

<b>DOC #:</b>	EHS-0049	<b>Revision #:</b>	1.8
<b>DOC Type:</b>	SOP	<b>Implementation Date:</b>	02/10/06
<b>Page #:</b>	1 of 9	<b>Last Reviewed/Update Date:</b>	04/23/20
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# Deactivating and Decommissioning Equipment

## 1. Purpose / Background

The purpose of this Standard Operating Procedure (SOP) is to ensure that equipment is properly decommissioned and if necessary decontaminated prior to moving, handled by an outside contractor or final disposal off MIT property. It describes the procedure used to deactivate and dispose of MIT equipment that may present a potential hazard if not properly decommissioned. The MIT Property Office physically tags equipment with a value of \$3000 and greater for the purposes of property control. Each piece of equipment registered by the Property Office is assigned a Class (i.e., laboratory equipment, furniture, and computers) and an expected life for depreciation expressed in years (see Appendix A, Table 1). Every two years, the Property Office does a physical inventory of registered equipment (approximately 60,000) and attempts to identify the final disposition of any not found. All equipment still in use and inventoried, is categorized as “active”. Once removed from the active status, it is placed into one of the categories listed in Appendix A, Table 2.

## 2. Scope

This SOP covers all equipment used or stored at MIT or at offsite locations conducting MIT business that may contain or become contaminated with chemical, biological, or radioactive material or may otherwise present a hazard to unknowledgeable users unless a warning is provided, or it is rendered harmless.

Equipment that is not tracked by the Property Office because it is valued at less than \$3000 or is home built must also be handled as prescribed here if it presents a potential hazard, if not properly decommissioned.

No equipment can be removed from a laboratory unless it has been decontaminated according to this SOP.

## 3. Prerequisites

It is required that the current “owner” of the equipment be knowledgeable or have documentation about their use of the equipment and the potential hazards associated with the equipment.

## 4. Procedures

- 4.1 When decommissioning equipment which bears a tag from the MIT property office, the first step is to submit a notification using the on-line Environment, Health and Safety (EHS) Office Laboratory Decommissioning Tracking Tool. If the equipment decommissioning is part of a larger laboratory decommissioning

- effort, a separate notification need not be submitted (the equipment will be managed under the notification submitted for the laboratory decommissioning). Decommissioning equipment which does not bear a Property Office tag does not require submittal of an on-line notification.
- 4.2** Follow the established procedures below for work with radiation-producing materials (i.e., radionuclide) or equipment (lasers, X-ray units, etc.) and/or biological materials, rDNA, infectious agents, etc. for registration, maintenance, and termination of their use and associated equipment
- 4.3** Follow the established procedures for handling, maintenance, and decontamination of equipment using or coming into contact with chemicals as described in your Department, Lab, or Center's (DLC's) Chemical Hygiene Plan. All actions indicated below are to be performed by the equipment owners with assistance from the appropriate EHS Program.
- 4.4** Deactivate alarms and disconnect power and/or release stored energy inside equipment prior to cleaning or decontamination.
- 4.5** For equipment potentially contaminated with radioactive materials:
- 4.5.1** Perform initial survey or evaluation to identify contamination
  - 4.5.2** Obtain EHS approval before defrosting freezers which held radiological materials to ensure ice build-up is free of contamination.
  - 4.5.3** Perform decontamination
  - 4.5.4** Verify decontamination was complete
  - 4.5.5** Contact EHS Radiation Protection Program (RPP) for assistance and final verification by telephone at 617-452-3477 or via the Web at <http://ehs.mit.edu/>
  - 4.5.6** Remove all radiation signs and attach completed "lime green" equipment decontaminated label (Appendix B).
- 4.6** For X-rays or accelerator equipment:
- 4.6.1** Contact RPP to discuss decommissioning plans
  - 4.6.2** Perform initial survey to determine if contaminated
  - 4.6.3** Decontaminate as necessary
  - 4.6.4** Contact RPP for decontamination verification and final disposal options
  - 4.6.5** RPP will remove the x-ray/accelerator from the MCRP registration inventory
- 4.7** For Class 3b and Class 4 lasers and laser systems:
- 4.7.1** Contact RPP to discuss decommissioning plans
  - 4.7.2** Perform initial survey to determine if there are any hazardous components (oil, chemical dyes, etc.)
  - 4.7.3** Decontaminate/dispose of all potential hazardous materials
  - 4.7.4** Contact RPP for decontamination verification and final disposal options for the laser system

