

## LABORATORY CLOSURE AND DECOMMISSIONING Toolkit

Western Washington University (WWU) is committed to the health and safety of its students, faculty, staff, and visitors as well as the surrounding community and environment in which WWU personnel conduct their studies, scholarship, and work. The goal of this procedure is to protect employees and students and ensure a safe transition in laboratory occupancy. These guidelines provide a framework for properly disposing of research materials when an investigator vacates laboratory space. These guidelines will similarly assist laboratory personnel in conducting decommissioning and cleaning of laboratory equipment and fixtures as needed.

[WAC 296-800-11005](#) requires that employers provide a workplace free from recognized hazards, and [WAC 173-303-170](#) lays out requirements for generators of dangerous waste. Because investigators and/or lab managers will have the most intimate knowledge of the hazards in their space, they play a crucial role in the lab cleanup and decommissioning process.

Because laboratory closures and decommissioning projects often involve a number of diverse hazards, EHS requests that, when possible, 30-day advanced notification of laboratory vacancy be provided (or as much time as is possible). EHS will then coordinate with the PI, lab manager, department, and any other relevant stakeholders to ensure a smooth cleanout process. In the event that the PI or lab manager is unable to oversee the lab cleanup process, the department may be responsible for costs incurred by EHS for cleanup activities or the department may hire and oversee the work of a licensed and certified hazardous materials contractor.

### APPLICABILITY

These guidelines apply to:

- Research and teaching laboratories, shops, and studios owned or leased by WWU.
- Spaces that use chemicals, radioactive materials, biologicals, human pathogens, controlled substances, compressed gases, large equipment, mercury containing monitors, etc.
- Ancillary spaces (e.g., cold rooms, freezers in hallways) that are vacated by faculty or staff.
- Space that is to be reused by different faculty and staff, as well as space that is to be converted to another use.

### BACKGROUND

This procedure will help ensure compliance with applicable regulations and best practices:

- EHS oversight of laboratory decommissioning and material transfer helps ensure hazardous material transportation and licensing compliance ([49 U.S.C. 5101](#)) ([WAC 173-303](#)) ([WAC 446-50](#)).
- Prior to vacating a laboratory, the U.S. Nuclear Regulatory Commission requires removal of all radioactive materials and waste. Procedures for proper disposal of radioactive materials are found in the University's Radiation Safety Manual. No radioactive material or waste may be left unsecured.

Transfer of radioactive materials are only permitted between authorized users and must be approved by the University's Radiation Safety Officer.

- Prior to vacating a laboratory, the U.S. Drug Enforcement Agency and the State of Washington requires removal of all controlled substances. No controlled substance may be unsecured. Controlled substances can only be transferred to another researcher if they are also licensed to use such materials. It is a felony to transfer a controlled substance to a person not registered with the DEA and DOH. Schedule I or II transfers require a completed DEA form 222. Schedule III-V require documented transfer with information of the supplier, recipient, item ID, and transfer date.
- Prior to vacating a laboratory, Federal, state, and local rules and guidelines require the safe transport, transfer, or decontamination and removal of all infectious pathogens, recombinant and synthetic nucleic acids, and other potential biohazards ([NIH Guidelines](#)) ([WCC 24.06](#)) ([WAC 296-823-14060](#)) ([49 CFR Parts 171-180](#)).
- Laboratory equipment, fixtures, furniture and space that has not been properly cleaned and decontaminated may pose a hazard to EHS staff, movers, construction and renovation personnel and future occupants.
- Research materials left in vacated spaces pose hazards to others, particularly those that are unlabeled, unidentified, unstable, improperly stored, contaminated or improperly contained. When unsecured in a vacant laboratory, these research materials are also at risk of theft, diversion and misuse.
- Research materials that are not promptly removed from a vacated laboratory may be ineligible for redistribution or recycling making disposal the only viable option.
- Safety critical equipment (equipment whose failure could cause or contribute to a major accident) must be certified in place. Prior to use, EHS must recertify all safety critical equipment that has been moved.

The PI and/or laboratory manager are best suited for carrying out the rules and guidelines associated with this Policy in conjunction with their department and EHS. PIs and lab managers may delegate tasks to other knowledgeable personnel but are ultimately responsible for ensuring the completion of the work.

### EHS RESPONSIBILITIES

When an investigator vacates laboratory space, EHS and department representation will be responsible for visually verifying that the space is free of hazardous materials and gross contamination. EHS, along with a department representative will complete this verification in a timely manner and will provide written approval to the department (for new occupancy) or project manager (for space to undergo construction/renovation).

