

State University of New York at Stony Brook
Radiation Protection Services
Department of Environmental Health & Safety



Radioactive Waste Management Guide



**SUNY Stony Brook
Department of Environmental Health & Safety
Radioactive Waste Disposal Procedures**

Radiation Protection Services

This document provides users of Radioactive Materials with instructions for preparing radioactive waste for pick-up and disposal. Not all radioactive waste generated at SUNY Stony Brook is described in this manual. If you have any questions regarding any procedure in this manual or need additional information please contact us:

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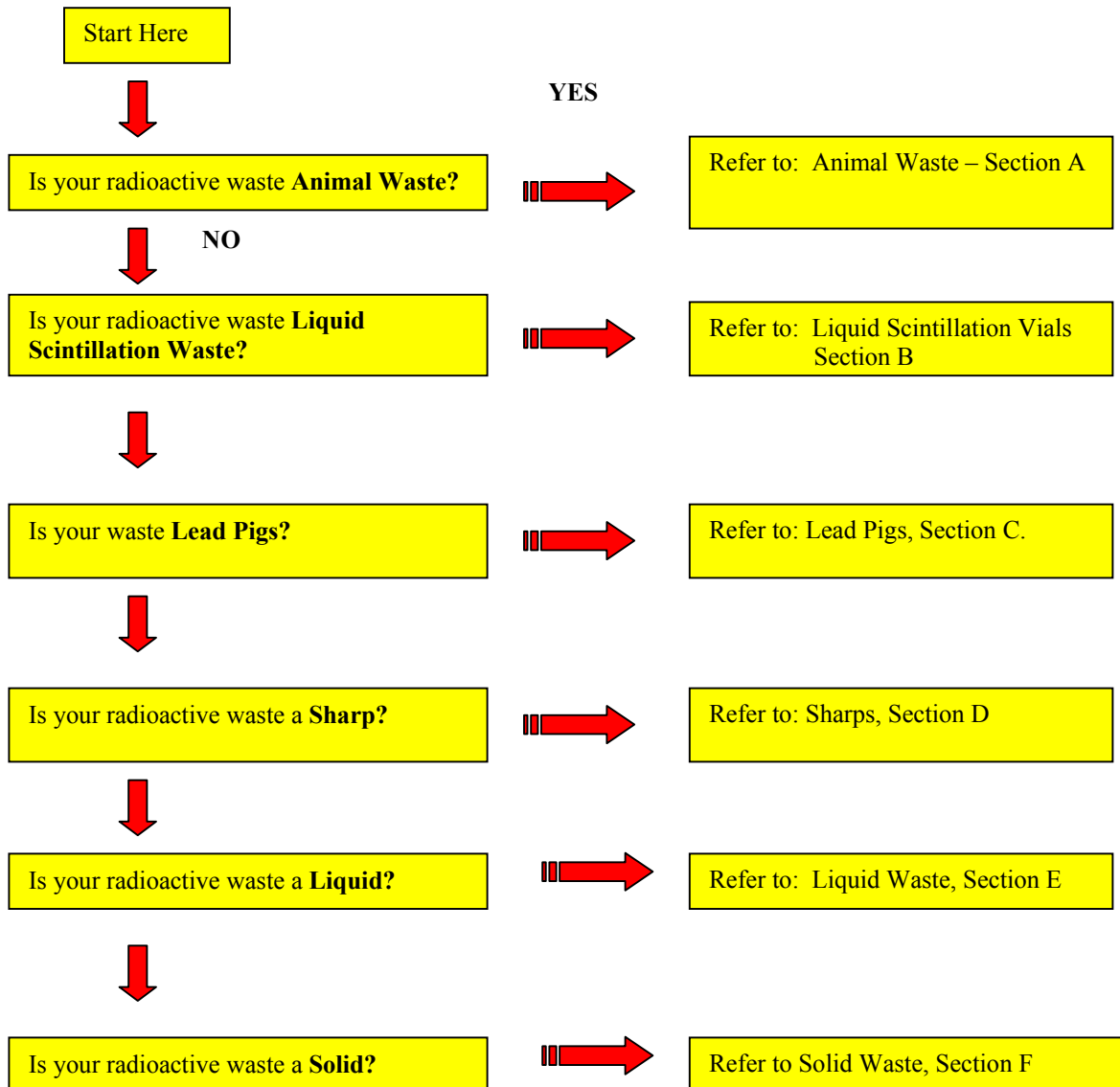
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General Requirements

