

POLICY FOR TERMINATION OF LABORATORY AND CONTAINMENT AREA USE OF HAZARDOUS MATERIALS

Whenever a Principal Investigator or Laboratory Supervisor (or a person under their charge performing work with hazardous materials in their laboratory) leaves the university or is transferred to a different location, proper disposition of hazardous materials is required. This includes faculty, staff, post-doctoral and graduate students.

If improper management of hazardous materials at close-out requires removal services from an outside contractor, the responsible department will be charged for this service.

Hazardous Chemical Disposal in Laboratories and Containment Areas

The following procedures should be completed before the responsible individual leaves the university or transfers to a different location on campus.

- Assure that all containers of chemicals are labeled with the name of the chemical. All containers must be securely closed. Beakers, flasks, evaporating dishes, etc., should be emptied. Hazardous chemical wastes must not be sewerred or trashed; they must be collected for disposal.
- Clean chemicals from glassware and assure proper waste disposal guidelines are followed. Never pour chemical residues down the sink unless it is specified by the MSU Hazardous Waste Disposal Guide that this is the safe and preferred method of disposal.
- Check refrigerators, freezers, fume hoods, storage cabinets and bench tops for chemical containers and thoroughly clean these locations.
- If another room or facility (such as a freezer or refrigerator, stock rooms, etc.) is shared with other researchers, remove, transfer or dispose of items used by the departing researcher.
- Contact the ORCBS for pick-up of hazardous waste at least one week prior to vacating the lab.
- For gas cylinders, remove regulators, replace cap and return to supplier. If cylinders are non-returnable, refer to the MSU Hazardous Waste Disposal Guide. Gas cylinders used in the containment area must be decontaminated prior to return.

As an alternative to disposal, if the chemical is still usable, transfer the responsibility of the chemical to another P.I. or supervisor who is willing to take charge of the chemical.

Follow all guidelines in the MSU Hazardous Waste Disposal Guide for disposal of unwanted chemicals. The ORCBS will pick up all hazardous waste provided:

- All chemical containers are properly labeled as "hazardous waste" and are accompanied with a completely filled out hazardous waste tag.
- All containers are securely closed.

Notify the department when laboratories or containment area/rooms have been cleared.

Transportation of Chemicals on Campus

The following procedures should be completed by individuals who have usable chemicals which are to be moved to a different laboratory.

- Assure that all containers of chemicals are labeled with the name of the chemical. All containers must be securely closed. Beakers, flasks, evaporating dishes, etc., should be emptied. Stock solutions should be transferred to containers intended for use in transportation such as screw cap bottles. Transportation requirements for usable chemicals is the same as that for hazardous waste.
- Chemicals offered for shipment must be grouped together on lab benches or on shelves to facilitate removal.
- For gas cylinders, remove regulators and replace cap. Attach a tag with the name of the person responsible for the material, a contact person, and a phone number.
- A licensed transporter should be contacted to package and deliver the materials to the new location. ORCBS will help in making a proper selection.
- Persons intending to transport chemical materials themselves should contact ORCBS.

Disposal of Controlled Substances

The United States Drug Enforcement Agency (DEA) issues permits for controlled substances. There are several considerations when disposing of controlled substances.

- Abandonment of a controlled substance is a violation of the DEA permit under which it is held.
- Permission to transfer ownership of a controlled substance must be received from the DEA.
- Controlled substances being held by a licensed individual and to be surrendered for destruction or destroyed on-site must be inventoried on DEA Form 41. The form must be sent to:

United States Department of Justice
Drug Enforcement Agency
Rick Finley Building
431 Howard Street
Detroit, Michigan 48226

For copies of DEA Form 41 please contact the ORCBS.

- If controlled substances for which the licensee is unknown are found, contact ORCBS immediately.

Disposal of Biological Materials

Animal Tissue

- If tissue is held in a liquid preservative, the tissue and liquid should be separated.
- Large animal parts or whole animals will be picked up by ULAR and incinerated. Small animal parts and tissues should be placed in a biohazard waste bag for incineration.
- Liquid preservative usually needs to be disposed as a hazardous waste. Contact the ORCBS for assistance. Do not assume that the preservative can be sewerred.

- If appropriate disposal is uncertain, contact the ORCBS at 355-0153.
- Defrost and clean refrigerators and freezers if they are empty.
- If samples need to be saved, locate the PI or supervisor to take responsibility for them.

Microorganisms And Cultures

- Use an autoclave to decontaminate all liquid culture waste, and dispose of it as outlined in the MSU Hazardous Waste Disposal Guide.
- If the material cannot be decontaminated, place it in a biohazard bag for incineration.
- Clean and disinfect incubators, drying or curing ovens, refrigerators and freezers.
- If samples need to be saved, locate the PI or supervisor to take responsibility for them.

Transportation of Biological Materials on Campus

All biological materials* that are of potential risk to humans and/or animals must be stored and transported in a primary and secondary container. Primary containers can be culture tubes, flasks, vials etc. All containers must meet the following requirements:

- Rigid
- Puncture resistant
- Leak proof
- Impervious to moisture
- Of sufficient strength to prevent tearing or bursting under normal conditions of use and handling
- Sealed to prevent leakage during transport
- Labeled with a biohazard or infectious substance label

All containers should be accompanied by a list of content, the person responsible for this material, a contact person and phone number.

If materials are to be transported in liquid nitrogen or with other protection from ambient or higher temperatures, all containers and packaging should be capable withstanding very low temperatures, and both primary and secondary packaging must be able to withstand a pressure differential of at least 95 kPa and temperatures in the range of - 40°C to + 50°C. If the material is perishable, warnings should appear on accompanying documents, e.g., "Keep cool, between + 2°C and + 4°C."

For all shipment requirements of biological materials off campus contact the ORCBS at 355-0153.