- EHS staff will provide detailed instructions and guidance to investigators and their staff in advance of all laboratory moves, closures and decontamination, including requirements for labeling and identification of research materials.
- EHS will pay for the removal and ultimate disposal of all properly labeled and classified research materials. Research materials that are unidentified or left after the space is vacated will be arranged for proper disposal and decontamination. Costs of these activities to identify, segregate, and label hazardous materials, may be charged to the department.

## PRINCIPAL INVESTIGATOR/LAB MANAGER RESPONSIBILITIES

Each investigator and/or lab manager is responsible for:

- Implementing and documenting appropriate safety policies and procedures in accordance with their respective Chemical Hygiene Plan.
- Ensuring employees are instructed on and follow proper procedures and utilize protective equipment provided during their work as detailed in written SOG's.
- Filing a 30-Day Notification of Laboratory Vacancy if possible:
  - To ensure proper characterization and disposition of research materials and decontamination of laboratory equipment, fixtures, furniture and space, EHS requests that investigators/lab managers notify EHS 30 days prior to vacating laboratory space.
- The safety and security of regulated materials and equipment including but not limited to: radioactive materials, controlled substances, infectious agents, etc.
- Adhering to established EHS procedures for safe and compliant disposal and decontamination of research materials.
- Ensuring that research material cleanouts are performed by staff knowledgeable of hazards and trained in all required safety disciplines.
- Completing the Laboratory Decommissioning Checklist (Attachment A) and submit to EHS and RSP accordingly.

## DEPARTMENTAL RESPONSIBILITIES

Department Chairs are responsible for:

- Filing a 30-Day Notification of Laboratory Vacancy if possible/in the absence of a PI/lab manager.
- Ensuring that research material cleanouts be performed by staff knowledgeable of hazards and trained in all required safety disciplines, including temporary hires on an as needed basis.

## INCURRED COSTS/FEES:

Research materials and equipment that cannot be identified or have been left behind after lab vacancy will be properly handled and disposed of by EHS, but these services may be billed to the department. EHS will provide a cost estimate for any services prior to initiating work. Alternatively, the department may hire a hazardous materials contractor to handle materials left behind.

## PROGRAM OVERSIGHT:

The EHS Department will serve as a technical resource for the implementation of this program.

## LABORATORY CLOSURE PREPARATION GUIDE

Before laboratory moves or closures, the following preparations should take place.

### Physical Hazards

All recognized physical hazards that exist within the space shall be removed prior to vacating the space. Such hazards may include: items, objects or equipment that may cause slips, trips, falls, heat stress, cold stress, high noise, vibrations, and any bodily harm or damage. All laboratory specific research apparatus must be dismantled, decontaminated and removed from the space.

### General – All Laboratories:

- Depending on the size and scope of the move, stop or modify research activities 6-8 weeks prior to decommissioning or move. Provide at least 30-days notice to EHS of your plan to vacate your lab space. Contact your Departmental Safety Coordinator (DSC) or EHS to help estimate the time commitment.
- Clean off all benches. Remove lab matting and clean any spilled materials. Wipe down all benches with an appropriate disinfectant.
- Completely empty all drawers.
- All razor blades, needles, syringes, etc. in drawers, on benches, shelves or the floor must be disposed of properly. Please contact your DSC or EHS for help with acquiring sharps containers.
- Refrigerators, Freezers and Equipment
  - Refrigerators shall be emptied and contents segregated into hazard classes before removing from the space. A cooler with ice packs or dry ice may be used to move items that must be refrigerated/frozen. Freezers may be removed with the contents inside as long as they do not contain breakable containers, are labeled as to what is inside the freezer, and are locked and securely strapped shut.
- All laboratory equipment contaminated or potentially contaminated with chemicals or biological materials shall be decontaminated before removal from the space. Equipment shall have chemicals safely removed, drained or discharged from the equipment.
- Biological materials shall be removed from the equipment. Disinfect surfaces that may be contaminated with biological agents by cleaning with a bleach and water solution consisting of one part of bleach to ten (1:10) parts of water. As a final step, wipe equipment down with a 70% alcohol solution.
- Equipment that needs to be cleaned prior to moving includes, but is not limited to:
  - Centrifuges
  - Glassware
  - Plastic ware
  - Glove boxes
  - Flammable cabinets
  - Corrosive cabinets
  - Water baths

- Refrigerators
- Ovens
- Microfuges
- Incubators
- Microwave ovens
- Shakers
- Vacuum pumps
- Compressors

#### Radiation Safety Preparations:

1. There are specific requirements and regulations for Authorized Users who possess radioactive materials. Contact the Radiation Safety Officer for assistance with disposal or transfer of radioactive materials and proper surveying of a laboratory where radioactive work was conducted.