1. Principal Investigators must ensure, prior to the procurement of radioactive materials, that a method of disposal for the materials presently exists or can be worked out to the satisfaction of Radiation Protection Services.
2. Each Principal Investigator must maintain accurate records of the types, quantities and forms of radioisotopes generated. Isotope inventory sheets and Decay In Storage log-sheets fulfill this requirement. Records kept by the Principle Investigator must be based on either calculations or on measurements.
3. It is the responsibility of the principle investigator to secure proper storage for radioactive wastes Generated in his / her laboratories.
4. Radioactive waste containers shall be stored as close to the work area as feasible to minimize the possibility of spillage during the transfer of waste to the containers.
5. Waste containers shall NOT be stored in hallways, stairwells or other uncontrolled areas.
6. Radioactive waste containers shall be kept closed at all times when not in use. Liquid waste containers must be kept in secondary containment at all times. (e.g. placed in deep trays)
7. Regardless of content, each radioactive waste container shall be labeled with a "Caution Radioactive Materials" sticker.
8. When handling or transferring radioactive waste, the individual shall wear appropriate laboratory attire including lab coat, disposable gloves, protective eye wear and closed-toed shoes and Luxel radiation detection badges.
9. Radioactive wastes containing carcinogens, biohazards, or extremely hazardous chemicals must be handled separately and packaged in such a way that they present minimal hazards to people who handle the wastes. Contact Radiation Safety for specific requirements.
10. Only Secondary and/or Tertiary Aqueous washes may be disposed of into the Sanitary Sewer system.
11. Do NOT place any radioactive waste in regular trash receptacles.
12. Package the waste properly according to the attached instructions.

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Master Flowchart



Cases where radioactive waste cannot be disposed of as outlined above must be referred to Radiation Safety. Special procedures may require the approval of Radiation Protection Services.

Animal Waste

Definition:

Animal Waste includes radioactively contaminated animal carcasses, tissue samples, excreta or blood. Animal waste does not include microscopic tissue sections or slides.

Segregation:

All animal tissue containing 0.05 uCi/gm or less of H-3 and C-14, when averaged over the weight of the entire animal, may be incinerated in an approved pathogenic incinerator. **Contact DLAR for proper procedures to follow.**

Animal tissue containing more than 0.05 uCi/gm of H-3, C-14, or other isotopes will be collected for disposal in Environmental Health and Safety supplied containers in the DLAR freezer room.

Liquid Scintillation Vials

Definition:

Scintillation waste consists of liquid scintillation cocktails (including dissolved or suspended samples) and associated containers such as counting vials.

Campus policy treats all scintillation media as both hazardous and radioactive waste.

Segregation:

All LSV waste used for scintillation counting are to be collected in the designated waste drums supplied by Radiation Protection Services.

Packing Instructions:

All liquid scintillation vials should be put into the LSV drum supplied by RPS and its contents recorded on the Radioactive Waste Disposal Card.

Disposal:

- Wipe test the outside of the drum and input the results on the back of the Radioactive Waste Disposal Card.
- Fill out the Radioactive Waste Tracking Form.
- Call Radiation Protection Services (2-9680) to schedule a pick-up.

Lead Pigs

Definition:

Lead Pigs are source vial enclosures that have lead integrated into them for use as shielding.

NOTE: Uncontaminated Plastic Pigs that don't contain lead can be recycled. All radioactive signs and labels must be defaced or removed prior to disposal. Call RPS for a pick-up (2-9680)

Segregation:

Lead Pigs must be segregated between contaminated and uncontaminated pigs.

Packaging Instructions:

Uncontaminated Lead Pigs

- Deface all labels on pig.
- Place all uncontaminated lead pigs in a suitable container for transport.
- Lead will be recycled. **No paperwork or labeling is required.**
- Notify Radiation Protection Services to schedule a pick-up. (2-9680)

Contaminated Lead Pigs

- Place all contaminated lead pigs in plastic bag.
- Attach to exterior of the outer bag:
 - ✓ Caution Radioactive Materials sticker or tape.
 - ✓ Label bag with isotope and date.
- Call Radiation Protection Services to schedule a pick-up. (2-9680)

Radioactive Sharps Waste

Definition:

Sharps include: hypodermic needles, syringes, scalpels, broken glass and razor blades.

Packaging Instructions:

All sharps must be placed in a puncture resistant sharps container (available from Radiation Protection Services)

- Attach a “Caution Radioactive Materials” sticker or label to the exterior of the sharps container.
- Completely fill-out and attach the Radioactive Waste Disposal Card to the exterior of the container.
- Completely fill out the Radioactive Waste Tracking Form.
- Call Radiation Protection Services to arrange a pick-up (2-9680)

Liquid Waste

The only suitable containers for liquid radioactive waste are carboys supplied by Radiation Protection Services. Always keep liquid waste stored in secondary containment.

