

## PROCEDURE FOR WASTE DISPOSAL

### Overview

There are four commonly used methods of waste disposal: release to the environment through the sanitary sewer or by evaporative release; decay-in-storage (DIS); transfer to a burial site or back to the manufacturer; and release to in-house waste. With the exception of the patient excreta and generally licensed in vitro kit exemptions, nothing in these guidelines relieves the licensee from maintaining records of the disposal of licensed material.

### General Guidance

1. All radioactivity labels must be defaced or removed from containers and packages prior to disposal in in-house waste. If waste is compacted, all labels that are visible in the compacted mass must be defaced or removed.
2. Remind employees that nonradioactive waste such as leftover reagents, boxes, and packing material should not be mixed with radioactive waste.
3. Occasionally monitor all procedures to ensure that radioactive waste is not created unnecessarily. Review all new procedures to ensure that waste is handled in a manner consistent with established procedures.
4. In all cases, consider the entire impact of various available disposal routes. Consider occupational and public exposure to radiation, other hazards associated with the material and routes of disposal (e.g., toxicity, carcinogenicity, pathogenicity, flammability), and expense.

### Procedure for Disposal of Liquids and Gases

Liquids may be disposed of by release to the sanitary sewer or evaporative release to the atmosphere. This does not relieve licensees from complying with other regulations regarding toxic or hazardous properties of these materials.

1. Regulations for disposal in the sanitary sewer appear in either federal regulations for non-agreement states or your State's local regulations. Federal guidance may be found in 10 CFR 10.2003. Material must be readily soluble or dispersible in the water. There are monthly and annual limits based on the total sanitary sewerage release of your facility. Make a record of the date, radionuclide, estimated activity that was released (in millicuries or microcuries), and of the sink or toilet at which the material was released.

2. Limits on permissible concentrations in effluents to uncontrolled areas are enumerated in either federal regulations for non-agreement states or your State's local regulations. Federal guidance may be found in 10 CFR 10.2003. These limits apply at boundary of the controlled area. Make a record of the date, radionuclide, estimated activity that was released (in millicuries or microcuries) and estimated concentration at the point at which the material was released.
3. Liquid scintillation-counting media containing 0.05 microcuries per gram of H-3 or C-14 may be disposed of without regard to its radioactivity. Make a record of the date, radionuclide, estimated activity (in millicuries or microcuries), calculated concentration in microcuries per gram, and how the material was disposed of.

#### Procedures for Disposal of Decay-In-Storage (DIS)

Short-lived material (physical half life less than 120 days) may be disposed of by DIS. Keep material separated according to half-life.

1. Use separate containers for different types of waste, e.g., capped needles and syringes in one container, other injection paraphernalia such as swabs and gauze in another, and unused dosages in a third container. Smaller departments may find it easier to use just one container for all DIS waste. Because the waste must be surveyed with all shielding removed, the containers in which waste will be disposed must not provide any radiation shielding for the material.
2. When the container is full, seal it with string or tape and attach an identification tag that includes the date sealed, the longest-lived radioisotope in the container, and the initials of the person sealing the container. The container may then be transferred to the DIS area.
3. Decay the material until not distinguishable from background.
4. Prior to disposal as in-house waste, monitor each container as follows:
  - a. Check your radiation detection survey meter for proper operation;
  - b. Plan to monitor a low-level (less than 0.05 millirem per hour) area;
  - c. Remove any shielding from around the container;
  - d. Monitor all surfaces of each individual container;

- e. Discard as in-house waste only those containers that cannot be distinguished from background. Record the date on which the container was sealed, the disposal date, and type of material (e.g., paraphernalia, unused dosages). Check to be sure no radiation labels are visible.
- f. Containers that can be distinguished from background radiation levels must be returned to the storage area for further decay or transferred for burial.

#### Procedures for Transfer for Burial

Except for material suitable for DIS and some animal carcasses, solids must be transferred to a burial site. Follow the packaging instructions you received from the transfer agent and the burial site operator. For your record of disposal, keep the consignment sheet that the transfer agent gave you.

#### Procedure for Release to In-House Waste

Waste from in vitro kits that are generally licensed are exempt from waste disposal regulations when these kits are used in a laboratory physically and administratively isolated from Nuclear Medicine. Radioactive labels should be defaced or removed. There is no need to keep any record of release or make any measurement.