

	Decommissioning of Laboratory Space Prior To Relocation, Demolition or Renovation	Document Number: EHS
		Effective Date: 3-1-2005
		Revision Date: 12-28-2011

1.0 Purpose and Applicability

- 1.1 The purpose of these procedures is to eliminate, as much as possible, any potential hazards to personnel and the environment prior to the relocation, demolition or renovation of laboratory space.
- 1.2 These procedures were established to ensure that hazardous materials are disposed of properly when faculty/researchers/occupants of a laboratory transfer to a different laboratory or leave the University. Procedures also apply to all demolitions, renovations or reassignments of space conducted at the University of Massachusetts/Amherst and any of its field stations. These guidelines are based in part on information described in the American National Standard for Laboratory Decommissioning ANSI/AIHA Z9.11-2008.
- 1.3 This document is designed to reduce the number of unwanted and unknown hazardous materials in laboratories, reduce waste disposal costs, prevent or minimize the risk of exposure to personnel and provide personnel with a healthy, safe, and clean place to work. Responsibilities of the individual, department, and the institutional administrative areas are addressed. Procedures that must be followed for the proper disposition of hazardous materials generated in research and included within building materials are identified.
- 1.4 These procedures shall be supplemented, expanded or consolidated as required to address the specific space and decommissioning effort.

2.0 Definitions

- 2.1 A laboratory is a place equipped for experimental studies in the sciences. It is a workplace where relatively small quantities of hazardous materials (chemical, biological, radiological, physical) are used on a non-production basis.
- 2.2 Hazardous materials are materials that can harm people, other living organisms, property, or the environment. Hazards include radioactive, flammable, explosive, toxic, corrosive, and biohazardous materials, and also oxidizers, asphyxiants, pathogens, allergens, pesticides and animals, that may have characteristics that render them hazardous in specific circumstances. Physical hazards include mechanical moving parts, high pressure reactions, lasers, magnetic fields, radiation, and microwaves.
- 2.3 Decommissioning is a process to ensure a facility meets environmental health and safety requirements for its next use.

- 2.4 Demolition/Renovation - Any operation which involves the wrecking, taking out, removal, stripping, or altering in any way or construction of one or more facility components or facility component insulation.

3.0 Roles and Responsibilities

- 3.1 The faculty member assigned to a laboratory is responsible for the proper use and disposal of all hazardous materials used for research purposes in his/her assigned laboratory space. When a faculty member or personnel under his/her supervision transfers to a new laboratory or leaves the University, s/he must follow proper "clean out" procedures. Each department shall be responsible for developing written check out procedures and inspecting facilities for hazardous materials when laboratory close out procedures have been completed (see Laboratory Checkout list 6.0 document). Environmental Health & Safety (EH&S) will review check out procedures and provide information on hazardous materials, proper disposal procedures and regulations governing disposal of hazardous materials. Any problems resulting from improper management (such as, but not limited to, unlabeled chemicals or biologicals, unknowns, outdated chemicals, chemicals which may have formed peroxides or have become shock sensitive) of hazardous materials at closeout will be addressed by the faculty member's Department Head.
- 3.2 The Department Head/Chairperson is responsible for ensuring that the hazardous materials used for research purposes and hazardous waste generated from the research procedures has been properly disposed of. *EH&S will not be responsible for any additional cleanup costs, regulatory action or fines resulting from non-compliance with this policy.* In these instances, the responsible department head will arrange for the necessary remediation funds.
- 3.3 EH&S shall inspect the facility before any demolition or renovation begins. EH&S shall provide technical guidance and advice to all parties regarding decontamination and waste disposal, ensuring compliance with state and federal regulations. The purpose of the EH&S assessment is to identify, based on the historical use of the space, the types of contaminants anticipated and general areas and equipment that shall be professionally decontaminated.
- 3.4 The project manager for the funding authority (Facilities Planning, Physical Plant, or other) is responsible for ensuring that this procedure has been followed. In addition, decontamination and proper disposal of hazardous materials that make up or are included within the building materials and equipment must be completed prior to any alterations of the space. This includes but is not limited to asbestos, lead paint, mercury, PCB's etc. Project managers shall give timely notification to EH&S of planned renovations/demolitions of laboratory space.

4.0 Procedure

- 4.1 Research materials, equipment and space - Faculty shall remove and properly dispose of all research materials from the laboratory and from any shared storage units such as refrigerators, walk-in incubators and cold rooms, stock rooms, glove boxes, and waste collection areas. Hazardous materials must be disposed of properly according to EH&S policies. Faculty and lab occupants familiar with specific area hazards shall surface clean

chemical hoods (unless heavily contaminated or a review determines a previous specialized use which needs specific testing and decontamination), biosafety cabinets, benchtops, cabinets, shelves etc. The faculty member of the laboratory shall inspect the facilities and notify the department head/chairperson that graduate students, postdoctoral associates, and employees under his/her supervision have followed the proper disposal procedures and fulfilled his/her responsibilities for cleanup.

<https://cems.unh.edu/umass/CEMS/RequestRemoval>

4.2 Radiation use laboratory - If any device, hood, chase, fan, ductwork, plumbing, equipment and/or instrument is associated with a radiation use laboratory, area and/or room, then a radiation contamination survey must be performed on all affected locations before any removal, repair, renovation or demolition takes place.