#### Chemical Safety Preparations:

1. Clean any equipment used with hazardous materials.
2. Hazardous waste and unwanted chemicals must be labeled as hazardous waste. Contact EHS for waste pick up by completing the [online waste collection form](#).
3. Disposal of hazardous chemicals into sinks, drains, commodes, or other sewage disposal channels is prohibited. Most empty containers may be disposed of as regular trash, except for [EPA P-listed chemical containers](#), which must be handled as hazardous waste. Pesticide containers must be triple-rinsed, with the rinsate collected as hazardous waste, and labels defaced prior to disposing of the container in the regular trash.
4. Usable chemicals may be transferred to another party who is willing to assume responsibility for them (limitations apply for radioactive materials and controlled substances). The donating PI or the receiving PI must complete the transfer within Chimera. If a new user cannot be found, the materials are disposed through the EHS hazardous waste program.
5. Check chemical containers for expiration dates and signs of damage, corrosion or crystallization. Any expired chemicals or any chemical containers exhibiting damage, corrosion or crystallization shall be disposed of as chemical waste and shall not be relocated to a new location.
6. Any peroxide-forming materials within the space shall be disposed of as chemical waste unless peroxide-forming chemicals have been handled in accordance with the [Peroxide Forming Chemicals Procedures](#) and testing prior to transfer shows peroxide concentrations of <10ppm.
7. Dried containers of picric acid or picrates shall not be moved and shall be disposed of as hazardous waste. EHS shall be notified if perchloric acid has been used within the space or in a fume hood so that the space may be tested for perchlorates.

#### Controlled Substances

Controlled substance permits are issued by the US Drug Enforcement Agency (DEA) and Washington Department of Health (DOH) and are issued to individual researchers.

Permission to transfer ownership of a controlled substance (Schedule I or II) to another individual must be received from DEA. Schedule III-V may be transferred between licensed researchers as long as the recipient has the receiving material on their license and as long as the following information is recorded:

- Name, address, and DEA registration number of recipient
- Name, address, and DEA registration number of supplier
- Name, concentration, and quantity of Controlled Substances transferred
- Transfer date

EHS is notified if controlled substances for which the licensee is unknown are found and guidance on disposal is needed.

#### Biological Safety:

1. Use an appropriate disinfectant, prepared in accordance with manufacturer's instructions, to decontaminate equipment that has been in contact with biological materials.
2. Properly autoclave/dispose of all infectious/biological waste.
3. Ensure biosafety cabinet (BSC) has been decontaminated. Call the BSC service coordinator to schedule a decontamination appointment at least 7-10 working days prior to the anticipated move date. Decontamination should be performed at least 2 days pre-move.
4. Properly dispose of all sharps, including unused needles and syringes.

#### Compressed Gasses

1. Compressed gas cylinders and dewars shall be properly secured and capped when they are transported.
2. Cylinders shall be transported in an upright position in an approved cylinder cart. Never move a cylinder by rolling it across the floor.
3. Do not leave a cylinder unattended in the corridor.
4. Never drop cylinders or bang them against each other or another object.
5. Empty cylinders shall be labeled "empty".
6. Cylinders shall be disconnected, their caps replaced, and the cylinders returned to suppliers or relocated to other labs.
7. Non-returnable cylinders (i.e., lecture bottles) are manifested and packed as chemical waste.

## Attachment A: Decommissioning Checklist

### General Information

Department:

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Lab Location Building: \_\_\_\_\_ Room(s): \_\_\_\_\_

Department Head or Facility Supervisor:

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Phone Number: \_\_\_\_\_ Email: \_\_\_\_\_

Estimated Date for Closing Lab:

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PI Responsible:

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Phone Number: \_\_\_\_\_ Email: \_\_\_\_\_

Is the PI designating a primary contact other than themself?

No

Yes – Primary Designee Responsible:

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Phone Number: \_\_\_\_\_ Email: \_\_\_\_\_

### Sections for Review

Biosafety

Radiation Safety

Chemical Safety

Facilities

## Biosafety

### What biosafety level applies?

None (skip to next section)  BSL-1  BSL-2  BSL-3

<i>PI Responsibilities</i>	<i>Completed</i>	<i>N/A</i>	<i>Initials</i>
Contact EHS to evaluate biohazards to be moved or discarded.	<input type="checkbox"/>	<input type="checkbox"/>	
Biohazards have been removed from the lab: <ul style="list-style-type: none"> <li>Biohazardous materials sent to offsite locations must be packaged and shipped in accordance with DOT/IATA hazardous materials shipping regulations; contact EHS for assistance.</li> <li>Biohazardous materials transferred to other WWU lab locations must be reviewed and approved by the EHS.</li> <li>Unwanted biohazard must be segregated and treated as biohazardous waste (see below).</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
All biohazardous waste must be inactivated by an approved method (e.g. autoclaving) <b>or</b> packaged for removal by regulated medical waste contractor. Contact EHS for guidance.	<input type="checkbox"/>	<input type="checkbox"/>	
Permanently close and surface disinfect sharps containers and submit to EHS during hazardous waste collection. Contact EHS for locations and times.	<input type="checkbox"/>	<input type="checkbox"/>	
Surface clean and disinfect all lab benches used for procedures with biohazards.	<input type="checkbox"/>	<input type="checkbox"/>	
Surface clean and disinfect all biosafety cabinets (BSCs), clean benches, centrifuges, incubators, or other equipment used to process and store biohazards. Full gaseous decontamination of internal components of such equipment is generally not required but may be necessary depending on risk assessment. Equipment for surplus must be labeled with completed Equipment Decontamination Form	<input type="checkbox"/>	<input type="checkbox"/>	
Remove or deface all biohazard labels/markings on decontaminated equipment.	<input type="checkbox"/>	<input type="checkbox"/>	
Notify EHS of any equipment or areas that cannot be fully decontaminated.	<input type="checkbox"/>	<input type="checkbox"/>	

<i>EHS Responsibilities</i>	<i>Completed</i>	<i>N/A</i>	<i>Initials</i>
Perform exit survey.	<input type="checkbox"/>	<input type="checkbox"/>	



Ensure that biohazardous materials are properly packaged and declared for commercial shipping as applicable (in accordance with DOT/IATA regulations).	<input type="checkbox"/>	<input type="checkbox"/>
Verify that all biohazardous waste has been treated/removed from lab and that sharps containers have been submitted to EHS.	<input type="checkbox"/>	<input type="checkbox"/>
Verify that equipment has been cleaned and disinfected by occupants.	<input type="checkbox"/>	<input type="checkbox"/>
Verify that all biohazard labels have been removed/defaced and remove the door placard(s) as necessary.	<input type="checkbox"/>	<input type="checkbox"/>

### Radiation Safety

**Were radioactive materials used in the lab?**

**No (skip to next section)**  **Yes (complete the following)**

<i><b>PI Responsibilities</b></i>	<i><b>Completed</b></i>	<i><b>N/A</b></i>	<i><b>Initials</b></i>
Prepare radioactive waste for EHS to pick up. All waste containers should be labeled with radionuclide and activity.	<input type="checkbox"/>	<input type="checkbox"/>	
Contact EHS for an exit decommissioning survey of the lab space.	<input type="checkbox"/>	<input type="checkbox"/>	
Notify the Radiation Safety Officer if there are items/equipment that may be contaminated with radioactive materials.	<input type="checkbox"/>	<input type="checkbox"/>	

<i><b>EHS Responsibilities</b></i>	<i><b>Completed</b></i>	<i><b>N/A</b></i>	<i><b>Initials</b></i>
Remove/move any radioactive materials.	<input type="checkbox"/>	<input type="checkbox"/>	
Survey all equipment that is labeled or could possibly be contaminated.	<input type="checkbox"/>	<input type="checkbox"/>	
Perform an exit decommissioning survey of the lab space and remove radiation postings from doors.	<input type="checkbox"/>	<input type="checkbox"/>	

### Chemical Safety

**Were chemicals used in the lab?**

**No (skip to next section)**  **Yes (complete the following)**

<i><b>PI Responsibilities</b></i>	<i><b>Completed</b></i>	<i><b>N/A</b></i>	<i><b>Initials</b></i>
Label chemical containers with the proper chemical name. Please avoid using abbreviations and chemical formulas.	<input type="checkbox"/>	<input type="checkbox"/>	
Close all containers securely	<input type="checkbox"/>	<input type="checkbox"/>	

