

# Laboratory Decommissioning Procedure

Document # 1102.02 – Rev. 1 (October 2023)

Office of the Chief Risk Officer

[uOttawa.ca](http://uOttawa.ca)



uOttawa

## Contents

<b>1. Document Background</b> .....	<b>3</b>
Purpose and Scope .....	3
Terms and Definitions.....	3
Responsibilities.....	3
Reference Documents.....	4
<b>2. Procedure</b> .....	<b>4</b>
Procedural Steps.....	4
Step 1 – Pre-Decommissioning.....	5
Step 2 – Decommissioning .....	6
Step 3 – Inspect, Verify and Document .....	13
<b>Appendix 1: Notification of Laboratory Decommissioning</b> .....	<b>14</b>
<b>Appendix 2: Laboratory Decommissioning Form</b> .....	<b>15</b>

Version Control Table

Version Number	Owner	Approver	Change Summary	Status
1	OCRO	OCRO	New	N/A

# 1. Document Background

## Purpose and Scope

The purpose of this procedure is to minimize potential hazards prior to the relocation, demolition or renovation of spaces where hazardous materials have been used or are suspected to have been used. The procedure must be followed whenever:

- the researcher responsible for the lab intends to leave the University;
- the researcher responsible for the lab intends to relocate to a different space at the University of Ottawa; or
- major renovations to the existing lab space are planned that would require the laboratory's routine activities to be suspended for the duration of the construction activities.

This procedure addresses what is required to manage all hazardous chemical, biological, and radiological hazards associated with research and academic activities in such laboratories, the subsequent decontamination of all surfaces, and close-out of all regulatory documentation. **The decommissioning process will only be complete when all required documentation is signed, all hazardous and non-hazardous materials and wastes have been removed from the vacated spaces, and all surfaces in the lab have been thoroughly decontaminated and cleaned.**

The Laboratory Decommissioning Form will be posted on the door(s) of the room(s) being decommissioned. As each stage of the decommissioning process is completed, the responsible person must sign and date the form as indicated.

## Terms and Definitions

Refer to the [OHS Glossary](#) for the terms and definitions that apply to the documents in the OHS management system.

## Responsibilities

The responsibilities of individuals who play roles in this procedure, including those of supervisor and worker, are detailed in the [Laboratory Safety Program Manual](#) and [Administrative Procedure 14-1](#) (Internal Responsibility Procedure for Health and Safety Issues). Here are some responsibilities specific to this procedure:

**Principal investigator (PI)** - Responsible for the safe decommissioning of their laboratory or group of laboratories. This responsibility includes leaving all facilities in a safe condition when the premises are vacated. Decommissioning must be completed before the departure of the PI.

**Vice-dean, research (or equivalent/delegate)** – Along with the PI, responsible for initiating the decommissioning process.

**Health, safety and risk manager (HSRM)** – The HSRM facilitates the laboratory decommissioning; this may include coordinating aspects of the decommissioning process to ensure that all accountable persons complete their tasks in a reasonable and timely fashion.

**Facility manager** – Manages the overall space management, including coordination, liaising with Facilities and the HSRM to keep the decommissioning process moving forward.

**Risk management specialist - Biosafety** – Responsible for verifying that all regulated biohazardous materials and wastes are thoroughly removed from the laboratory or properly disposed of in accordance with uOttawa biosafety decommissioning procedures and regulatory requirements. Also responsible for amending or terminating the Principal Investigator’s Biohazardous Materials Use Certificate(s), ensuring the decommissioning result meets uOttawa biosafety program requirements, and signing off on the Laboratory Decommissioning Form.

**Risk management specialist - Radiation** -- Responsible for verifying that all radioactive materials laser and X-ray devices and relevant wastes are thoroughly removed from the laboratory or properly disposed of in accordance with uOttawa radiation decommissioning procedures and regulatory requirements. Also responsible for amending or terminating the Principal Investigator’s radiation, laser, or x-ray permit, ensuring the decommissioning result meets uOttawa radiation safety program requirement and signing off on the Laboratory Decommissioning Form.

## Reference Documents

- [General OHS Program Manual](#)
  - [Hazard Identification and Risk Assessment \(HIRA\) Procedure](#)
- [Laboratory Safety Program Manual](#)
- [Biosafety Program Manual](#)
- [Radiation Safety Program Manual](#)

## 2. Procedure

### Procedural Steps

The following steps **must be followed** when planning to vacate a laboratory or suspend research activities in a space that houses laboratory materials and equipment:

1. Pre-decommission
2. Decommission
  - a. Hazard-specific considerations
3. Inspect, verify and document

Additional steps may be required based on the project or scope of work.

### Main activities

- **Three (3) months prior** to moving out of the laboratory space, conduct the specified activities to prepare for the decommissioning process.
- **One (1) month prior** to moving out of the laboratory space, conduct the specified activities to prepare for the decommissioning process.

### Contextual details

The steps specified outline the preparatory work required to ensure a safe and efficient decommissioning process.

## Step 1 – Pre-Decommissioning

### *Three (3) Months Prior to Move Out*

- 2.1. The principal investigator (PI) completes a [Notification of Laboratory Decommissioning form](#). This form requires the signatures of the PI and the Faculty's vice dean, research (or equivalent/delegate).
- 2.2. The PI sends the completed and signed [Notification of Laboratory Decommissioning form](#) to the Faculty's Health, Safety and Risk Manager (HSRM).
- 2.3. HSRM informs the Faculty's facility manager. The HSRM will accompany the PI (or their designate) on a tour of the space(s) to be decommissioned.
- 2.4. The PI and HSRM develop a close-out plan that is tailored to the space(s). They identify critical dates.
- 2.5. The PI and HSRM provide an inventory of the hazardous materials to dispose of or transfer to the [Risk Management Specialist – Environment](#). Special attention must be paid to any unknown materials, expired chemicals, chemical containers exhibiting damage, corrosion, or crystallization, or high hazard chemicals (violently reactive chemicals, toxic gases, etc.).
- 2.6. If the space is listed on a biosafety, radiation, x-ray, or laser permit, the PI (or designate) must inform the [Risk Management Specialist - Biosafety](#) or [Risk Management Specialist - Radiation](#) to initiate applicable decommissioning procedures.

### **Material Transfer Agreement**

- 2.7. If the PI is relocating to another university and intends to take research materials with them, the PI must contact [Innovation Support Services](#) to determine whether a material transfer agreement (MTA) is required.

### *One (1) Month Prior to Move Out*

- 2.8. PI reviews the space(s) to ensure that hazardous materials have been identified and have been (or will be) disposed of.
- 2.9. PI seeks assistance from the HSRM or Facility Manager in planning the safe transfer of materials, removal of any high hazard materials (violently reactive chemicals, toxic gases, etc.), and planned relocation of all electrical equipment (if applicable).
- 2.10. PI and HSRM review critical dates and adjust plan, as needed (e.g., radioactive and chemical waste collection, special equipment transportation arrangements, etc.).

## Step 2 – Decommissioning

### Main Activities

- Continue to complete the [uOttawa Laboratory Decommissioning Form](#). **The decommissioning process will only be deemed complete when all documentation is signed, all hazardous and non-hazardous materials and wastes have been removed from the vacated spaces, and all surfaces in the lab have been thoroughly decontaminated and cleaned.**

### Contextual Details

The uOttawa Laboratory Decommissioning Form is posted on the door(s) of the space(s) being decommissioned. At the end of each stage of the decommissioning process, the responsible person must sign and date the form, as indicated.

### *Biological Hazards*

Any biohazardous materials (materials containing or previously containing microorganisms, toxins, or allergens derived from organisms, plants, or animals) present in the lab must be designated for transport to the PI's new lab, formally transferred to another PI, or properly disposed of.

