

ENVIRONMENTAL HEALTH & SAFETY

UNIVERSITY *of* WASHINGTON

# EH&S GUIDE FOR PRINCIPAL INVESTIGATORS

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DEVELOPED WITH SUPPORT FROM THE UW SCHOOL  
OF MEDICINE

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# EH&S GUIDE FOR PRINCIPAL INVESTIGATORS (PI GUIDE)

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## Why Read This Guide?

This guide is an introduction to Environmental Health and Safety (EH&S) for principal investigators (PIs) new to the University of Washington. This guide is also a reference tool for any principal investigator (PI). It outlines your health and safety responsibilities as a PI and provides links to related resources. It lists related requirements for grant proposals, purchases, and similar actions. It also outlines how to plan for emergencies and disasters.

As a PI, you are responsible for the workplace safety of everyone who works in your laboratory and for the requirements outlined in this guide. You may delegate safety-related tasks to others, but you retain ultimate responsibility. These responsibilities are outlined in [University of Washington Executive Order 55](#).

## Contact Information

Web pages and contact information for specific issues are listed throughout this guide. See the EH&S website for a list of contact information by topic.

## EH&S Resources

EH&S offers training, advice, and information regarding laboratory safety. The [EH&S website](#) has a variety of safety information and resources. The [Research & Lab Safety](#) web pages include links to everything covered in this guide.

EH&S provides resources and guidance for research at all UW campuses and most UW owned or leased facilities. However, policies and especially procedures may vary by location.

# TRAINING

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As principal investigator, you are responsible for ensuring that all your staff are trained on the hazards they will encounter while working for you. EH&S provides classroom and online courses. Some courses are required in certain situations. Almost all courses are free.

## EH&S General and Laboratory-Specific Training

The [UW Laboratory Safety Manual](#) outlines training required for you and your laboratory staff as well as other courses offered by EH&S.

## EH&S Training Webpage

Visit the [EH&S Training](#) page to see a schedule of current courses, register for scheduled classes, and take online courses.

## Laboratory-Specific Training

In addition to general courses taught by EH&S, all laboratory staff are required to have laboratory-specific training on the hazards they may encounter while working for you. This training is usually conducted by principal investigators or laboratory managers and should also include training on your department's [Accident Prevention Plan](#) (formerly Department Health & Safety Plan) and your building or department's [Fire Safety and Evacuation Plan](#).

## Laboratory Safety Seminar

At the beginning of each academic year, EH&S offers a Laboratory Safety Seminar for graduate students, faculty and staff working in laboratories. New graduate students who will conduct research or teach in laboratories should attend.

# CHEMICAL SAFETY

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If you use chemicals in your laboratory, you must have the following as a minimum:

## Chemical Hygiene Plan

If you use hazardous chemicals in your laboratory, state law requires that you have a Chemical Hygiene Plan (CHP). A CHP documents safe use and management of chemicals in your laboratory. The [UW Laboratory Safety Manual](#) fulfills most of this requirement. However, you must assess your actual procedures for their hazards and add your laboratory-specific details to the CHP, including floor plans and standard operating procedures (SOPs). For more information on SOPs, see Section 6 and Appendix D of the Laboratory Safety Manual. [Sample SOPs](#) are available on the EH&S website.

## Chemical Hygiene Officer

A Chemical Hygiene Officer (CHO) coordinates chemical safety for your laboratory, including providing training, writing and updating SOPs, and enforcing correct procedures. The CHO must be actively involved or observant of laboratory work and have the authority to enforce correct procedures. Usually the CHO is the principal investigator or laboratory manager. For more information, see Section 1.C.1 of the [Laboratory Safety Manual](#), Responsibilities –Responsible Party.

## MyChem Chemical Inventory

The University of Washington has [MyChem](#), an online chemical inventory system that stores the identity, location and amount of chemicals in your laboratory. It is also a central library for material/safety data sheets (MSDS/SDSs). MyChem inventories must be updated annually and after major changes in inventory. Contact information must also be current in case of emergency.

## Access to MSDS/SDSs

Your staff have the right to access hazard information, usually in the form of MSDS/SDSs, for the chemicals they use. MyChem may be used to fulfill this requirement if your staff have ready access to MyChem. See the [EH&S MyChem page](#) for more information.



## RADIATION SAFETY

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The State of Washington Department of Health (DOH) issues a Broad License to the University of Washington for the use of radioactive materials. EH&S ensures compliance with the license conditions and can revoke authorizations if conditions are not met.

### Use Authorization

Principal Investigators need an authorization to use radioactive materials. To request an application packet, contact EH&S's Radiation Safety team at [radsaf@uw.edu](mailto:radsaf@uw.edu) or 206.543.0463.

### Radiation Safety Training

Initial [radiation safety training](#) is required for all personnel using radioactive materials at the UW. A written exam must be successfully completed to satisfy the training requirements.

### Radioactive Material Management

Regulations and procedures for the handling, storage and disposal of radioactive materials and sealed radioactive sources are in the [UW Radiation Safety Manual](#).

## BIOLOGICAL SAFETY

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EH&S is involved in research proposal reviews and approvals, facility reviews, consultation on laboratory containment and training for biohazardous agents, recombinant DNA, bloodborne pathogens, select agents, human gene transfers and research involving animals. For more information, see the [Biological Safety](#) pages.

