

OREGON HEALTH & SCIENCE UNIVERSITY

RADIATION SAFETY OPERATING PROCEDURE 1801

RADIOACTIVE WASTE HANDLING & STORAGE

I. PURPOSE:

To describe the manner in which radioactive waste shall be stored and/or disposed of by research laboratories at OHSU.

II. DISCUSSION:

In order to keep exposure to radiation As Low As Reasonably Achievable (ALARA) in the research laboratories at OHSU, radioactive waste shall be handled according to the following procedure. Proper storage and disposal methods, and accurate record keeping for radioactive wastes are essential to the radiation safety program. In order to reduce waste build-up in the lab and to stay within individual license limits, radioactive waste should be picked up or otherwise disposed of periodically. Radioactive waste disposal is provided by the RSO on a fee-for-service basis. **Requests for radioactive waste pick-up may be made by telephone to the Radiation Safety Office at Ext. 4-2578.**

III. EQUIPMENT

A. Protective Clothing

1. Disposable latex or vinyl exam gloves
2. Lab Coat
3. Eye protection when necessary
4. Radiation labels/tape

B. Provided by RSO as needed by lab:

1. Cardboard box (es) (2 cubic ft) with yellow and clear liners or 55 gallon drums with clear liners for high-volume users. Both containers can have absorbent material added by RSO for LSC waste.
2. Approved liquid absorbent (Superfine) and 1 gallon plastic container(s) for absorbed aqueous waste.

IV. PRECAUTIONS:

- A. Minimize the handling of radioactive material. Always wear protective clothing and gloves when handling radioactive materials.
- B. Ensure that radioactive waste containers are conspicuously marked with radiation labels and placed in an area where they will not be mistaken as regular trash.

- C. Prior to generating mixed radioactive waste with biological, infectious, or chemical waste, contact the RSO for information on disposal.
- D. Dispose of sharp objects, glass pipettes and needles in a sharps container before placing in the radioactive dry waste.

V. DRY RADIOACTIVE WASTE

NOTES: Radioactive waste must not be disposed of in the regular trash.

The outside of all containers with radioactive dry waste must be clearly labeled with ARadioactive Materials@ tape or labels.

A. Storage in the lab

- 1. Radioactive waste that does not require shielding shall be kept in a 2 cubic foot box or other sturdy container fitted with a clear plastic liner over a yellow plastic liner.
- 2. Any radioactive waste that requires shielding (i.e. plexiglass for ^{32}P , or lead for ^{51}Cr) shall be stored within a clear plastic liner over a yellow plastic liner within the appropriate shielding.
- 3. Radioactive waste should be stored away from regular trash.
- 4. Biological or infectious radioactive waste must be stored in red biohazard bags marked with ARadioactive Materials@ tape. Biological or infectious radioactive waste must be deactivated before being discarded to the radioactive waste container, or decayed to background prior to incineration.

B. Storage for decay

- 1. Laboratory Decay of Radioactive Waste:
 - a. Only radioactive waste with half-lives < 90 days may be stored for decay in the laboratory. Radionuclides with half-lives > 90 days must be given to RSO for pick up. Each radionuclide must have its own collection container. Waste that is being held for decay **must be stored for a minimum of 10 half-lives (5 half-lives for I-125) and be at background before disposal to regular trash.**
 - b. A survey instrument **appropriate for the radiation being measured** must be used. It should be set on the most sensitive scale.
 - c. For low energy beta emitters, hold detector at the surface of the bag at several points, including the bottom. Then open the bag and survey the inside of the bag without actually touching the detector to the waste.
 - d. For high energy beta and gamma emitters, survey in the same manner, but there is no need to open the bag.
 - e. The results of this survey must be documented and retained as records of decayed waste disposal. A sample record sheet is included with this procedure.
 - f. All radiation labels must be removed or obliterated prior to disposal in the regular trash. It is recommended that this is done before storing waste for decay.

C. Record Keeping

1. Disposal of radioactive waste must be recorded. Information that **must** be included is: radionuclide, activity, date, and initials of person discarding the waste. The waste log must be kept on or near the waste container.
2. For decay record keeping see B.1.e above.

VI. LIQUID SCINTILLATION WASTES

NOTES: The average concentration of LSC waste for RSO pick-up must be less than or equal to 0.05 $\mu\text{Ci/ml}$.

All containers and storage areas with radioactive liquid waste must be clearly labeled with A Radioactive Materials@ tape or labels.

A. Non-Hazardous, Biodegradable Liquid Scintillation Cocktail

1. Before drain disposing of liquid waste, determine the activity using RSOP 1803. Water must be running before, during, and after drain disposal.
2. Non-hazardous biodegradable liquid scintillation cocktail that is dispersible in water may be disposed of down the drain or picked up by the RSO.
3. After LSC vials have been emptied, they must be triple-rinsed with water and may be disposed of in regular trash if at background levels.
4. Jugs filled with LSC cocktail must be stored in unbreakable secondary containers. The container must be large enough to hold the entire contents of the jug. Filled vials may be stored in their original trays or in containers provided by the RSO.

B. Hazardous Liquid Scintillation Cocktail

1. Toluene, xylene or other hazardous or non-biodegradable liquid scintillation cocktails **must** be disposed of through the RSO.
2. Jugs must be stored in unbreakable secondary containers and in appropriate chemical storage areas.
3. Filled vials must be stored in containers provided by the RSO and must be picked up for disposal by the RSO.

C. Record Keeping

The activity of all liquid scintillation waste that is disposed of via the RSO or the sanitary sewer must be accurate. See RSOP 1803 for drain disposal activity documentation. Keep a log sheet on the LSC container to record radionuclides, total activity, total volume in milliliters and initials of user.

VII. LIQUID WASTE

Aqueous radioactive waste may only be absorbed in one-gallon plastic containers provided by the RSO. See RSOP 1804 - Absorbing Aqueous Radioactive Wastes. Absorbed liquid wastes are picked up by the RSO. Aqueous radioactive waste may also be disposed of down the drain. See RSOP 1803.

VIII. ANIMAL WASTES

Radioactivity levels in animal wastes must be less than 0.05 μCi /gram of tissue for tritium and carbon-14. Animals may be stored in the designated freezer in the Comparative Medicine Department.

**The RSO must be informed of intent to dispose of radioactive animal waste.
Call Ext. 4-2583.**

Lab Disposal of Decayed Waste

Closure Date: _____ Amount: _____ mCi or μ Ci (circle)

Date waste surveyed: _____ Surveyed by: _____

Survey Instrument(Make): _____ Model: _____ Serial Number: _____

Calibration Date: _____ Background reading: _____ cpm

All bags $<$ or $=$ Background: Yes No (circle)

Rad Labels removed/defaced prior to release? _____

Comments:

Lab Disposal of Decayed Waste

Closure Date: _____ Amount: _____ mCi or μ Ci (circle)

Date waste surveyed: _____ Surveyed by: _____

Survey Instrument(Make): _____ Model: _____ Serial Number: _____

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Comments: