Washington University in St. Louis
ENVIRONMENTAL HEALTH & SAFETY

Guidelines for Laboratory Closure

These guidelines have been developed to facilitate the process of laboratory closure when an investigator is vacating or relocating, as well as full and partial laboratory renovations. These guidelines only cover the removal of regulated materials. It is the investigator's Department's responsibility to coordinate removal of all non-regulated materials (books, furniture, etc.). Both the Principle Investigator (PI) and the department/division Business Manager (BM) are responsible for ensuring that all necessary signatures are obtained on the Laboratory Safety Status form before vacating a lab or renovations begin.

Roles:	Responsibilities:
Department/Division Head	Ensures that PIs using biological, chemical, or radioactive material are aware of the requirements for close-out prior to vacating or renovation.
Responsible Party (RP) /Principle Investigator (PI)	The PI is responsible for executing the required tasks as outlined in the EH&S policies & guidelines, as well as contacting EH&S for guidance as needed. The PI is responsible for ensuring the removal of all chemical, radioactive, and biohazardous materials and the decontamination of lab surfaces and associated equipment in which their work was conducted. **The PI may delegate tasks to another RP, i.e. lab staff appropriate to their level of training, knowledge, and ability; however, in all cases, it remains the PI's responsibility to ensure tasks are completed according to the guidelines and specified protocols**. This includes proper use of personal protective equipment.
Department/Division Business Manager (BM)	Provides only support to the vacating lab. Admin staff shall not be required to undertake tasks for which they are not qualified through experience, training, or not within the normal scope of their job duties. In the event that the vacating PI cannot be held accountable for their responsibilities, the department BM assumes the responsibilities and must see that the tasks are completed by other means and will ultimately become the contact at this point. The BM may ask another qualified RP for assistance. If this is not possible, the department BM may need to expend funds to complete tasks in the absence of the PI or RP. The department is accountable for fees resulting from unaddressed chargeable lab close-out tasks.
EH&S Department:	Provides technical guidance and advice in accordance with relevant outside agencies to address the proper handling, transfer, and disposal of regulated biological, chemical, and radiological materials. Prepares policies and procedures to address a proper laboratory closure. Can offer advice regarding decontamination of surfaces or equipment found in a lab to prepare for re-occupancy, or for full or partial renovation.
Biological Safety Division (BSD)	Contact for IBC protocol update and closure.
Chemical Safety Division (CSD)	Advises Responsible Parties on proper lab close-out procedure. Performs the final inspection to release the room from the vacating PI for renovation or new occupancy.

Roles:	Responsibilities:
Environmental Compliance Division (ECD)	Removes surplus and waste chemicals/unwanted materials, biohazardous waste and universal waste. Provides advice on inter- and intra-campus chemical transfer, to include identifying qualified moving companies.
Radiation Safety Division (RSD)	Provides technical assistance on permitting or transfer of materials, as well as safety guidance or disposal of radiation producing equipment such as; X-ray system, fluoroscopic system, CT scanners, cabinet X-ray systems, electron microscopes, lasers (class 3B/4 lasers) and high field magnet safety.. Performs final surveys of the lab as well as large equipment where radioactivity was used or stored. Point of disposal for RAM waste.
Occupational Health & Safety Division (OHD)	Provides asbestos remediation guidance.

Definitions:	
Laboratory	A laboratory is a space where research or teaching is conducted, and where relatively small quantities of hazardous chemicals, biological materials and/or radiological agents are used. In a lab, much of the work involves manual manipulation of small containers or bench-top apparatus, and the work does not result in the routine production of goods.
Responsible Party (RP)	Principal Investigator (PI), or PI/departmental designee that has authority for the equipment or lab area and understands the hazards associated with the related chemical, biological or radioactive materials, and the training to handle those materials.
Contaminant	A substance found in a lab space that is potentially harmful, hazardous, or creates a nuisance.
Lab Decontamination	The removal of chemicals, drugs, sharps, equipment, biological materials, radioactive materials, supplies, papers/records, and removal of gross contaminations from surfaces. Labs in a decontaminated condition do not pose a recognized hazard to staff, visitors, or contractors.
Lab Clean-Out of Surplus Chemicals	Chemicals that are unused, off-specification—old, expired, or otherwise unstable—or chemicals in the original container with the label intact and legible, can be submitted in a lab clean-out once every 12 months. This process is separate, but often implemented in conjunction with the lab close out. Round lab clean-out stickers will be provided.
Lab Close-Out	A close-out is the final inspection by EH&S to verify that the process of removing all the accessible chemical, biological and radioactive materials, equipment, consumables, and any unwanted papers/catalogs, as well as any related contamination from accessible surfaces was performed by the responsible user. This is to confirm that the space can be safely reused by other laboratory staff, or undergo renovations by contractors.
Partial Close-Out	This is the process by which a specified area within a lab space is closed-out with the understanding that construction in the space will be confined to the area that underwent a decontamination process and final close-out inspection by EH&S.

Lab Closure Snapshot:

6 weeks before:

- ☐ Notify EH&S Chemical Safety auditor.
- ☐ Notify EH&S Radiation Safety inspector of investigator departure/lab renovation.
- ☐ Notify Capital Projects/facilities if necessary.

If renovation is taking place, please contact Radiation Safety REGARDLESS OF PRIOR RAM USE, to schedule a survey of opportunity.

See page 4 for details.

4-6 weeks before:

- ☐ Notify EH&S Environmental Compliance of impending unwanted material/waste or surplus chemical removal **before** it needs to be collected.
- ☐ Pack chemicals, equipment, supplies, and samples for moving or shipping. Contact EH&S to assist with chemical packing and shipping. EH&S Radiation Safety must ship or transfer any radioactive materials.
- ☐ Have all chemical, biological, radioactive, and sharps waste and gas cylinders removed.
- ☐ Dispose of any remaining uncontaminated glass or non-hazardous materials.

See pages 4 & 5 for details.

2 weeks before:

- ☐ Clean out all cabinets, drawers, desks, refrigerators, freezers, fume hoods, biosafety cabinets, incubators, etc. in the lab.
- ☐ Do no leave any materials unless prior arrangements have been made with the new investigator or the department/division.

See pages 5 & 6 for details.

Just before:

- ☐ Wipe down all surfaces, cabinets, and fume hoods with an appropriate disinfectant or detergent solution.

Lab Closure Process

Early Closure Steps—at least six weeks prior to vacating space:

1) When it is known that a PI is vacating a laboratory or that is to be renovated, the department/division business manager is to notify a representative from EH&S Chemical Safety Division (CSD) (314-362-6816) and from EH&S Radiation Safety Division (RSD) (314-362-3476). Typically this notice will be given to the auditor and inspector assigned to the building and PI from these EH&S divisions, respectively.

Please note if extensive construction or renovation is planned such that previously inaccessible building systems will be accessed (i.e. ductwork, sink pipes, vacuum systems, etc.), Radiation Safety will need to survey these areas, regardless of prior RAM use.

2) Please note that this document only addresses EH&S (including RSD) policies regarding laboratory closures. Any other relevant compliance offices (Animal Studies Committee, Office of Sponsored Research Services, Office of Technology Management, Office of the Vice Chancellor for Research, etc.) should be notified as they may also have applicable policies for laboratory closures.

Early Closure Steps—at least four to six weeks prior to vacating space

1) If the lab space will be renovated before another PI moves in, the business manager should contact Capital Projects/Facilities for the Medical School campus, or Facilities Planning & Management for the Danforth campus, to make them aware of the impending lab closure.

REGARDLESS OF COST/SIZE, THESE GROUPS SHOULD BE CONTACTED—even if the department/division is hiring an outside contractor to do the work.

Capital Projects/Facilities Planning & Management will perform an asbestos survey after the final inspection by EH&S, and will request asbestos abatement by an accredited outside vendor if necessary.

2) If a lab group will be re-locating to a new space within Washington University, any new rooms that will be used in conjunction with radioactive materials must first be approved by the Radiation Safety Committee (RSC) before any radioactive material can be moved there. You may obtain the necessary amendment form from Radiation Safety. The Authorized User (AU) will be notified and the room will be posted for radioactive materials upon approval. Additionally, please contact both the BSD and the CSD to review the new location and potential requirements.

3) If hazardous materials are to be shipped to another university or will travel to another laboratory on either campus via public roads, the PI or another RP should consult with EH&S ECD on vendor selection, proper packing, moving, and/or shipping of these materials.