- 2.11. PIs working with regulated RG2 material must complete the [Biosafety Decommissioning Form](#).
- 2.12. The Risk Management Specialist – Biosafety must be informed of any intent to transfer any biohazardous materials to another laboratory at uOttawa or to another PI at uOttawa. The Risk Management Specialist – Biosafety will verify the containment level of the new lab and make any changes required to the receiving PI's Biohazardous Materials Use Certificate (BMUC). Furthermore, an **import permit addendum** may be required from the Canadian Food Inspection Agency (CFIA) if the PI is relocating to another lab at the University.
- 2.13. Biohazardous waste material must be disposed of either by thermal treatment in an autoclave (preferred) or by rendering it harmless using chemical disinfectant techniques.
  - 2.13.1. Liquid biological waste must be chemically disinfected for at least 30 minutes using freshly prepared 10% bleach and decanted into a labelled, designated liquid waste carbonyl (carboy) container in preparation for disposal via the hazardous waste program.
  - 2.13.2. Solid biological waste, such as culture dishes and flasks, petri dishes, solid waste cultures/stocks used in producing biologicals, gloves, gowns, masks, shoe covers, and any other solid materials potentially contaminated with biohazardous material, must be placed in suitable orange autoclave bags bearing the biohazard symbol and a hazardous waste label, and then autoclaved onsite prior to disposal as municipal waste.

- 2.14. Disinfect surfaces with 70% ethanol solution. Freezers that may be contaminated need to be switched off and defrosted prior to disinfection. Complete and post an equipment decommissioning tag once complete.
- 2.15. Decontaminate laboratory sinks with freshly prepared 10% bleach and let stand a minimum of 10 minutes before running water.
- 2.16. Remove all media and supplies from drawers, shelves, and cabinets.
- 2.17. Biological safety cabinets require professional decontamination prior to removal. They require recertification before they can be relocated. Contact the Risk Management Specialist – Biosafety.
- 2.18. The Risk Management Specialist – Biosafety will sign the posted decommissioning form once all biological hazards have been removed, all work surfaces have been decontaminated, and all paperwork relevant to the PI's BMUC has been closed out.

#### *Radiological Hazards*

The decommissioning of a room or a piece of equipment for radioactive material is a three-part exercise requiring the removal of all radioactive material and wastes, the monitoring for contamination (and subsequent decontamination, if required), and the removal of all radiation warning signs and symbols from the laboratory.

- 2.19. PI must follow the procedure outlined in the [Radiation Safety Manual](#).
- 2.20. The Risk Management Specialist – Radiation will verify that the appropriate measures have been taken and will update their permit and inventory database.
- 2.21. The Risk Management Specialist – Radiation, in conjunction with the PI and lab staff, will oversee the completion of the separate [Room Decommissioning Record](#).
- 2.22. As required by CNSC, the permit holder (the PI) is responsible for maintaining all associated contamination monitoring records for three years.

#### *Lasers and X-Ray Devices*

- 2.23. The key or activation mechanism must be removed from the control box and secured. Where possible, remove or disable any power cords to prevent unauthorized use.
- 2.24. If an x-ray device is relocated, transferred, or disposed of, the Risk Management Specialist – Radiation must inform the Ministry of Labour, Immigration, Training and Skills Development. If an x-ray device is disposed of, the PI must submit proof of x-ray source being removed or destroyed to the Risk Management Specialist – Radiation.

### *Controlled Substances*

- 2.25. Controlled substances are regulated by the *Controlled Drugs and Substances Act*. The PI will need to obtain a permit or exemption from Health Canada before purchasing a controlled substance. It is forbidden to simply give a controlled substance to another researcher when decommissioning a laboratory: the other researcher must coordinate any transfer through Health Canada and have the documentation to demonstrate this.
- 2.26. Controlled substances that are no longer required and will not be formally transferred (in accordance with the instructions above) must be disposed of through the University's Hazardous Waste Program. Contact the HSRM: the controlled substance must be destroyed and/or rendered unusable before leaving the lab and being submitted as chemical waste. **IMPORTANT:** A designated official (e.g., the HSRM) must witness the destruction of the controlled substance.

### *Laboratory Chemicals and Hazardous Chemical Waste*

- 2.27. The PI must transfer or designate products for disposal. Before any chemicals are given to any other uOttawa researcher, lab staff must record the transfer in the electronic uOttawa Chemical. Contact the Faculty's HSRM if assistance is required.
- 2.28. Check chemical containers for expiration dates and signs of damage, corrosion, or crystallization, as this could indicate hazardous conditions. Any expired chemicals and any chemical containers exhibiting damage, corrosion, or crystallization must be disposed of as chemical waste and must not to be relocated to new space(s).
- 2.29. Any transfer of designated substances (i.e., acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica, and vinyl chloride) must be completed in accordance with the [Designated Substances Program](#) and Ontario Regulation 490/09.
- 2.30. For peroxide-forming materials in the decommissioned lab: if the container has been opened and is more than six months old, or if it has not been opened and is more than one year old, the material must be disposed of as chemical waste and must not to be relocated to a new location. The Faculty's HSRM must be notified if perchloric acid has been used within the space or in a fume hood.



