Laboratory Safety Close-Out Manual

Department of Environmental Health and Safety
1800 Arthur St. Louisville, KY 40208

Due to the variety and amount of hazardous materials (biological, chemical, and radioactive) in our laboratories, moving from a lab space has the potential to negatively impact the safety of current and future staff, research, and the environment. This manual contains the necessary steps each lab must complete to receive clearance to move out of a lab space.

To schedule a close-out consultation or if you have any questions about this manual, contact the Department of Environmental Health and Safety at 502-852-6670 or dehsih@louisville.edu.

Overview

Laboratories operating within the University of Louisville must be left in a state suitable for new occupancy or renovation activities. The vacating Principal Investigator (PI) and department are responsible for:

- Ensuring the clean and safe condition of equipment and benchtops left in the lab
- Movement of equipment from the lab space for relocation, repair, and/or surplus
- Proper disposal of chemical, biological, and radioactive materials and waste materials

Applicability

The following procedures must be used whenever a laboratory operating within the University of Louisville will be vacated for any reason (e.g. renovation, relocation, or termination of research activities).

> **Equipment moves not in conjunction with a lab close-out**: If equipment is to be released to non-lab personnel (e.g. movers, repair services, surplus), the equipment must have a DEHS-provided sticker verifying proper decontamination. Submit an Equipment Release Form to notify DEHS of equipment movement and start this process.

Responsibilities

Department of Environmental Health and Safety (DEHS) can assist by providing guidance for the laboratory close-out process. DEHS provides the final clearance for lab spaces to the vacating PI and department upon completion of all necessary steps as outlined in this manual.

Department Chairs are ultimately responsible for the vacating PI following the necessary steps outlined in this manual to obtain final clearance from DEHS regarding the condition of the vacated lab space. If items (e.g. equipment, waste, chemicals) are left behind and the PI cannot be contacted or determined, the Department Chair will assume all costs and responsibilities for completing the close-out process and receiving final clearance from DEHS.

Principal Investigators (PI) operating within the University of Louisville are responsible for the safe operation of their lab space and personnel. This responsibility includes completing all necessary steps for vacating a lab space, as outlined in this manual, and receiving final clearance to vacate the lab space from DEHS.

Outside contractors (including Physical Plant) are prohibited from working in laboratories that have not received final clearance from DEHS. Cleared labs will be posted with a signed DEHS Lab Close-Out Certification on outside doors. Cleared lab equipment will be posted with a signed DEHS Equipment Release sticker.

Procedure

Lab space cannot be reoccupied or renovated until DEHS has given its final clearance. This manual provides a checklist of items to facilitate the proper close-out of a lab space to receive this clearance.

Sections include: master checklist; general lab guide; chemical and chemical waste guide; biological materials, sharps, and biohazardous waste guide; and radioactive materials guide.

Complete the master checklist prior to a scheduled lab close-out consultation visit from DEHS. DEHS is always available by email and phone to assist during the close-out process, but the close-out visit is typically the final step. The additional guides included in this manual provide details and specifics for completing items in the master checklist; reference them as necessary.

Once you've finished the master checklist, **complete the Laboratory Close-Out Checklist Self-Assessment in BioRAFT**. DEHS requires completion of the self-assessment prior to a scheduled final close-out visit and may request its completion if missing. Guidance on how to perform the BioRAFT self-assessment can be found at the end of this manual.

Contact DEHS with any questions during the close-out process.

DEHS Main Office	502-852-6670
Biosafety Officer	502-852-2959
Hazardous Waste Coordinator	502-852-2956
Radiation Safety Officer	502-852-6146
Lab Safety Assessment Specialist	502-852-2830

✓	Master Checklist
	All chemical waste and chemicals have been properly removed for disposal by DEHS through its chemical hazardous waste program.
	Chemicals have been relocated to new lab location or institution. Note that moving hazardous chemicals in a motor vehicle will require the appropriate DOT containers, permits, and registrations.
	Chemical fume hoods have been emptied, cleared of debris, and appropriately decontaminated to remove chemical hazards.
	All lab surfaces that came in contact with chemicals have been cleaned with soap and water to remove any contamination.
	All lab equipment remaining in the lab has been emptied and appropriately decontaminated to remove any biological and/or chemical hazards.
	Refrigerators and freezers have been emptied and appropriately decontaminated to remove any biological and/or chemical hazards.
	All compressed gas cylinders have been returned to the supplier or appropriately relocated.
	All controlled substances have been transferred to another DEA registrant or disposed of through the DEHS Witness Destruction program.
	All biological materials have been destroyed, transferred to another University of Louisville Principal Investigator or lab, or relocated to a new lab space appropriately. Note that moving biological materials in a motor vehicle may require appropriate DOT containers and permits.
	Select Agents have been destroyed or transferred in accordance with 42 CFR Part 73, 9 CFR Part 121, and/or the University of Louisville Select Agent Program.
	Biological safety cabinets have been emptied and decontaminated with a fresh 10% bleach solution, or other appropriate disinfectant, followed by 70% ethanol to prevent corrosion. If moved, BSCs must be professionally decontaminated.
	All stocks and media solutions have been decontaminated by autoclaving or by addition of bleach to a final concentration of 10% and allowing to sit for 30 minutes prior to disposal down the drain.
	All lab surfaces used for infectious materials have been decontaminated with a fresh 10% bleach solution.
	All biohazard signs and labels have been removed from equipment and cabinets following decontamination.
	Solid biological and infectious materials and contaminated supplies have been properly disposed of in University of Louisville vendor-supplied red bag waste containers.
	All sharps have been placed into sharps containers and the closed sharps containers disposed of in University of Louisville vendor-supplied red bag waste containers.
	All radioactive materials and inventories have been compare and balanced to account for all materials.
	All radioactive materials have been transferred to another authorized user, transferred to another institution, or disposed of as radioactive waste in accordance with DEHS Radiation Safety Office procedures.
	Equipment and devices that have internal radioactive sources must be cleared by the Radiation Safety Office prior to transfer or moving.
	The Radiation Safety Office has conducted an exit survey of the lab after the last use of radioactive materials.
	Copies of the radioactive materials inventory have been sent to the Radiation Safety Office.

✓	General Lab Guide
	Remove any non-permanent absorbent pads and tape from all lab surfaces, including within fume hoods. Dispose of contaminated absorbent materials in appropriate solid waste containers.
	For moves within the University of Louisville, -80 freezers do not have to be emptied assuming contents will not shift or break during the move. Freezers must be locked or securely closed such that they will not open during the move. Exterior surfaces of freezers, including doors and handles, must be disinfected using a fresh 10% bleach solution and any other disinfectant appropriate for the materials stored in freezers. Contact DEHS for guidance on appropriate disinfectants and procedures.
	Refrigerators must be emptied before moving. All interior and exterior surfaces must be cleaned with soap and water ad a fresh 10% bleach solution. Additional disinfectants may be necessary depending on the materials stored in the refrigerators. Contact DEHS for guidance on appropriate disinfectants and procedures.
	Empty and properly dispose of all materials in drawers, cabinets, and fume hoods. Wipe down surfaces with soap and water where chemicals were stored. Lab supplies (Petri dishes, test tubes, glassware, unused sharps, etc.) may remain in drawers if usable, properly stored, and an agreement with the department and any outgoing/incoming lab personnel has been reached. DEHS is not responsible for removal of lab supplies for a vacating or incoming PI.
	Ensure that all microtubes, pipette tips, glass Pasteur pipettes, razor blades, scalpels, and any other used or open sharps are removed from within drawers, under equipment, and off the floor and properly disposed of in appropriate glass waste and sharps containers.
	Decontaminate surfaces of ALL equipment using a fresh 10% bleach solution. Additional disinfectants may be necessary depending on the materials used in the lab. Contact DEHS for guidance on disinfectants and procedures. Equipment being released to movers, repair services, or surplus will receive a signed DEHS sticker verifying proper decontamination.
	Incubators and water baths must be drained of all standing water, including water inside the jacket. Disinfect inside and outside surfaces using a fresh 10% bleach solution and any other appropriate disinfectant. Contact DEHS for guidance on proper disinfectants and procedures.
	Contact DEHS for assistance with any chemical fume hoods where perchloric acid was used.
	It is unacceptable to leave contaminated equipment or dispose of equipment in the trash. Contact Physical Plant 502-852-6241 if unwanted equipment contains a compressor or refrigerant.

✓	**Chemical/Chemical Waste Guide**
	Chemical/Chemical Waste Sorting and Disposal
	No chemical should be disposed of by discarding into trash, pouring into sinks or drains, or evaporating in chemical fume hoods. Designate an area to collect unwanted or waste chemicals. Complete the waste disposal forms to initiate a DEHS waste pickup. **The Waste Disposal Chemical Pickup Form (University of Louisville login required) should be completed at least two weeks prior to the move.** For large quantities of chemicals for disposal, contact the Hazardous Waste Coordinator 502-852-2956 for instructions.
	Hazardous waste cannot be moved from one location to another. The waste disposal forms and subsequent waste pickup must be completed prior to a final lab close-out clearance.
	Try to minimize the amount of chemicals that need to be moved to a new lab space; take this opportunity to dispose of chemicals that are expired, unused, or no longer needed. Ensure that all containers are clearly marked as to the contents, hazards, and any applicable dilutions. Containers should be in good condition and capable of being securely closed. Check containers for expiration dates, signs of corrosion, or crystallization. Segregate compromised or contaminated containers for disposal.
	Identify and label any unknown substances; disposal of true unknown substances is very expensive. Segregate true unknown substances for identification during waste collection.
	Segregate unopened chemicals that have not expired and are not being transferred to a new location. DEHS may accept these chemicals into the redistribution program.
	Carefully inspect shared storage areas such as refrigerators, freezers, cold rooms, and flammable liquid cabinets. Old reagents, samples, and inherited chemicals from past lab personnel must be identified and moved or disposed of properly.
	Disposal of compressed gas cylinders a) Mark empty cylinders as 'EMPTY.' b) Remove regulators and replace valve stem cap. c) Contact compressed gas vendor for removal. d) Return lecture bottles to the manufacturer. Contact the Hazardous Waste Coordinator 502-852-2956 for assistance with disposal if the manufacturer/vendor will not accept.
	Moving compressed gas cylinders a) Ensure adequate gas cylinder restraints are available. b) Purge all lines and regulators on cylinders. c) Remove the gauge and regulator and secure the valve cap before moving. d) Transport secured cylinders upright on wheeled compressed gas transport dollies. e) For moving toxic gases, contact DEHS 502-852-6670 for special procedures.
	Chemical Packaging
	Package and transport chemicals only during normal business hours so that DEHS is available to assist in the event of an emergency.
	Have spill clean-up materials on hand before you being packing. Wear proper personal protective equipment (PPE) such as gloves, lab coats, safety glasses or goggles when handling chemicals and chemical spills. While packing, ensure all chemical containers are properly labeled and securely closed.