4) The PI/RP will notify EH&S ECD (Danforth Campus: 314-935-4650, Medical School Campus: 314-362-6735) of the need for unwanted material/chemical waste and equipment pickup and disposal at least four to six weeks before the anticipated collection date. Please plan submissions accordingly. The greater the volume

of surplus chemicals or equipment, the more time needs to be allowed for removal. Contact ECD to evaluate volume and coordinate chemical and equipment pickups, which may need to be done in stages over the course of several weeks. If advance notice is not given, or is not possible, an EH&S approved outside vendor will be called in to clean out the materials and equipment at the expense of the department/division. Gas cylinders should be returned to the original companies according to those companies' procedures. The PI/RP have two options for the pickup and disposal of unwanted materials/chemical waste. If the laboratory has not had a lab cleanout in the last 12 months and the chemicals meet the definition of surplus chemicals, the laboratory may have their surplus chemicals removed as a cleanout. See the Laboratory Cleanout Guidance.

Equipment containing potentially hazardous materials must be picked up by EH&S ECD. Guidance on what equipment contains potentially hazardous materials can be found on the EH&S website. Be sure to coordinate with ECD for equipment removal to avoid any "last minute" submissions, as this can cause delays in having the space closed out. ECD will be able to provide advice in selection of an approved mover.

Please be aware that certain equipment must have hazardous components (Freon, oil, lead, radioactive sources) removed before they are disposed of, sometimes by an outside vendor, which can take time. For example, refrigerators must have the Freon removed. Be sure to contact Environmental Compliance if you have any questions.

Fume hoods must be surveyed for asbestos before removal!

5) If no renovation will be taking place, and you have BM approval, you may leave equipment behind that has been clearly marked for the oncoming PI, or is departmental equipment. Unwanted equipment needs to be submitted for pickup by the PI/RP.

Two Weeks Before Closure

1) The PI/RP will place properly completed unwanted material or lab cleanout labels on all chemical containers that are to be picked up by EH&S. PI/RP will then complete Request for Pickup (RFP) forms for the disposal of all chemicals not included in a laboratory cleanout, as well as biological waste, sharps, and universal waste/equipment to be removed by EH&S. If biological or sharps waste is disposed of by an entity other than Washington University EH&S, please follow those procedure for waste disposal. RFP forms are submitted online through the EH&S website. It is advisable to have submission of these materials coordinated and underway at this time. Unless it has been arranged for equipment to stay behind, it needs to be removed as regulated equipment or universal waste.

   The PI/RP will ensure that radioactive waste is transferred to RSD using the normal waste pickup procedure. They must also arrange (through Radiation Safety) for any remaining radioactive materials or equipment to be transferred (through Radiation Safety) to another university or another WUSTL AU.

If a lab group is relocating to a new space within the University and the space has been approved in writing by the RSC, trained members of the lab may manually move radioactive materials or RAM-labeled equipment after they survey the equipment first to ensure it is contamination-free. If radioactive materials or pieces of RAM-labeled equipment are to be shipped to another university or will travel to another WUSTL laboratory via vehicle on public roads, then the PI/RP must notify RSD, who will package, label, and either ship, approve for transport, or transport the items to their final destination. Please note that Radiation Safety will need to be able to survey all inside surfaces of any RAM-labeled equipment, including -80 freezers, before they can be moved. Please plan to empty and defrost these items so that the surfaces are accessible for survey.

2) The PI should determine how remaining viable chemicals, supplies, and equipment will be reallocated if they no longer wish to keep these materials. The PI can donate chemicals and supplies to other labs and determine if equipment will be given to other investigators or become departmental property. **Lab fridges should not be used or donated for non-lab use.**

There are limitations and restrictions to relocating and donating materials:
***Highly hazardous/regulated materials should not change hands without prior approval!**

Some examples include, but are not limited to the following materials:
Select agent materials—contact EH&S for procedures
DEA materials—contact EH&S for procedures
Export-controlled materials—contact Export Control for procedures
Potentially explosive materials:
Ether cans, picric acid, perchloric acid
Radioactive materials
Hydrofluoric acid
Lecture cylinders
Toxic gas cylinders (CO, fluorine, NO, etc.)

3) The donation or disposal of any radioactive materials or equipment used with radioactivity should first be cleared with RSD, as they will need to survey the equipment and approve the transfer.

Just Before Closure

1) The PI, lab staff, or another RP may need to continue to submit surplus chemicals and chemicals determined to be unwanted material/hazardous waste to ECD. Unwanted material must be submitted for pickup by completing an RFP, found online at the EH&S website. Any unwanted material, abandoned chemicals or equipment left behind may delay closure of the lab, and subsequent renovation. If necessary, an EH&S approved outside vendor will be called in to collect the chemicals, unwanted material, and/or equipment at the expense of the department/division.

Please do not wait until the last minute to request removal of equipment and materials.