Empty all beakers, flasks, evaporating dishes, oil/water bathes into the proper container and dispose of appropriately (all hazardous materials must be disposed of as hazardous waste).	<input type="checkbox"/>	<input type="checkbox"/>
Dispose of empty containers in the trash after removing all markings and writing "EMPTY" on the container. Triple rinse empty acid containers before disposal. Empty containers which held acutely toxic chemicals (P and U-listed chemicals) must be disposed of through EHS. Do not dispose of any chemicals in the trash or down the drain, regardless of hazard rating	<input type="checkbox"/>	<input type="checkbox"/>
Check containers for expiration dates and signs of corrosion or crystallization. Peroxide-forming materials should be disposed of if the container has been opened and is more than three months old, or if it has not been opened and is more than one year old unless tested for and found to be peroxide-negative. Always dispose of by the expiration date listed by the supplier.	<input type="checkbox"/>	<input type="checkbox"/>
Dispose of old chemicals and lecture bottles to EHS. If you have a large amount of chemicals to dispose of, contact EHS to coordinate a lab chemical cleanout at least four weeks before needed.	<input type="checkbox"/>	<input type="checkbox"/>
Contact EHS and DEA to dispose of any controlled substances	<input type="checkbox"/>	<input type="checkbox"/>
Clean and decontaminate all chemical cabinets, refrigerators, freezers and any other chemical storage areas, benchtops and equipment from any spilled chemicals. Remove all bench paper.	<input type="checkbox"/>	<input type="checkbox"/>
Make sure that shared equipment and locations are included in the cleanout and are decontaminated from any radioactive, biohazardous or chemical contamination.	<input type="checkbox"/>	<input type="checkbox"/>
Remove regulators, replace cylinder caps and return all compressed gas cylinders to the vendor.	<input type="checkbox"/>	<input type="checkbox"/>
Contact EHS for disposal of any compressed gas cylinders which are nonreturnable	<input type="checkbox"/>	<input type="checkbox"/>
Properly dispose of all sharps waste (Biological, Radioactive or Chemical)	<input type="checkbox"/>	<input type="checkbox"/>
Notify EHS of any materials or procedures that could leave hazardous chemical residues (e.g., perchloric acid in a chemical fume hood) or areas that cannot be fully decontaminated (e.g., materials potentially containing asbestos; fume hoods; refrigerators used in the storage of highly toxic chemicals, etc.).	<input type="checkbox"/>	<input type="checkbox"/>

Perform Exit Survey.	<input type="checkbox"/>	<input type="checkbox"/>
Dispose of all chemicals, lecture bottles, and other hazardous materials left remaining in lab.	<input type="checkbox"/>	<input type="checkbox"/>
Address any chemical residue hazards.	<input type="checkbox"/>	<input type="checkbox"/>

*Facility Safety*

**To be completed by all labs**

<b><i>PI Responsibilities</i></b>	<b><i>Completed</i></b>	<b><i>N/A</i></b>	<b><i>Initials</i></b>
Bag or box up all trash and refuse (or place in trash cans) and label as trash for disposal by housekeeping.	<input type="checkbox"/>	<input type="checkbox"/>	
Notify Facilities Services to bleed any stored electrical energy from equipment (e.g., capacitors) bound for trash or surplus to the warehouse.	<input type="checkbox"/>	<input type="checkbox"/>	
Ensure all keys unique to closing lab have been turned in by all members of the research group.	<input type="checkbox"/>	<input type="checkbox"/>	

<b><i>Facilities Responsibilities</i></b>	<b><i>Completed</i></b>	<b><i>N/A</i></b>	<b><i>Initials</i></b>
Equipment disconnected from fixed facilities and utility connections in room made safe.	<input type="checkbox"/>	<input type="checkbox"/>	
Bleed stored electrical energy from equipment.	<input type="checkbox"/>	<input type="checkbox"/>	

## Required Signatures (Lab Closing/Move)

**This lab is considered clean and ready for housekeeping, renovations, or occupation by new faculty, only *after* all signatures are complete and this page is posted on the lab door.**

***Principle Investigator:***

<b>Print</b>	<b>Signature</b>	<b>Date:</b>

***Department Head or Facility Supervisor:***

<b>Print</b>	<b>Signature</b>	<b>Date:</b>

***EHS Representative:***

<b>Print</b>	<b>Signature</b>	<b>Date:</b>

***Facilities Representative:***

<b>Print</b>	<b>Signature</b>	<b>Date:</b>

**Current (Interim) Emergency Contact**

<b>Name and Department</b>	<b>Daytime Phone #</b>	<b>After Hours phone #</b>

This record shall be kept in the PI's (or responsible person) permanent personnel file in their respective departmental office for a minimum of 10 years. Electronic copies shall be kept by the Office of Research and Environmental Health & Safety for a minimum of 10 years. A copy of the signature page shall be placed in the sign holder on or next to the laboratory door to be removed by the new occupant (40 CFR 792.195)