- 2.31. All containers of chemical waste must be fully and properly labeled with a University Hazardous Waste label, as shown. Chemicals to be disposed of that are still in their original containers and bear legible supplier labels do not require a hazardous waste label.

Figure 1 - uOttawa Hazardous Waste Label

- 2.32. Lab staff must remove the entries of chemical waste from the electronic chemical inventory before it is transferred.
- 2.33. Disposal of hazardous chemicals into sinks, drains, toilets, or other water or sewage disposal channels is **STRICTLY PROHIBITED**. Notionally empty containers (i.e., those with 3% or less chemical residue) must be triple rinsed with the rinsate and the rinsate collected as chemical waste. Deface the container label and set the rinsed chemical container aside for recycling.
- 2.34. All chemicals must be properly packaged before being relocated. Do not transport chemicals yourself.
- 2.35. All chemicals must be moved during regular business hours (8 a.m. to 4:30 p.m., Monday to Friday). Equipment and other, non-hazardous materials may be moved after hours or on the weekends. Laboratory personnel must be present when chemicals are relocated to the new space.

#### *Compressed Gases*

- 2.36. The Principal Investigator must return all cylinders to the Faculty's receiving area. Should the PI move to another building at uOttawa, the PI should order new cylinders from the new location. In the case of expensive specialty gas mixtures, the cylinder must be transported in accordance with TDG regulations. Contact the HSRM for assistance.
- 2.37. Compressed gas cylinders and dewars must be properly capped and secured during transport. Cylinders must be transported in an upright position on an approved cylinder cart.

- 2.38. Empty cylinders must be labeled "empty" by tearing the perforated hang tag. They must be transported by lab staff back to Receiving/Stores.
- 2.39. The contents of lecture bottles will determine whether the manufacturer accepts them back as part of a recycling program, but in most instances, lecture bottles will be disposed of through the University's hazardous waste program.

#### *General Housekeeping*

- 2.40. All garbage must be removed from the space, including empty containers, paper, and disposable materials. All non-hazardous materials may be disposed of as general waste.
- 2.41. All surfaces, including bench tops and fume hoods, must be washed down with warm, soapy water after all garbage has been removed.
- 2.42. Any broken glass or unwanted glassware must be disposed of in rigid, puncture-resistant containers.
- 2.43. Any sharps, such as needles or razor blades, must be disposed of in an appropriate sharps container.
- 2.44. At the end of the decommissioning process, no waste or unwanted goods may be left behind in the space(s).

#### *Physical Hazards*

- 2.45. All physical hazards must be removed prior to vacating the space. Such hazards include, but are not limited to: items, objects or equipment that may cause slips, trips, falls, thermal stress, noise, vibrations, and any bodily harm or damage.
- 2.46. All laboratory-specific research apparatus must be dismantled and removed from the space(s).

#### *Refrigerators, Freezers, and Equipment*

- 2.47. Refrigerators and freezers must be emptied and their contents must be segregated into hazard classes before their disposal or relocation from the space(s). A cooler with dry ice may be used to move items that must be refrigerated.
- 2.48. All contaminated (or potentially contaminated) laboratory equipment must be decontaminated before removal from the space. If any equipment contains hazardous

products, these products must be safely removed, drained, or discharged from the equipment. If decontamination could damage the equipment or cause a hazard, refer to the manufacturer's recommendations for decontamination of the equipment.

- 2.49. Any equipment that previously contained hazardous materials, or was used with hazardous materials, must be tagged with an equipment decommissioning tag before it can be removed from the space.

