



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 1000  
ARLINGTON, TEXAS 76011

October 23, 1981

ARMY, DEPARTMENT OF THE  
NRC LIC. #: C5-00046-13  
FITZSIMONS ARMY MEDICAL CENTER AND  
DENVER CC 80240

Gentlemen:

The enclosed Information Notice is forwarded to you for information. If there are any questions related to the subject, please contact this office. A copy has been sent to the major manufacturers/suppliers of generators.

Sincerely,

*Karl V. Seyfrit*  
Karl V. Seyfrit  
Director

Enclosures:

1. IE Information Notice No. 81-32
2. Recently Issued IE Information Notices

11/38

SSINS No.: 6830  
Accession No.:  
8103300409  
IN 81-32

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
WASHINGTON, D.C. 20555

October 23, 1981

IE INFORMATION NOTICE NO. 81-32: TRANSFER AND/OR DISPOSAL OF SPENT GENERATORS

Description of Circumstances:

Upon responding to a complaint recently from a private citizen, local police discovered boxes labeled as radioactive materials on the driveway of a private residence. Subsequent investigation by NRC revealed that the boxes contained eleven used molybdenum-99/technetium-99m (Mo-99/Tc-99m) generators manufactured by a major supplier of radiopharmaceuticals. Four of the generators had intact lead shielding, and seven generators had no lead shielding. The occupant of the residence was later identified as a subcontractor of the transporting company which has a contract with the major supplier to deliver new generators to, and pick up spent generators from, medical institutions. According to this individual, these spent generators had been given to him for temporary storage, and he had removed lead shielding from some of them for sale. Apparently, many drivers routinely store spent generators at their residences for indefinite periods, and return them to the contractors of the transporting companies only when they are ready to pick up new generators for delivery. NRC inspectors have encountered other situations where recovery of lead shielding from generators apparently had taken place.

Average exposure rates measured on these generators were approximately 25 mR/hr at contact and 2 mR/hr at 3 feet. Based on information included on the generator labels, the generators were estimated to contain, at the maximum, a total of 43 millicuries of Mo-99 on the day of the investigation. Assuming that 5 mCi of Mo-99 remains on a generator column and that 10 seconds are required to handle the column and to separate both internal and external layers of the lead shielding, a person could typically receive a dose of roughly 25 mrem to the hands from dismantling such a generator.

Caution to Licensees - Users of Generators:

You should note the following if you are involved in the receipt, possession, use, and transfer of these generators:

1. Your NRC license should contain specific procedures for disposing of spent generators (e.g., return to supplier, etc.). You are also reminded of the letter dated June 4, 1981 from the NRC Material Licensing Branch to all medical licensees. As stated in this letter, a condition authorizing decay-in-storage of certain radioactive materials, including

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generators, would be automatically placed in new licenses issued, or added to existing licenses in response to renewal requests. You were also informed in this letter that you have the option of submitting an amendment request should you desire to add this condition to your license immediately. The proper way to store spent generators for decay and subsequent disposal is to segregate the generator columns and monitor them separately prior to disposal to ensure decay to background levels. Necessary precautions (e.g., use of disposable gloves) should be taken to avoid hand contamination.

If the columns are held for decay to background levels, there are no special requirements on disposal except for appropriate surveys to verify total decay, records of the surveys, and defacing or removal of labels on the devices. Any surveys should include the lead shielding. If no contamination is present on the shielding they may be disposed of as normal (non-radioactive) waste.

When storing spent generators for decay and disposal, you must comply with the requirements of 10 CFR 20.105 (Permissible levels of radiation in unrestricted areas) and 10 CFR 20.207 (Storage and control of licensed materials in unrestricted areas), and 10 CFR 20.203 (posting and labeling requirements).

2. Until verification surveys determine that no radioactivity remains, these spent generators must be treated as licensed material. None of the exemptions in Part 30 would apply. Any person possessing these items (for the purposes of lead recovery or waste disposal, for instance) would be required to have an NRC license. Any transfer to a person without a license is an unauthorized transfer. The only exception would be the delivery of a properly packaged and labeled item to a common or contract carrier for expeditious transport to an authorized recipient.
3. 10 CFR 30.41 (b)(5) requires that licensed material be transferred only to a person who is generally or specifically licensed by NRC or one of the Agreement States\* to receive the material. You should ensure that when transferring spent generators back to the supplier, the common or contract carrier transporting the generators is fully aware that any operations with or use of the material, other than the actual transport or storage incident thereto, is not authorized. Upon delivery of the generators to the carrier for transport, you are urged to provide specific instructions on the shipping papers, indicating that the generators are to be delivered to the consignee without unnecessary delay, are not to be stored in unauthorized locations, and should not be dismantled or used by unauthorized persons. As an additional precaution, it would be judicious to establish a routine point-of-contact with the supplier to inform him of the carriers being used, and to ask for the supplier's cooperation in reporting to you any apparent instances of improper actions, such as unauthorized lead removal activities.

4. The generator supplier may have provided instructions in the package inserts regarding proper, safe and legal packaging and transport of generators. If you do not already have these instructions or are unfamiliar with them, contact the supplier's representative immediately.
5. The instructions described in item 4 above may also apply to instances during which defective generators need to be shipped back to the manufacturer.

No written response to this information notice is required. If you need additional information with regard to this matter, contact the appropriate NRC regional office.

Attachment:  
Recently issued IE Information Notices

Attachment  
IN 81-32  
October 23, 1981

RECENTLY ISSUED  
IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
81-31	Failure of Safety Injection Valves to Operate Against Differential Pressure	10/8/81	All power reactor facilities with an OL or CP
81-30	Velan Swing Check Valves	9/28/81	All power reactor facilities with an OL or CP
81-29	Equipment Qualification Testing Experience	9/23/81	All power reactor facilities with an OL or CP
81-28	Failure of Rockwell-Edward Main Steam Isolation Valves	9/3/81	All power reactor facilities with an OL or CP
81-27	Flammable Gas Mixtures in the Waste Gas Decay Tanks in PWR Plants	9/3/81	All power reactor facilities with an OL or CP
81-26	Compilation of Health Physics Related Information Items	9/3/81	All power reactor facilities with an OL or CP
81-25	Open Equalizing Valve of Differential Pressure Transmitter Causes Reactor Scram and Loss of Redundant Safety Signals	8/21/81	All power reactor facilities with an OL or CP
81-24	Auxiliary Feed Pump Turbine Bearing Failures	8/5/81	All power reactor facilities with an OL or CP
81-23	Fuel Assembly Damaged due to Improper Positioning of Handling Equipment	8/4/81	All power reactor facilities with an OL or CP

OL = Operating License  
CP = Construction Permit