* **Infectious substances:** viable microorganisms, including a bacterium, virus, rickettsia, fungus, or a recombinant, hybrid or mutant, that are known or reasonably believed to cause disease in animals or humans.

* **Diagnostic specimens:** any human or animal material including but not limited to, excreta, secreta, blood and its components, tissue and tissue fluids.

Radioisotopes

Close Out Procedures for Radioactive Materials Use Areas

Prior to close-out of radioactive materials use areas, release of radioactive use equipment and/or radioactive materials approvals, it is the responsibility of the approved principal investigator and the department to assure that the following steps have been completed.

1. Contact a Health Physicist to notify ORCBS of the intended transfer or close out. At that time, the materials to be moved will be reviewed. If necessary, a visit will be scheduled for ORCBS to go to the laboratory and provide guidance for segregating, labeling and packing the materials to be relocated. It is helpful to request a copy of the most recent inventory of radioactive materials possessed by the principal investigator to facilitate the close-out, transfer and waste disposal process.
2. The ORCBS must authorize any transfers to other principal investigators or to off campus licensees prior to the transfer. The receiving principal investigator must be approved for the nuclide and quantity of activity, and must not exceed the authorized amount after receipt of the transferred material. The shipments must be transferred in the ORCBS inventory database tracking system.
3. An inventory of the materials to be transferred must be supplied to the ORCBS prior to the transfer.
4. Package the radioactive materials in strong tight containers. Each container must be contained and segregated properly according to the nuclide and amount of activity in the material, whether it is waste, stock vials, sealed sources, contaminated equipment, samples, etc.
5. Schedule a pickup of the radioactive materials with the ORCBS. **All radioactive materials must be transported by the ORCBS; transfer by the laboratory staff is prohibited if the materials are to be moved in a vehicle.**
6. After the removal of all radioactive materials, sources and waste, perform a survey of the entire laboratory, including all use, storage and disposal areas. (Note: refrigerators and freezers, community use areas, incubators, fume hoods and all other areas which may potentially be contaminated must be included in the survey). Document this survey in the safety records. If contamination is found, it must be decontaminated prior to release to new occupants. No further use of radioactive materials in the room is allowed until the close-out is finalized and the room or areas is released by ORCBS.
7. Contact a Health Physicist and arrange for a formal ORCBS close-out survey. This must be completed, with records maintained, before new occupants may move into the area. Warning labels may then be removed. Records of decommissioning radiation surveys will be sent to the principal investigator, and will be available upon request for new occupants.
8. Prior to moving radioactive materials into a new use area, principal investigators must obtain prior approval from the Radiation Safety Officer. New rooms to be occupied must be approved for radioactive materials use, and facilities must be appropriate for the types and quantities of radioactive materials to be used.
9. Equipment used for or with radioactive materials must be surveyed and released by the ORCBS prior to transfer to other locations or users.
10. Note that all contaminated areas, equipment, materials etc., must be decontaminated to the **unrestricted area release limits** before release or must be treated as radioactive and managed accordingly.

Some other tips which will help with planning relocation of radioactive materials, or release of equipment and other items used for radioactive materials are:

- Materials must be in containers which are tightly sealed or capped.
- For liquids, it is recommended that parafilm be wrapped around the caps to prevent volatilization or leakage if caps loosen.
- Each container must be labeled clearly with the nuclide, date, quantity and chemical form.
- Put smaller bottles and containers in secondary containers which are lined with plastic, and place absorbent material between containers to prevent breakage.
- Use strong boxes with strong bottoms which will not tear or break. (DOT approved boxes are the most effective.)
- Do not pack boxes and containers with more than 50 pounds of material.
- For materials which must be kept at frozen or ultra-frozen temperatures, pack the materials in dry ice just prior to pick up by ORCBS. We do not have cold temperature maintenance capabilities in our transport vehicles.
- Have storage facilities ready at the receiving location, and radiation workers present to receive and properly store radioactive materials.
- Materials found leaking or contaminated on the outside will not be moved. Check each package in advance (wipe the package and monitor with the correct radiation detection instrument) to assure the integrity of the package.
- Equipment which has been used for radioactive materials, such as refrigerators, incubators or any other equipment, must be surveyed prior to relocation and released by the ORCBS.
- An equipment release form must be affixed to each piece or package of equipment which will be moved by Physical Plant or intended to go to Salvage. (This documents that the equipment has been checked and is safe for release to the general public.)
- If materials or equipment are going to be routed out as regular trash, it must be surveyed prior to dumping and certified free of radioactive contamination.

Mixed Hazards

Occasionally it is necessary to dispose of materials that contain more than one of the above hazards. Contact the ORCBS (355-0153) for chemical, radioactive or biological agent assistance.

Equipment

If laboratory equipment is to be left for the next occupant, clean or decontaminate it before departing the laboratory. Attached is an Equipment Release Form that should be used to certify that the equipment was decontaminated. If exhaust or filtration equipment has been used with extremely hazardous substances or organisms, alert the ORCBS.

If laboratory equipment is to be discarded, be aware that capacitors, transformers, mercury switches, mercury thermometers, radioactive sources and chemicals must be removed before disposal. Contact the ORCBS for assistance.

Equipment potentially contaminated with radioisotopes must be surveyed by the ORCBS prior to release or use by other persons.

Shared Storage Areas

One of the most problematic situations is the sharing of storage units such as refrigerators, freezers, cold rooms, stock rooms, waste collection areas, etc., particularly if no one has been assigned to manage the unit. Departing researchers must carefully survey any shared facility in order to locate and appropriately dispose of their hazardous materials.

Regulatory Impact

Mishandling of hazardous materials can result in citations, fines and/or loss of right to use hazardous materials. Adverse publicity is also a frequent result.