

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

March 6, 1990

NRC INFORMATION NOTICE NO. 90-14: ACCIDENTAL DISPOSAL OF RADIOACTIVE  
MATERIALS

Addressees: All U.S. Nuclear Regulatory Commission (NRC) Byproduct Materials Licensees.

Purpose:

This information notice (IN) alerts licensees to recent cases where unauthorized, accidental disposal of radioactive material has occurred, and of the need to avoid storing radioactive materials in places where the materials could inadvertently be disposed of in an unauthorized manner (e.g., unauthorized land burial, incineration, or removal to unrestricted areas). Licensees should review this information for applicability to their programs, distribute it to appropriate personnel and consider actions, as appropriate, to preclude these events from occurring at their facilities. Information contained in this notice does not constitute new NRC requirements.

Description of Circumstances:

Licensees were previously informed of the importance of assuring that access to licensed radioactive material is controlled (IN 89-35, "Loss and Theft of Unsecured Licensed Material," attached.) The following additional cases are examples of events that have occurred since IN 89-35 was issued.

**CASE 1. Accidental Incineration of Iodine-131**

A licensee reported that radioactive trash containing approximately 1 millicurie of iodine-131 (used for a medical procedure) was removed from a hospital patient's room and incinerated with non-radioactive waste. A follow-up inspection determined that the incinerated material was iodine-131, and that there was a lack of proper training among licensee personnel.

**CASE 2. Incineration of Iodine-125 Brachytherapy Seeds**

A licensee's Radiation Safety Officer informed the NRC of the apparent loss of control of four iodine-125 seeds, approximately one millicurie of activity each. Twenty seeds had been implanted in a patient in a hospital operating room during a cancer treatment. The surgical materials, coverings, and waste materials were not surveyed, but were put in the infectious waste trash.

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Later, x-rays were taken of the patient's implant site, revealing that only 16 of the 20 seeds were in place. The licensee concluded that the four seeds were incinerated. The manufacturer of the seeds stated that intense heat from burning would break down the titanium capsule that covered the seeds.

#### CASE 3. Loss of Two Industrial Gauges Containing Strontium-90 Sources

A licensee reported that two density measurement gauges had been inadvertently transferred from its facility to a scrap metal processor. Searches at the scrap dealer failed to locate the devices. The gauges each contained a 13-millicurie strontium-90 sealed source. One gauge was subsequently located by NRC inspectors. NRC imposed a civil penalty for the first lost source, and licensee is still looking for the remaining source.

#### CASE 4. Loss of a 40-Microcurie Cesium-137 Sealed Source

A licensee reported the loss of a 40 microcurie cesium-137 sealed reference source (part of a liquid scintillation counter) that had been sent inadvertently to a scrap-yard for disposal. The source has not been found.

#### CASE 5. Lost Density Level Gauge

A licensee informed an NRC regional office that it was unable to locate a generally licensed density gauge, which it previously possessed, despite an on-going intensive search. The gauge contained 50 millicuries of cesium-137, and has not been found.

#### CASE 6. Steel Furnace Melts Cesium Source

An Agreement State notified the NRC that a cesium-137 source had been inadvertently melted by a steel mill. The mill reported to the State that an outgoing rail shipment of furnace flue dust tripped the plant's radiation monitors. Surveys by a consultant and by a State inspector found radiation levels up to 1 mr/hr on the sides of the railcars. Analysis of samples identified the contaminant as cesium-137.

The NRC is aware of 15 cases, since 1983, of accidental smelting of radioactive sources. Eleven have occurred in the United States. Cesium-137 and cobalt-60 are the primary sources of contamination. In response, many scrapyards and dealers have installed radiation detectors to monitor incoming scrap. In 1986, NRC issued a hazardous scrap warning poster that has been distributed to the ferrous and non-ferrous metal industry.

#### Discussion:

IN 89-35, "Loss and Theft of Unsecured Licensed Material", issued in March, 1989, reminded licensees of the importance of assuring that access to licensed radioactive material is controlled. This notice cites recent examples of loss of radioactive materials, and indicates that many licensees did not take sufficient actions to address this problem when IN 89-35 was issued.

Licensees should review systems for control of licensed material and routinely instruct employees in the actions needed to assure control of licensed material. Particular attention should be paid to instructing workers who may only come in contact with licensed material on an occasional basis, since several of the cited losses were due, in part, to the failure of employees to recognize or appropriately handle licensed material.

Title 10, Code of Federal Regulations, Part 19, Section 19.12, "Instructions to workers" requires that "... all individuals working in or frequenting any portion of a restricted area shall be kept informed of the storage, transfer, or use of radioactive materials...." Section 20.207 of 10 CFR Part 20, "Storage and control of licensed materials in unrestricted areas," requires that such material be secured from unauthorized removal, and that materials not in storage in an unrestricted area be under the constant surveillance and immediate control of the licensee.

Licensees are reminded of the importance of ensuring that access to licensed radioactive material is controlled as required by NRC regulations. The incineration, burial, or damage of licensed radioactive material has the potential for causing unnecessary exposures of employees and members of the public. Severe penalties can be imposed for failure to control access to licensed material as required by the NRC regulations. It is suggested that licensees review their programs to assure that all radioactive material is properly secured against unauthorized removal, and that workers are properly trained in proper safety procedures.

No written response is required by this information notice. If you have any questions about this matter, please contact the appropriate regional office or this office.

  
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Attachments:

1. IN 89-35, Loss and Theft of  
Unsecured Licensed Material
2. List of Recently Issued NMSS Information Notices
3. List of Recently Issued NRC Information Notices