- 4.7.5** RPP will assist in disposal and will remove the laser from the MCRP registration inventory
- 4.8** For equipment potentially contaminated with biological agents from BL2+ or lower containment facilities:
- 4.8.1** Perform initial survey or evaluation to identify contamination (equipment used with viable biological agents will be labeled with biohazard signs).
  - 4.8.2** Obtain EHS approval before defrosting freezers which held radiological materials to ensure ice build-up is free of contamination.
  - 4.8.3** Perform decontamination of all surfaces using appropriate disinfectant
  - 4.8.4** Verify decontamination was complete
  - 4.8.5** Contact EHS Biosafety Program (BSP) for assistance and final verification by telephone at 617-452-3477 or via the Web at <http://ehs.mit.edu/>
  - 4.8.6** Remove biohazard sign and attach completed "lime green" equipment decontaminated label (appendix B).
  - 4.8.7** Note that Biological Safety Cabinets (BSC) can only be removed from a laboratory space after they have been decontaminated by an outside vendor, or with approval from BSP.
- 4.9** For equipment potentially contaminated with chemicals, including those with chemicals as components (vacuum pumps with oil, lead shielding, etc.):
- 4.9.1** Perform initial survey or evaluation to identify contamination
  - 4.9.2** When emptying refrigerators or freezers of chemicals, plan for a new location to store the removed items. Any chemical materials which are temperature-sensitive must be stabilized and left at room temperature for at least 24 hours before EHS will collect them.
  - 4.9.3** Perform decontamination. Contact EHS Industrial Hygiene Program (IHP) for guidance on purging equipment or systems which contain hazardous gases.
  - 4.9.4** Verify decontamination was complete
  - 4.9.5** Attach completed "lime green" equipment decontaminated label (appendix B).
  - 4.9.6** Contact EHS IHP for assistance and final verification by telephone at 617-452-3477 or via the Web at <http://ehs.mit.edu/>
- 4.10** Equipment that potentially contains polychlorinated biphenyls (PCBs)
- 4.10.1** Transformers and capacitors manufactured prior to July 2, 1979 must be assumed to contain PCBs unless a) testing or documentation shows that there are no PCBs or the PCB concentration is less than 50 parts per million (ppm) or 10 ug/100cm<sup>2</sup> or b) the equipment bears labeling from the manufacturer indicating "NO PCBs".
  - 4.10.2** Equipment bearing the yellow sign "Caution: Contains PCBs" per 40 CFR 761 must be disposed as PCB material.
  - 4.10.3** Any PCB-containing material, including transformers and capacitors, that is in use or in storage shall be tested for verification of PCB content prior

to disposal or recycling. The Environmental Management Program (EMP) and its hazardous waste contractor may perform this testing.

**4.10.4** The EHS Office shall be notified of the decommissioning and deactivation of transformers and electrical switches (e.g., G&W switches) associated with the campus power distribution system, or any transformer or electrical

**4.10.5** Switch with greater than 55-gallon oil capacity that is being prepared for storage/disposal.

**4.11** Some fume hood panels as well as insulation/components of older furnaces could contain asbestos. Contact EHS to verify that suspect materials are asbestos-free prior to attempting to clean or decontaminate them.

**4.12** For equipment potentially presenting a physical hazard, contact EHS for advice. See Appendix A, Table 3 for examples of such equipment

**4.13** Once equipment is cleaned and decontaminated, with the lime green label affixed, a work request should be submitted through the Department of Facilities to have it removed from the lab. Functional, useful laboratory equipment and supplies can be offered to other groups at the Institute. Resources for listing useful materials are available through the EHS Green Labs Program and the MIT Property Office.

**4.14** For e-waste such as computer monitors, cathode ray tubes (CRTs), TVs and computer equipment contact the Recycling and Materials Management Office for drop off locations or pickup requests at 617-253-2835 or email [recycling@mit.edu](mailto:recycling@mit.edu)

**4.15** For all equipment leaving MIT, remove all labels and stickers that reference MIT.

## 5. Roles & Responsibilities

### 5.1 Faculty, staff, and students:

Users of equipment that may be covered under this SOP are responsible for identifying potentially hazardous conditions and taking the necessary actions to render equipment free from contamination or physical harm during use and before final disposition. **They are also responsible for using the on-line EHS Laboratory Decommissioning Tracking Tool to notify the Property Office prior to any transfer/disposal of MIT owned equipment.**

### 5.2 The Property Office:

Is responsible for keeping documentation of the status of equipment valued at \$3,000 (one thousand dollars for computers) or greater and communicating any change of status from active to EHS for those equipment identified in Appendix A, Tables 3 and 4 or otherwise suspected of possessing the potential for harm. They will also forward a copy of all disposition requests (for equipment on Appendix A, Tables 3 and 4) to EHS ([environment@mit.edu](mailto:environment@mit.edu)).

### 5.3 The EHS Office:

Is responsible for providing appropriate procedures to 1) identify potential hazards, 2) perform decontamination or mitigation of physical hazards and 3) verification of completion. The EHS Office will also provide guidance on the appropriateness of final disposition depending on the potential hazard. The EHS office will notify the Property Office and the equipment owner when deactivation is complete. Finally, the EHS Office is responsible for maintaining inventories of equipment containing certain EHS hazards, including materials with PCBs in concentrations of 50 ppm or greater. As PCB-containing materials are moved from the campus, MIT is responsible for revising the campus inventory.

### 5.4 EHS Coordinators and EHS Representatives:

Are responsible for communicating the requirements of this SOP and monitoring its implementation within their DLC and Lab Group.

### 5.5 Facilities personnel (i.e., recyclers/movers):

Are responsible for verifying that all laboratory or potentially contaminated equipment has an "MIT Equipment Decontamination Record" sticker on it before moving to another location (see Appendix B).