2) The PI and lab staff or another RP will pack, moved, and/or ship all non-hazardous materials in the laboratory. If large appliances or other equipment are being left behind for the next investigator, mark them in some fashion to state this intent.

As a reminder, do not attempt to transport or ship hazardous materials without prior approval. Transportation of hazardous materials on the public roads, even inter-campus moves, must be done by a licensed hazardous materials transporter.

For intra-campus moves, please contact EH&S for guidance on packing container selection and route selection in order to avoid high traffic, carpeted areas.

3) The PI or another RP will perform a final visual survey of the lab spaces to ensure that no unwanted material/hazardous waste, chemicals, gas cylinders, sharps, or other materials remain in the lab. Uncontaminated glass waste should be sealed in a plastic bag-lined cardboard box for regular trash collecting. Remember to empty refrigerators, desk drawers, and under-sink areas. All lab spaces and other rooms (dark rooms, microscope rooms, supply storage) under the control of the PI should be emptied. In addition, all materials belonging to the vacating lab should be removed from common use areas (cold rooms, equipment rooms, etc.).

4) The PI/RP is responsible for making sure all items are removed from the laboratory space. Please submit all materials for proper disposal within an appropriate amount of time. The lab close out cannot take place if any material is left behind. Do not abandon materials; last-minute submissions may cause a delay in the close out of the lab.

5) The PI/RP will perform a final meter and/or wipe survey of the lab, as appropriate, to ensure that no radioactive contamination remains. After disposal of these last used scintillation vials as radioactive waste, the lab group should perform a final visual inspection of the lab spaces to ensure that no radioactive stock vials, samples, wastes, etc. remain in the lab.

The final Radiation Safety laboratory records files must be turned over to Radiation Safety.

6) The lab is responsible for wiping down all surfaces with an appropriate disinfectant or detergent solution. Custodial services are not responsible for this initial cleaning, as the purpose is to eliminate any potential contamination resulting from lab work, for which they are not trained.

Closure—when lab has been vacated

1) The BM, the PI/RP will notify the appropriate CSD auditor and RSD inspector that the lab spaces have been cleared. Please give the auditors advanced notice so they can schedule accordingly.

2) The EH&S CSD auditor and the EH&S RSD inspector will inspect the lab areas and perform final radiation surveys. The EH&S auditor/inspector that performs the initial closure inspection will post the Laboratory Safety Status form.
   a) The EH&S RSD inspector will perform a visual inspection, instrument surveys, and wipe tests in the lab and on all RAM-labeled equipment. If the wipe tests show residual radioactivity, the lab staff will be required to clean the contaminated areas and a second wipe test will be performed. If the investigator and lab personnel have already left the university, RSD will clean the contaminated areas and bill the appropriate department/division for its services. The EH&S RSD inspector will sign the Laboratory Safety Status form and remove radioactivity signage only when the wipe tests show that the lab is free of radioactivity.
   b) The EH&S CSD auditor will perform a visual inspection of the lab spaces to ensure that all unwanted materials, chemicals, gas cylinders, equipment, and other materials have been removed. If any of these items remain in the lab, the auditor cannot sign the Laboratory Safety Status form until the items are removed or properly disposed of by the PI/RP. If the PI and lab personnel have already left the University, the department/division is responsible for the proper disposal of the remaining items. The department/division may ask another RP, or may choose to hire an EH&S approved contractor or EH&S ECD to remove the remaining materials. If EH&S has to pack/clean/dispose beyond the normal course of daily work activities, or does not receive adequate notice (minimum 2 weeks ahead of the cleanout time), an outside vendor will be assigned in order to remain in compliance at cost to the Department. When the lab passes inspection, the auditor will sign the Laboratory Safety Status form.

3) Once the Laboratory Safety Status form has been signed by the auditor and inspector, the BM will contact Capital Projects/Facilities (Medical School), or Facilities Planning & Management (Danforth) to let them know that EH&S has officially closed the laboratory and the space is now ready for asbestos surveys, if necessary.

4) It is the responsibility of the PI/RP to update the Institutional Biological and Chemical Safety Committee (IBC) protocol to reflect the change in location, or to close the protocol if leaving the University.

5) It is the responsibility of the PI/RP to update the online chemical inventory to reflect the change in location, or to close out the online chemical inventory if leaving the University. Please contact EH&S for assistance.

6) When Capital Projects/Facilities /Facilities Planning & Management has completed the asbestos survey and any necessary abatement, the business manager or PI may contact Custodial Services for either Medical School or Danforth campuses to have the room cleaned, or notify the contractors in charge of the renovation to begin construction.