	Keep an updated chemical inventory while packing so that it is readily available for the new lab space.
	Use sturdy trays, deep boxes, or 5 gallon buckets with lids to pack chemicals. Cushion containers with compatible absorbent materials to prevent breakage and spills. Pack containers so they can be completely closed and are not too heavy.
	Label all containers according to general hazard class (see below).
	Separate chemicals according to hazard class. This ensures incompatibles do not react should containers break and helps in unpacking and segregating chemicals for storage at a new location. Categories and typical identifiers include: Flammable and Combustible Liquids (Red) Corrosive Acid (White A) Corrosive Base (White B) Flammable Solids (Red) Oxidizers (Yellow OX) Poisons and Toxins (Blue T) Cyanides (Blue C) Peroxide Formers (Yellow PF) Water Reactives (Yellow WR) Organic Peroxides (Yellow OP)
	Chemical Moving
	University personnel can use the above packaging guidelines to relocate chemicals if the new lab location is in the same or adjacent building to the previous lab location. University personnel cannot use personal vehicles to move hazardous chemicals. Physical Plant personnel cannot move hazardous chemicals. For assistance in intra-campus hazardous chemical relocations that require a motor vehicle, please contact the DEHS Hazardous Waste Coordinator 502-852-2956.
	To obtain qualified hazardous materials moving company information: if contracted by University of Louisville, call Purchasing at 502-852-6247; if contracted outside of University of Louisville, contact the DEHS Hazardous Waste Coordinator 502-852-2956.
	DEHS can provide assistance in moving hazardous materials; a two week notice for this service is required to ensure available personnel.
	If an independent moving company is contracted to move hazardous materials via motor vehicle, DEHS requires the PI ensures the mover is licensed and certified to transport hazardous materials over the road and complies with DOT regulations 49 CFR 172.404 and 177.800 (employee training). Contact the Hazardous Waste Coordinator 502-852-2956 for assistance.

✓	**Biological Materials and Waste Guide**
	If you have an Institutional Biosafety Committee (IBC) registration, you must modify the registration in iRIS for: a) Location changes, including locations and certification dates of biosafety cabinets b) Termination of your IBC protocol if leaving the University of Louisville c) Transferring biohazard materials to another PI; the new PI must have an IBC registration in the same risk group and a lab at the same biosafety level as that required for the transferred materials. Contact the Biosafety Officer 502-852-2959 with any questions.
	Transfer of CDC/USDA Select Agents requires notification and approval by the CDC **prior** to move. A listing of select agents can be found here. Guidance documents and request forms can be found here. Contact the Biosafety Officer 502-852-2959 with additional questions.
	If you are transferring biological materials off campus to another institution, the proper DOT/IATA regulations must be followed. A current shipping certification is required to package these items for shipment. Contact the Biosafety Officer 502-852-2959 for guidance.
	Carefully inspect cold rooms, freezers, refrigerators, and shared spaces for biological agents. Samples must be either disposed of or moved to the new location. If items are left behind and a responsible person cannot be identified or contacted, the Department Chair assumes all costs and responsibilities for clean-up and disposal.
	Properly dispose of all biohazardous and recombinant DNA waste in red-bag lined Stericycle boxes. Decontaminate all liquid biohazard waste by adding bleach to a final concentration of 10% and allowing it to sit for 30 minutes before disposal down the drain.
	All biohazard materials must be double packaged before transport within the University of Louisville. The primary and secondary containers must be leak proof, and the secondary container should contain enough absorbent to absorb the entire contents of the primary container. The secondary container should be hard-walled and labeled with the biohazard symbol and PI contact information.
	Package and move biological materials during normal business hours when possible so that DEHS 502-825-6670 or the Biosafety Officer 502-852-2959 can be contacted if needed.
	Contact your liquid nitrogen (LN2) supplier to let them know your move date so they can assign a person to move your LN2 tanks. The N2 supplier must move your LN2 tanks. LN2 tanks should not be moved when full of liquid nitrogen; plan accordingly in the weeks before moving. Wipe handles and tops of the dewar with a fresh 10% bleach solution and any other appropriate disinfectant. Contact DEHS 502-852-6670 for disinfection guidance.
	Biological Safety Cabinets (BSC) a) Disinfect and remove all contents from BSCs. b) Disconnect the tissue culture vacuum flask and decontaminate the liquid waste by adding bleach to a final concentration of 10% and allowing it to sit for 30 minutes before disposal down the drain. c) Disinfect all surfaces of the BSC with a fresh 10% bleach solution, or any other appropriate disinfectant, followed by 70% ethanol to prevent corrosion. If accessible, disinfect under the work surface panels and front grille. d) If a BSC is being moved, professional decontamination is required. Preferred vendors include: Lewis Testing 1-868-508-7958 or Precision Air Technology 1-919-812-0340. Professional recertification is also required after relocation and some maintenance.