4.3 If laboratory equipment is to be discarded, EH&S shall be notified to assess equipment for hazardous materials. Batteries, capacitors, transformers, mercury switches, mercury thermometers, oil, asbestos linings, radioactive sources, and CFCs from refrigerators, etc. may be in equipment and must be removed before disposal. EH&S will clear this equipment for removal. For proper disposal of laboratory equipment see: <http://www.umass.edu/recycle/content/SEDformOWM9-6-06.pdf>

4.4 Decontamination of space

Standard decontamination procedures are:

- Clean out all loose material and debris
- HEPA vacuum all surfaces
- Spray and wipe down all surfaces with an aggressive cleaner while wearing level B protection
- Collect all liquids from sink traps and chip tanks. Contact EH&S to test all sink traps and chip tanks for the presence of mercury. Plug all drains in any location where a sink trap or chip tank was removed. Lock Out Tag Out for all water supply to decommissioned sinks.
- Call Environmental Health & Safety for proper assessment of abandoned containers uncovered during the demolition/renovation process.

Ensure that the following items are collected and properly disposed of : fluorescent light tubes, light ballasts, batteries of any kind, mercury switches or controls, smoke detectors, electronic equipment and sharps.

EH&S has Contract for Service information for vendors that are approved for laboratory decontamination procedures.

Specialized decontamination procedures may be necessary subject to review of historical use of space.

4.5 Removal of Chemical Fume Hoods, Ductwork and Fans

- Evaluation of the historical use must be done
- Specialized chemical hood use (radioactive materials, perchloric acid, extremely hazardous compounds) requires further evaluation and testing
- All other chemical fume hoods require decontamination and cleaning of hood baffles and fans before removal and disposal.

4.6 Biosafety cabinets (BSC) must be decontaminated by an authorized contractor before moving. BSCs must be recertified by an authorized contractor before reuse.
<http://www.ehs.umass.edu/bio/Procedural/BioCabinetManagement.pdf>

4.7 Building materials - Based on the historical use and type of operations conducted in the area, the funding source (Facilities Planning, Physical Plant, other) will dispose of building materials

- Asbestos abatement: Asbestos containing material (ACM) determine type, location and quantity of ACM
 - Lead
 - PCB materials
 - Oil
 - Refrigerant
 - Mercury
- See: http://www.ehs.umass.edu/HAZMAT_Survey_Guide1%202011%2003%2014.pdf

5.0 Key References

- 5.1 American National Standard for Laboratory Decommissioning ANSI/AIHA Z9.11-2008
- 5.2 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.1450, Occupational Exposures to Hazardous Chemicals in Laboratories, January 31, 1990.
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10106
- 5.3 University of Massachusetts/Amherst, *Waste Management at UMass*.
<http://www.ehs.umass.edu/Environmental%20Management.htm>
- 5.4 University of Massachusetts/Amherst, *Radiation Safety Manual*.
<http://www.ehs.umass.edu/RadSafetyManual070112.pdf>
- 5.5 US environmental Protection Agency Protection of Environment, 40 CFR 239-299
<http://www.epa.gov/epahome/cfr40.htm>
- 5.6 Massachusetts Department of Environmental Protection hazardous waste 310 CMR 30.00
<http://www.mass.gov/dep/servi/regulations/310cmr30.pdf>
- 5.7 Special report of the Research Council, Policy Concerning Safety and Training Protocols for Visiting Scientists and Scholars UMass Sen. Doc. No. 09-024. 2009.

6.0 Laboratory Checkout List for Researchers

Laboratory Checkout List for Researchers		
Researcher Name	Email	
Faculty Name	Email	
Building	Room	
All areas of the laboratory shall be inspected including refrigerators, acid and flammable storage cabinets, shelves, cabinets, drawers, walk in rooms, glove boxes, etc.		
RESEARCH MATERIALS	Yes	N/A
Chemical disposal or chemical relocation is complete. http://www.umass.cems.sr.unh.edu/CEMS/Info		
Biological disposal or relocation is complete. http://www.ehs.umass.edu/bio/UMASSBiosafetyTOC2010.pdf		
Radioisotope disposal or relocation is complete. EHS has cleared room. http://www.ehs.umass.edu/RadSafetyManual070112.pdf		
CEMS has scanned all materials for moving or disposal. http://www.umass.cems.sr.unh.edu/CEMS/Info		
Compressed gas cylinders have been returned to distributor.		
Hazardous waste disposal is complete. http://www.umass.cems.sr.unh.edu/CEMS/RequestRemoval		
EQUIPMENT	Yes	N/A
Biological Safety Cabinet(s) have been decontaminated. http://www.ehs.umass.edu/bio/Procedural/BioCabinetManagement.pdf		
Benchtops, cabinets, surfaces cleaned		
Chemical Hood - surface cleaned		
Surplus Equipment Disposal Form submitted. http://www.umass.edu/recycle/content/SEDformOWM9-6-06.pdf		
Name	Signature	Date
Lab Member:		
Faculty:		
Dept Head:		