Note: Custodial services will not be able to enter for their routine cleaning, and no construction can begin until all the appropriate signatures are on the Laboratory Safety Status form.

Routine cleaning by custodial services is separate from the cleaning that labs need to perform. Custodial services will not clean up chemical residues/spills, which can cause delays in construction. Therefore, labs need to wipe down all surfaces in which lab chemicals were used.

After Closure—when the space is reoccupied

1) The department/division Business Manager should notify the appropriate EH&S CSD auditor when a new investigator occupies the lab space, so that he/she may be given an Environmental Health & Safety Handbook ("Blue Book"). The BM should also contact the Biological Safety Division to determine if an IBC protocol is required for the new investigator. Any investigator moving into a new space must request authorization from the RSC before obtaining, using or storing radioactive materials in any laboratory. For existing AUs, use of a new space will require an "Application to Amend a Radioactive Materials Authorization". PIs or Principle Investigators who are not currently approved as AUs should contact EH&S RSD for information on how to apply for approval.

Special Equipment Considerations

Fume hood Removal/Move

- Residue from routine lab use should be reasonably decontaminated prior to moving.
- Hoods used for Highly Hazardous Materials work may require specialized decontamination. Contact EH&S for guidance.
- Hoods used for certain acids (e.g. perchloric) require specialized decontamination.
- Radiation Safety must be contacted in order to do a survey of opportunity, regardless of previous or current use of radioactive material.
- Fume hood must be surveyed for asbestos before removal.

Biosafety Cabinets (BSC) Removal/Move

- Biosafety cabinets must be decontaminated by an outside vendor prior to being moved to new lab area.
- Biosafety cabinets must be certified after moving, before they can be used again.

Contact Information:

EH&S Main Office:	314-362-6816
Radiation Safety Main Office:	314-362-3476
Environmental Compliance (WUSM):	314-362-6735
Environmental Compliance (Danforth):	314-935-4650
Export Control (Laura Langton):	314-747-1378 or email
Institutional Animal Care and Use Committee (IACUC):	314-362-3229 or email
Capital Projects/Facilities (WUSM):	314-362-8145
Facilities Planning and Management (Danforth):	314-935-5550
Design and Construction (BJH):	314-953-1900
Custodial Services (WUSM):	314-362-3563
Custodial Services (Danforth):	314-935-5030
Housekeeping (BJH):	314-747-7000
Request for Pickup (RFP) forms:	http://ehs.wustl.edu

Responsible party	**Laboratory Closure Checklist**	*Date*	*Initials*
PI	EHS Chemical Safety auditor notified of impending lab closure		
PI	EHS Radiation Safety inspector notified of impending lab closure		
PI	Capital Projects/Facilities/Facilities Planning & Management or Institutional Animal Care and Use Committee (IACUC) notified of impending lab closure (if necessary)		
LC	Submit list of surplus chemicals for removal to EHS **at least 4-6 weeks** in advance of desired lab closure date		
LC	Chemicals/equipment/supplies donated to other labs or department/division		
LC	Radioactive materials/equipment transferred or disposed of through Radiation Safety		
LC	Online Chemical Waste RFP forms submitted to EHS		
EHS	Hazardous and/or unwanted chemical waste removed		
EHS	Biohazard and sharps waste removed		
EHS	Radioactive waste removed		
EHS	Universal waste equipment removed		
LC	Gas cylinders returned to vendor		
LC	Fume hood cleared of all materials		
LC	Lab benches, desks, storage cabinet, drawers cleared of all materials		
LC	Shared rooms (cold rooms, warm rooms, tissue culture rooms, equipment rooms) cleared of all materials		
LC	Surplus equipment clearly marked for donation or retention by incoming investigator		
LC	Glass waste properly packaged for trash collection		
LC	Final visual survey and wipe tests of lab and common areas by lab staff		
LC	EHS Chemical Safety auditor notified that lab areas are ready for inspection		
LC	EHS Radiation Safety inspector notified that lab areas are ready for survey and inspection		
EHS	All necessary signatures obtained on Laboratory Safety Status form		
EHS	Picture of Laboratory Safety Status form taken by lab auditor		
LC	Custodial services contacted for cleaning of lab areas		
BM	Notify EHS of new investigator's arrival in lab		

PI = Principal Investigator

EHS = Environmental Health and Safety Personnel

LC = Lab Contact

BM= Business Manager