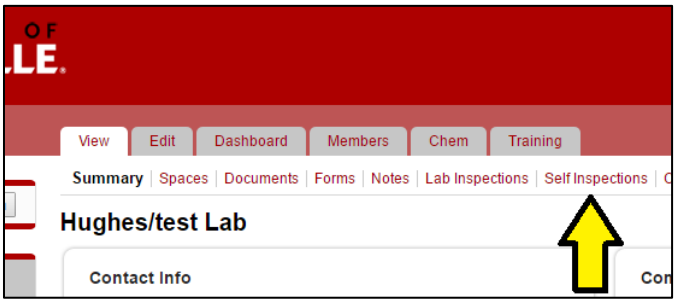
✓	**Radioactive Materials Guide**
	The Radioactive Safety Officer 502-852-6146 can assist with the movement of radioactive materials. Contact the RSO as soon as you know a tentative move date to arrange a Radiation Safety Exit Survey.
	At least 1 month prior to moving, amend your current Radioactive Materials Authorization Form to add new labs.
	Package all radioactive materials that can be disposed of as waste and request a radioactive materials waste pick up using this form.
	Inform the RSO of any radioactive materials use areas that will not be vacated but movers will need to access. Any chemical fume hoods used with Iodine-125 or Iodine-131 must be surveyed by the RSO.
	If equipment used to store or manipulate radioactive materials is moving, request a survey of the equipment from the RSO. This survey must be done prior to moving the equipment. If the equipment is being released to non-lab personnel (movers, repair services, surplus), DEHS will provide a sticker after verifying proper decontamination.
	Prior to the move day, the RSO will perform a commissioning survey of the new lab spaces and post radioactive materials signage when necessary.
	After the old lab is vacated, the RSO will perform a Radiation Safety Exit Survey. Once a final survey indicated no radioactive materials or contamination, the RSO will send correspondence to the Authorized User stating decommissioning is complete.
	The RSO will amend the authorization to add the new space and remove the vacated space.

How to Perform a Self-Inspection in BioRAFT

University of Louisville Department of Environmental Health and Safety
1800 Arthur St. Louisville, KY 40208 (502) 852-2830

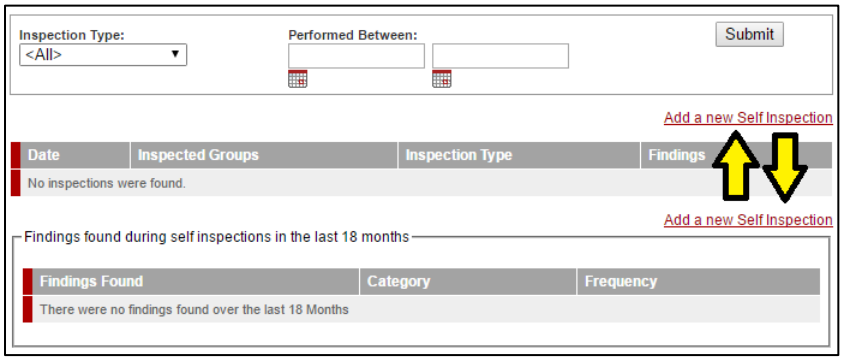
Step 1: Navigate to your lab profile by clicking 'View Lab Profile.'

Step 2: Navigate to the self-inspections module by clicking 'Self Inspections.'



Step 3: A new self-inspection can be started by clicking either of the two 'Add a new Self Inspection' links.

