the incinerator's operating procedures, which required that nonradioactive waste shipments containing radioactive material be rejected. Because the truck was returning directly to Toronto, Canada, NRC advised the Oklahoma Department of Health to request that the incinerator personnel return the packages to the shipper. The Oklahoma Department of Health confirmed that the medical waste was being returned to Canada.

Case 3: Incident involving a landfill

A licensee had three incidents involving the release of disposable diapers containing microcurie amounts of iodine-131 from diagnostic procedures. The contaminated diapers triggered sodium iodide detectors at a commercial landfill. In one of the incidents, the licensee realized that diapers containing iodine-131 had been placed in a dumpster. The dumpster was fully loaded and retrieval of the diapers before the waste was sent to the landfill would have been very difficult. Therefore, the licensee assigned a technician, with a GM detector, to monitor the shipment as it was being transported to the landfill and to detect the contaminated diapers as the dumpster was unloaded. During unloading, the contaminated diapers were retrieved as planned. Additionally, the licensee subsequently recovered all diapers contaminated with iodine-131 from the other two incidents. The quantity of iodine-131 that was reportedly in the disposed diapers ranged from 150 to 290 microcuries.

Case 4: Incident involving a landfill

A State representative reported that iodine-131, originating from a hospital, was found at a county landfill. The material was transferred back to the hospital by the State and placed in the hospital's waste storage area. The material (urine containing 60 microcuries of iodine-131 from a diagnostic renal study) was contained within a collection bag from a catheter device and was inadvertently disposed of by the hospital staff. Surface radiation levels were found to be 3 milliroentgens per hour. As a corrective action, the licensee installed sodium iodide detectors to monitor all wastes leaving the hospital.

Case 5: Incident involving a landfill

A 42-cubic-yard waste container from a hospital caused the scintillation counter at a landfill to trigger the alarm indicating the presence of radioactivity in the container. Personnel from the landfill contacted the hospital regarding the incident. Hospital personnel went to the landfill and had the container dumped. Using a 1-inch scintillation detector, the hospital recovered one bag of trash containing radioactive material. Investigation of this bag proved that its contents came from the room of a patient who had undergone an iodine-131 therapy

treatment. The trash in the bag was food, plastic and paper dishes and utensils, newspapers, and magazines. The hospital indicated that items removed from the room of the iodine-131 therapy patient had been surveyed for contamination. The bag of trash released to the landfill measured background levels of radiation (using a GM survey meter). However, on the day of discovery, using a 1-inch scintillation detector, the bag measured above background at the surface of the bag, and background at a distance of 5 feet from the bag. The hospital estimated that the bag contained less than 1 microcurie of iodine-131. The hospital is considering setting up scintillation detectors at all loading docks. Meanwhile, the hospital is holding all trash from iodine-131 therapy patients, before releasing it to the normal trash, until hospital personnel measure background radiation level, using a scintillation detector.

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 incinerators managing medical waste are not licensed to manage low-level radioactive materials, and may simply reject any shipment which 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 to a licensee a waste shipment containing detectable levels of byproduct, source or special nuclear material, absent an exemption, the licensee must manage the waste as licensed material. The licensee must evaluate the waste in accordance with 10 CFR 20.201, "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 regarding waste disposal.

Medical use licensees should be aware that radioactive materials may enter their waste-handling process through mechanisms largely beyond their control. Diagnostic and therapy patients 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. However, licensees may find it prudent to establish a system to monitor all outgoing shipments of the waste for any detectable radioactivity, both to ensure compliance with NRC requirements and to reduce the costs and risks associated with returned shipments.

Improper transfer of licensed materials to unauthorized recipients is a violation of NRC requirements and will be considered for enforcement action.