Definition:

Liquid waste may consist of a variety of chemical constituents, provided that the waste is homogeneous, and is “pourable”.

Although small amounts of non-soluble materials may be unavoidably present, liquid waste should generally not contain solid materials, especially plastic laboratory equipment such as pipette tips, microcentrifuge tubes, etc.

Segregation:

Liquid waste must be segregated on the basis of chemical composition (Aqueous vs. Mixed)

“Aqueous” Radioactive Liquid: Liquid waste in which the radioactive waste materials are either dissolved in water or evenly distributed in a liquid which is mainly composed of water. Secondary and tertiary aqueous washes may be disposed of into the sanitary sewer system and recorded on the Radioactive Sink Disposal log-sheet. A copy of this log-sheet must be forwarded to Radiation Protection Services on a monthly basis.

“Mixed” Radioactive Liquid: Radioactive liquid waste which is contaminated with a toxic, flammable, poisonous or reactive material. When generation of mixed waste is unavoidable it must be segregated from non-hazardous aqueous solutions. Contact Radiation Protection Services for assistance in managing mixed waste.

Packaging Instructions:

For Aqueous Liquids Only

- Secure a “Caution Radioactive Materials” sticker to the outside of the carboy.
- Use separate containers for short-lived waste and long-lived waste.
- Record the isotope and activity of the contents of the carboy and secure it to the outside of the container.
- Do not fill the carboys too greater than 75% capacity.
- Store the carboys in a secondary containment system.
- Only use the 5-gallon carboys provided by RPS.
- Completely fill out the Radioactive Waste Tracking Form.
- Call Radiation Protection Services for final disposal (2-9680)

Liquid Waste continued

For Mixed Liquids Only

- Secure a “Caution Radioactive Materials” sticker to the outside of the carboy.
- Record the isotope and activity of the contents of the carboy and secure it to the outside of the container.
- Dispose of all “Mixed” radioactive liquid into a chemically compatible non-breakable container.
- Store the containers in a secondary containment system.
- Do not fill the container to greater than 75% capacity.
- Completely fill out the Radioactive Waste Tracking Form.
- Call Radiation Protection Services for final disposal (2-9680).

Solid Radioactive Waste

Definition:

Solid waste consists of dry, radioactively contaminated materials (paper, plastic, microcentrifuge tubes, glassware, empty vials, gloves, etc.)

Small amounts damp materials may be present, but solid waste may not contain any pourable liquids.

Solid waste must not contain any metals, lead pigs, sealed sources, or sharps.

Short-lived Solid Radioactive Waste ($t_{1/2} < 90$ days): Solid radioactive wastes which contain short-lived radioisotopes are held in the laboratory for Decay In Storage (DIS) for a minimum of 10 half lives. A Decay In Storage log-sheet must be filled out for each container.

Long-lived Solid Radioactive Waste ($t_{1/2} > 90$ days): Long-lived solid radioactive waste are to be placed in the appropriate container and stored until pick-up by Radiation Protection Services.

Segregation:

All solid radioactive waste must be segregated by isotope. (Short-lived vs. Long-lived)

Packaging Instructions:

Short-Lived ($t_{1/2} < 90$ days –e.g.; P-32, P-33, S-35, I-125, Ca-45, Cr-51, Ga-67, Mo-99, Xe-133, Ir-192)

The only accepted container for short-lived waste is a 15 gallon cardboard container provided by Radiation Protection Services.

Each container must be shielded to reduce exposure to less than 0.1 mR/hr.

- Affix a “Caution Radioactive Materials” sticker or label to the exterior of the container.
- Completely fill-out a Decay In Storage Log-sheet for each waste container.
- Each bag deposited into the container must be labeled with the date and isotope information.
- When 10 half-lives have been completed call Radiation Protection Services to arrange a pick-up.

Solid Radioactive Waste continued

Long-Lived ($t_{1/2} > 90$ days – e.g. ; H-3, C-14, Na-22, Co-60, Cs-137):

The only accepted containers for long – lived radioactive waste are the 5, 30 or 55 gallon radioactive materials storage drums available from Radiation Protection Services.

Each container must be shielded to reduce exposures to less than 0.1 mR/hr.

- Completely fill-out the Radioactive Waste Disposal Card as waste is added to the drum and affix it to the exterior of the drum.
- A wipe test of the drum must be performed and the results posted on the back of the Radioactive Waste disposal Card.
- Completely fill out the Radioactive Waste Tracking Form.
- Call Radiation Protection Services to arrange a pick-up. (2-9680)