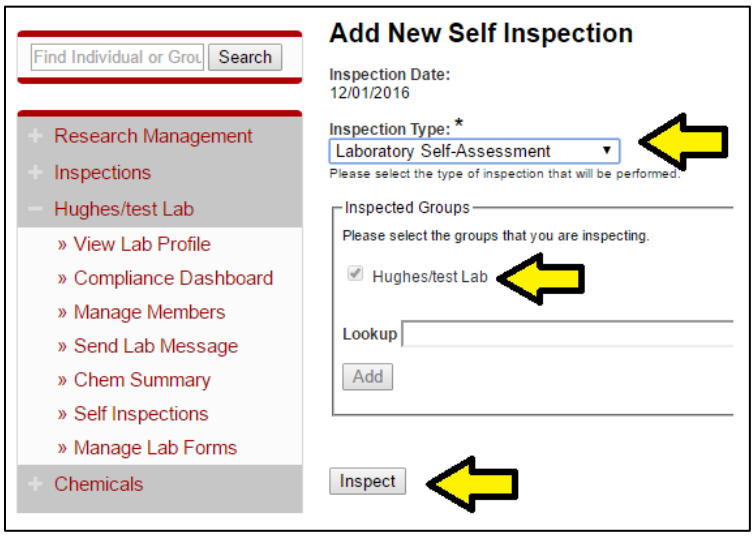
The top menu can be used to search for previous self-inspections. The middle box will show all previous self-inspections. The bottom box will show findings from all self-inspections performed in the past 18 months.



Step 4: From the drop-down menu, select 'Laboratory Self-Assessment.'

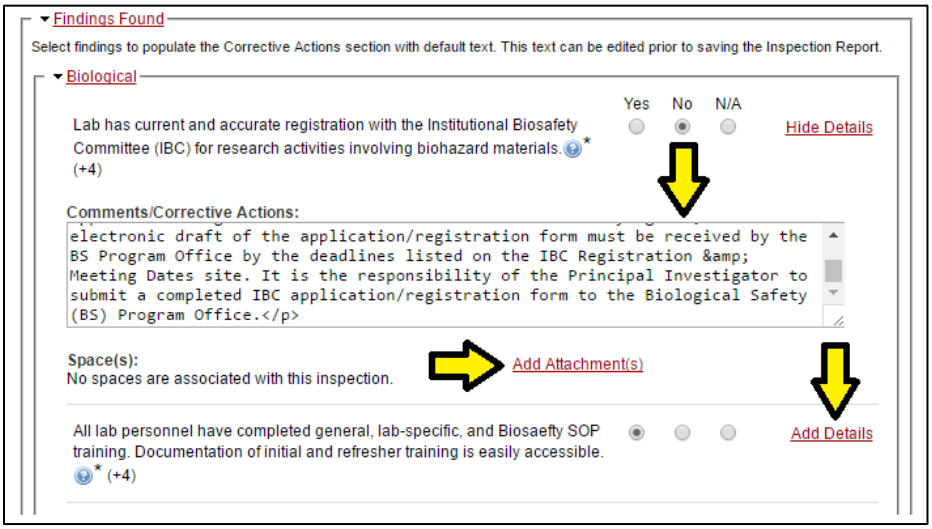
Ensure that your lab is selected as the Inspected Group. If it isn't, search by last name of the Principal Investigator in the 'Lookup' box. Select from the drop menu that appears and click 'Add.'

Click 'Inspect' to start the self-assessment.



Step 5: Perform your self-assessment by selecting 'Yes,' 'No,' or 'N/A' for each finding.

Answering 'No' will automatically populate the Comments box with useful information for improving each finding. Attachments and details can be added for each finding if desired.



Additional comments and details of corrective actions can be inserted in the text box at the bottom of the assessment.

Documents and photos can be uploaded to the self-assessment as well.

When complete, click the 'Save' button.