Notwithstanding the foregoing, certain radiologically-contaminated biomedical wastes are exempt from NRC regulatory control or disposed of through specific procedures precribed by regulation. For example, excreta from individuals undergoing medical diagnosis or therapy with radioactive material are exempt from the limitations contained in 10 CFR Part 20.303, "Disposal by Release Into Sanitary Sewerage Systems." In addition, 10 CFR Part 20.306, "Disposal of Specific Wastes," states that "any licensee may dispose of the following licensed material without regard to its radioactivity: (a) 0.05 microcuries or less of hydrogen-3 or carbon-14, per gram of medium, used for liquid scintillation counting; and (b) 0.05 microcuries or less of hydrogen-3 or carbon-14, per gram of animal tissue of averaged over the weight of the entire animal; provided however, tissue may not be disposed of under this section in a manner that would permit its use either as food for humans or as animal feed."

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact the technical contact listed below, or the appropriate regional office.

Richard L. Bangart

Richard L. Bangart, Director
Division of Low-Level Waste Management
and Decommissioning
Office of Nuclear Material Safety
and Safeguards

Technical Contact: Samuel Z. Jones, NMSS
(301) 492-0554

Attachments:
1. List of Recently Issued NMSS Information Notices
2. List of Recently Issued NRC Information Notices

# LIST OF RECENTLY ISSUED NMSS INFORMATION NOTICES

| Information Notice No. | Subject | Date of Issuance | Issued to |
|---|---|---|---|
| 91-02 | Brachytherapy Source Management | 01/07/91 | All Nuclear Regulatory Commission (NRC) medical licensees authorized to use byproduct material for medical purposes. |
| 90-82 | Requirements for Use of Nuclear Regulatory Commission-(NRC-)Approved Transport Packages for Shipment of Type A Quantities of Radioactive Materials. | 12/31/90 | All registered users of NRC-approved packages. |
| 90-81 | Fitness for Duty | 12/24/90 | All U.S. Nuclear Regulatory Commission (NRC) and non-power reactor licensees. |
| 90-75 | Denial of Access to Current Low-Level Radioactive Waste Disposal Facilities | 12/5/90 | All Michigan holders of NRC licenses. |
| 90-71 | Effective Use of Radiation Safety Committees to Exercise Control Over Medical Use Programs | 11/6/90 | All NRC licensees authorized to use byproduct material for medical purposes. |
| 90-70 | Pump Explosions Involving Ammonium Nitrate | 11/6/90 | All uranium fuel fabrication and conversion facilities. |
| 90-38, Supp. 1 | License and Fee Requirements for Processing Financial Assurance Submittals for Decommissioning | 11/6/90 | All fuel facility and materials licensees. |
| 90-67 | Potential Security Equipment Weaknesses | 10/29/90 | All holders of OLs or CPs for nuclear power reactors and Category 1 fuel facilities. |

OL = Operating License
CP = Construction Permit

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| 91-02 | Brachytherapy Source Management | 01/07/91 | All Nuclear Regulatory Commission (NRC) medical licensees authorized to use byproduct material for medical purposes. |
| 91-01 | Supplier of Misrepresented Resistors | 01/04/91 | All holders of OLs or CPs for nuclear power reactors. |
| 90-82 | Requirements for Use of Nuclear Regulatory Commission-(NRC-)Approved Transport Packages for Shipment of Type A Quantities of Radioactive Materials. | 12/31/90 | All registered users of NRC-approved packages. |
| 90-81 | Fitness for Duty | 12/24/90 | All U.S. Nuclear Regulatory Commission (NRC) material and non-power reactor licensees. |
| 90-80 | Sand Intrusion Resulting in Two Diesel Generators Becoming Inoperable | 12/21/90 | All holders of OLs or CPs for nuclear power reactors. |
| 90-79 | Failures of Main Steam Isolation Check Valves Resulting in Disc Separation | 12/20/90 | All holders of OLs or CPs for nuclear power reactors. |
| 90-78 | Previously Unidentified Release Path from Boiling Water Reactor Control Rod Hydraulic Units | 12/18/90 | All holders of OLs or CPs for boiling water reactors (BWRs). |
| 90-77 | Inadvertent Removal of Fuel Assemblies from the Reactor Core | 12/12/90 | All holders of OLs or CPs for pressurized-water reactors (PWRS). |

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