#### *Fume Hoods and Exhausts Systems*

- 2.50. Every effort must be made to identify potential contaminants of concern and to adjust decommissioning procedures and equipment accordingly. The project manager or construction manager must consult with the principal investigators, laboratory managers, HSRM, and/or the chemical inventory system to review the current and past use of the chemicals and inventory in the laboratory. If there are any uncertainties, a strictly conservative approach must be applied for the removal or disposal of any radioactive, biological, or other potentially explosive, shock sensitive, or toxic substances.
- 2.51. Visually assess and non-intrusively inspect the duct work to ensure that the ducting from the fume hoods to the ceiling at the vertical rises is physically separated from other systems. Verify internal portions of the duct at the access points near the beginning of the system (i.e., at the hood), exhaust fans and mechanical room for signs of corrosion and/or visible deposits.
- 2.52. Before proceeding with work on the fume hoods and ducting, wet the entire system using an adequate method of wetting internal surfaces for a minimum of 24 hours. Wetting methods may include steaming the system, or introducing a fine mist in the fume hood while running the exhaust fan, or any other wetting method that ensures water contact with all internal surfaces for a prolonged period. Adequate catch basins, dikes and other water recovery methods are required throughout the project to avoid wastewater escaping the work area.
- 2.53. Remove system components (while continuing to wet). Create access points where the exhaust duct systems will be cut. All intrusive work (e.g., drilling, sawing, and cutting) on the duct systems must be done with continuous wetting of the drilling or cutting tool. Minimize vibration, friction, shocks and shaking as much as possible. Regularly monitor for hazardous agents. Do not dismantle joints, cut into the ducts away from joints, elbows, accessories or any other section with potentially higher accumulation of perchlorates. Non-sparking tools and ground fault circuit interrupters (GFCIs) are required to work on and disassemble fume hoods and exhaust ducts systems.

- 2.54. Decontaminate the components of the removed system. Submerge all disassembled parts in clean, cold water and keep submerged until all hazardous materials have dissolved.
- 2.55. Test a representative number of rinse water samples. Collect them in sterile containers and send to a laboratory certified by the CALA (Canadian Association for Laboratory Accreditation) for analysis to confirm the effectiveness of the decontamination.
- 2.56. Any sections of disassembled components that cannot be successfully decontaminated must be kept moist and disposed of as hazardous waste.
- 2.57. Recycle or dispose of the materials. A Notice of Decontamination form must be attached to the part(s) prior to leaving the space.
- 2.58. Alternative work methods and/or procedures must be detailed in the work plan and submitted for review and approval by the University prior to commencement of work.

#### *Drain Piping and Plumbing Systems*

- 2.59. An experienced professional should assess the fume hood plumbing system, including piping, drain lines, sink traps and wastewater systems, to determine the potential risk of discharge of hazardous materials (e.g., mercury). The assessment will dictate if any further actions are needed.

#### *Miscellaneous Hazards*

- 2.60. Certain laboratory equipment and apparatuses may contain materials or hazardous substance that are potentially harmful to human health or the environment. These may include:
  - Asbestos (e.g., fume hoods, autoclaves, ovens, gloves, curtains, hot plates);
  - Mercury (e.g., manometers, thermometers, barometers, silent switches);
  - PCBs (e.g., batteries, batteries supplies, high voltage systems, capacitors, pump oils);
  - Acids (e.g., batteries); and
  - Solvents (e.g., degreasing equipment).

Notify the Faculty's HSRM if you know or suspect that some equipment contains any of these materials.

#### *Emergencies*

- 2.61. In the event of an accident or other emergency during decommissioning, immediately contact Protection Services at 613-562-5411 or ext. 5411.

## Step 3 – Inspect, Verify and Document

### Main Activities

- Complete final lab verification with the facility manager and HSRM, and ensure that all necessary decommissioning forms are signed (e.g., [Laboratory Decommissioning Form](#)). The decommissioning process will only be considered complete when all documentation is signed, all hazardous and non-hazardous materials and wastes have been removed from the vacated spaces, and all surfaces in the lab have been thoroughly decontaminated and cleaned.

### Contextual details

The decommissioning form(s) will be posted on the door(s) of the room(s) being decommissioned. As each stage of the decommissioning process is completed, the responsible person(s) will sign and date the form, as indicated.

## **Appendix 1: Notification of Laboratory Decommissioning**

Refer to the [Notification of Laboratory Decommissioning form](#)

## **Appendix 2: Laboratory Decommissioning Form**

Refer to the [Laboratory Decommissioning Form](#).