

## Radioactive Waste

Radioactive waste is not to be discarded by regular means of disposal. Specific rules, regulations, and guidelines must be followed for the disposal of radioactive waste. Emphasis is placed on the segregation of different types of waste according to radionuclide, half-life, chemical form, physical form, or combinations thereof. All radioactive waste disposals must be reflected on the inventory. When radioactive wastes need to be picked up, such as when the containers are full, contact the Radiation Safety Officer (RSO) at 644-8802 or [online](#) (FSUID Required).

The following procedures and guidelines are to be used in the disposal of radioactive waste:

### Liquid Waste

- Sanitary Sewer Disposal of Aqueous, Readily Soluble, or Readily Dispersible Biological Material
  - Radiolabeled nucleotides in microcurie amounts: Most aqueous liquid wastes and biodegradable scintillation cocktails can be discarded down designated sink drains, if disposal records are maintained. Such liquids must be aqueous, readily soluble in water, or readily dispersible biological material in water. Records of all sewer disposals must be indicated on a sewer disposal log and this log will be posted beside the disposal location. The chemical constituents of the radioactive waste must also be considered prior to sewer disposal. For assistance in determining which chemical forms are permissible for sewer disposal, contact the FSU Chemical Safety Office at 644 7682 or 644-6895.
  - Radiolabeled nucleotides in millicurie amounts: Aqueous and readily dispersible biological material containing millicurie amounts of radiolabeled nucleotides shall be collected in five-gallon safety containers (or other suitable collection containers) provided by the RSO. Such waste should only be disposed of by the RSO.
- Organic Solvent Waste

Five-gallon safety containers are provided to each laboratory that generates radioactive organic liquid waste, which usually consists of xylene, benzene, or toluene based scintillation fluid.

- Exempt concentrations of tritium and carbon-14
  - Separate containers are provided for exempt concentrations of less than 0.05 microcurie per gram of tritium or carbon-14.
- Nonexempt concentrations and other radionuclides
  - Additional containers will be provided by the RSO commensurate with the particular variety of radionuclides used in a lab. All containers must be labeled as to which specific radionuclides should be discarded therein; strict compliance with these labels is essential. Before the container is 3/4 full, contact the RSO for pick up. Ensure that an accurate record is kept detailing the isotope, activity and hazardous chemical constituents for each container.

### Solid Radioactive Waste

- Sharps/Broken Glass
  - Sharps contaminated with radionuclides should be placed into cardboard boxes or otherwise segregated from non-sharps and clearly identified, in order to prevent injury to personnel handling these wastes. Otherwise, segregation and disposal of this material is done exactly as it is for similar non-sharp radioactive wastes. Radioactive syringe needles and razor blades should be placed in a red plastic biohazard box and labelled with yellow 'Radioactive Material' tape.

- Other Solid Waste

Containers for discarding solid radioactive waste in the laboratories are provided by the Radiation Safety Office. Such waste shall be segregated by category; <90 day half life, >90 day half life, etc. If more than one waste category exists in a laboratory, the containers will be marked as to which radionuclides are to be placed into the specific containers. Compliance with such markings is essential.

#### Radioactive Animal Carcasses & Bedding

- All animal carcasses containing radioactive waste shall be segregated in the laboratory prior to pick up by Radiation Safety personnel for disposal in accordance with the following criteria:
  - Carcasses containing tritium or carbon 14 in quantities less than 0.05 microcurie per gram, when averaged over the initial weight of the animal, should be disposed of as non-radioactive. Records of these disposals must be reflected on the inventory and include the radionuclide, original live animal weight and activity.
  - Carcasses containing <90 day half life radioisotopes will be picked up by Radiation Safety personnel for decay before disposal.
  - Carcasses containing other radioisotopes and concentrations will ultimately be shipped by the Radiation Safety Office to a disposal site and must be stored in a freezer until picked up by Radiation Safety personnel. Precautions should be taken to prevent carcasses from freezing into a large mass. Laboratory personnel are responsible for seeing that large animal carcasses are reduced in size to fit into a 30-gallon drum.

- Animal Excrement and Bedding

All radioactive animal excrement and bedding should be kept separate from other waste. Separate animal excrement or bedding according to radionuclide concentration averaged over the net weight of the bag and/or according to the half-life as follows:

- Tritium or carbon 14, less than 0.05 microcurie per gram in one container and greater than 0.05 microcurie per gram in another.
- All radionuclides, other than tritium and carbon- 14, with a half-life <90 days in one container and those with a half-life of >90 days in another.

#### Mixed Waste

The Radiation Safety Office discourages mixing radioactive material with other hazardous material. Whenever this is unavoidable, the following criteria applies:

- Mixed waste containing radionuclides with a half life of <90 days will be held for decay by the Radiation Safety Office and disposed of in accordance with the hazardous material disposal requirements.
- Mixed waste containing radionuclides with a half life of >90 days must be kept separate from all other mixed waste. Disposal of such waste is difficult and expensive and the RSO should be notified prior to the generation of long-lived, mixed waste.