### 5.6 Department, Labs and Centers (DLC):

If contract movers are hired directly by the DLC then the DLC is responsible for verifying that all equipment has an "MIT Equipment Decontamination Record" sticker on it before moving (Appendix B).

## 6. Training

All those involved with identifying potential hazards, conducting surveys where appropriate, and performing decontamination where appropriate must have completed the appropriate EHS training. Before performing any of these tasks, each person must complete and/or update their Training Needs via the MIT Learning Center (<http://ehs.mit.edu/>).

## 7. Record Management

The Property Office maintains status (active versus non-active) of equipment initially valued at \$5000 or greater.

The EHS Office maintains records of radiation survey results and verification of acceptability of final disposal for the equipment listed in Appendix A, Tables 3 and 4. Records are kept for the duration specified in the EHS Office Records Retention Schedule.

## 8. References

To view the SOPs/SOGs go to <https://ehs.mit.edu/sops/> and search for the SOP/SOG listed. MIT Certificates are required to view SOPs/SOGs.

- EHS-0003: Hazardous Waste Removal and Disposal
- EHS-0026: Laboratory Cleaning, Decontaminating, and Decommissioning
- EHS-0034: Universal Waste Management for Laboratories and Facilities
- EHS-0021: EHS Office Records Retention

## 9. Definitions

### 9.1 Final Disposition:

Includes sending equipment anywhere off the MIT Campus, disassembling equipment for parts or disposal as trash.

### 9.2 Contamination:

Any level of chemical, biological or radionuclide present in high enough concentration to cause harm by contact or inhalation.

### 9.3 Decommissioning:

Rendering equipment safe for its next intended use or final disposition.

### 9.4 Decontamination:

Removal of residual chemical, biological or radionuclide that may be present on or in the equipment to a safe level.

## Appendix A: Table 1 - 4

**TABLE 1:** Assigned Class by MIT Property Office

Number	NAME
00	Miscellaneous
01	Artwork
02	Athletic Equipment
03	EDP (Computer) Equipment
04	Furniture
05	Laboratory & Sci. Equipment
06	Medical Equipment
07	Musical
08	Office Equipment
09	Precious Metals
10	Service
11	Shop
12	Telecom
13	Vehicles
14	Buildings

**TABLE 2:** Status Category for MIT Equipment with an Initial Value Greater than \$1,000

Code	Description
ABND	Abandoned
CNBL	Cannibalized
DACT	Deactivated
EXCH	Exchanged
FELL	Fellowships
GIFT	Gift
LOSS	Loss
RACB	Roa (Government)
RETC	Returned for credit
RETR	Retired
SCRP	Scrapped
SOLD	Sold
STLN	Stolen
TRAD	Traded
XOUT	Xfer outside MIT
XSPO	Xfer to sponsor

**Table 3:** Equipment Presenting a Potential Physical Hazard

Accelerator	Lathe
Centrifuge	Microwave Device
Compressor	Sand-Blast Machine
Cutoff Machine	Sander
Electrophoresis Apparatus	Saw, Band
Fire Extinguisher	Saw, Table
Fire Extinguishing System	Source, Alfa
Hydrogenator	Static Eliminator
LASER	Ultraviolet Lights in Gel viewers and Biological Safety Cabinets

**TABLE 4:** Equipment Requiring Notification to EHS by The Property Office Upon Removal from The Active List

Accelerator	Hood, Fume
Air-Conditioning Unit	37°C Incubators
Autoclave	Incinerator
Bioreactor	Ionizer
Biological Safety Cabinets	Irradiation Unit
Blueprint Machine	Kiln
Centrifuges (Low, high and ultra-speed) from Biological research laboratories	LASER
Chromatograph, Gas or Liquid	Laboratory Refrigerators
CO <sub>2</sub> Incubators	Microbalance
Counter, Gamma	Microwave Device
Counter, Scintillation	Nebulizer
Cyclotron	Ovens
Detector	Plasma Beam Apparatus
Fermenter	Pump, Vacuum
Fog Machine	Oil filled electrical equipment
Forge	Reactors
Freezers (-80°C and -20°C)	Source, Alfa
Furnace	Static Eliminator
Generator	Transformer
Glove Box	Vacuum Chambers
Gun, Welding	Water baths, shakers and vortexes from laboratories
Hood, Culture	

# Appendix B: MIT Equipment Decontamination Record “Lime Green” Sticker

**MIT EQUIPMENT DECONTAMINATION RECORD**

Principal Investigator \_\_\_\_\_  
Name Phone Date

This piece of equipment was used with the following:

No Hazardous Materials     Biologicals

Chemicals     PCBs surveyed by IHP \_\_\_\_\_  
Initials Date

Radiation     Surveyed by RPP \_\_\_\_\_  
Initials Date

Other Hazardous (specify) \_\_\_\_\_

Decontaminated with \_\_\_\_\_

By (Name) \_\_\_\_\_ Date \_\_\_\_\_

Equipment OK for removal or reuse: \_\_\_Yes \_\_\_No

**REMOVE THIS LABEL BEFORE REUSING EQUIPMENT**

BTU/MIT 007 Rev. 10/04