### Biohazardous Agents

The Institutional Biosafety Committee's (IBC) working definition of a biohazardous agent includes:

- Pathogenic agents (bacteria, rickettsia, fungi, viruses, protozoa, parasites, prions, and select agents)
- Recombinant or synthetic nucleic acid molecules, organisms, vectors (e.g., plasmids, viral vectors) and viruses containing recombinant or synthetic nucleic acid molecules
- Human and non-human primate blood, tissue, body fluid, and cell culture (primary or continuous)
- Plants, animals, or derived waste which contain or may contain pathogenic hazards (including xenotransplantation tissue)

### Biological Use Authorization (BUA)

If your study involves biohazardous agents, you must obtain a [Biological Use Authorization](#) (BUA) from the Institutional Biosafety Committee (IBC). IBC review and approval for research involving all biohazards is required by the [NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules](#), [UW Administrative Policy 12.3](#), and the [UW Biosafety Manual](#). If your research involves biohazardous agents in animals or human gene transfer, a Biological Use Authorization is required prior to approval by the Institutional Animal Care and Use Committee (IACUC) and the Institutional Review Board (IRB).

Principal investigators must review BUA letters with staff and document that they have done so. See the [Biological Research Approval](#) page for more information including application submission deadlines.

## Recombinant or Synthetic Nucleic Acids

The National Institutes of Health (NIH) requires review of all research involving recombinant or synthetic nucleic acids. The BUA (discussed in the previous section) addresses the NIH Office of Biotechnology Activities (OBA) directive that each principal investigator working with recombinant or synthetic nucleic acids must identify the section of [NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules](#) that applies to his or her research. There are several different levels of oversight depending on the agents and procedures. See the [Biological Research Approval](#) page for more information.

## Bloodborne Pathogens

Employees who have a reasonably anticipated potential for exposure to bloodborne pathogens, human blood, and other [potentially infectious materials \(OPIM\)](#) must be included in the UW Bloodborne Pathogens (BBP) Program. Principal Investigators must do the following:

- Offer the Hepatitis B vaccine to staff within ten days of assignment into a job with reasonably anticipated exposure.
- Develop a written site-specific BBP Exposure Control Plan which is reviewed at least annually and updated as necessary. PIs must also train staff on the Exposure Control Plan prior to initial start of work and then annually and ensure it is followed. A [BBP Exposure Control plan template](#) is available online.
- Ensure staff complete [EH&S BBP training](#) prior initial assignment and within 12 months thereafter.

For more information, see the [Bloodborne Pathogens Program](#) web page.

## Select Agents

Select agents are biological agents and toxins that have the potential to pose a severe threat to public health and safety; to animal or plant health; or to animal or plant products. Work with select agents requires a federal security clearance and strict oversight by the Centers for Disease Control and Prevention (CDC), and strict oversight, approval, and ongoing training specialized by EH&S. For more information, see the [Select Agent Program](#) web page.

## Human Gene Transfer (clinical trials)

The National Institutes of Health (NIH) require that the Institutional Biosafety Committee (IBC) review and approve [human gene transfer](#) investigations prior to initiation. Many human gene transfer clinical trials require an NIH Recombinant DNA Advisory Committee (RAC) review prior to the IBC review. The reviews are focused on protection of research personnel, research subjects, care givers and the general public. The IBC approval must precede the Institutional Review Board approval ([University of Washington Human Subjects Division](#)). Both are necessary prior to subject enrollment. For more information about the NIH requirements for human gene transfer see Appendix M of the [NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules](#).



## Biosafety Training

[EH&S Biosafety Training](#) is required every three years for PIs if their research includes the use of biohazardous agents. It is also required for students, fellows, laboratory managers, research staff, and any other staff who have the potential for exposure to biohazardous agents.

[Bloodborne Pathogens Training](#) is required annually for all personnel who have the potential for exposure to bloodborne pathogens (BBPs), human source materials, and other potentially infectious material (OPIM).

## Occupational Health/Animal Use Medical Screening

### Occupational Health Reviews

All animal protocols and protocols involving biohazards are evaluated to determine medical surveillance and vaccination requirements for work with hazardous agents. These requirements are communicated to you in an Occupational Health Recommendation (OHR) issued by EH&S. Principal investigators must review the OHR with staff and make it available to staff in the workplace. In addition, PIs must offer specified vaccinations and medical surveillance to staff. UW Employee Health Centers provides these clinical services.

### Animal Use Medical Screening

Individuals who have contact with animals or conduct activities in areas where animals are housed must participate in the [Animal Use Screening \(AUMS\) Program](#). Participation in the AUMS Program is required prior to approval from the Institutional Animal Care and Use Committee (IACUC) to work in the laboratory animal research environment.

## DIVING SAFETY

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If research uses SCUBA diving, it must adhere to the American Academy of Underwater Sciences (AAUS) Standards. All research diving and divers must be cleared for research diving by the Diving Safety Officer and adhere to the standards outlined in the [Scientific Diving Safety Manual](#).

## PURCHASING AUTHORIZATIONS AND NOTIFICATIONS

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Consult with EH&S prior to placing orders for specialized chemical use and storage equipment. New fume hoods and biosafety cabinets must also be tested and certified by EH&S before use. See Section 2.C of the [Laboratory Safety Manual](#) for more information.

## SHIPPING HAZARDOUS MATERIALS

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Hazardous materials include hazardous chemicals, infectious substances, radioactive materials, compressed gases, dry ice, liquid nitrogen, lithium batteries, aerosol cans, and pressurized items.



Training and certification are required to ship hazardous materials via land, air, or sea. There are prescriptive requirements for packaging and labeling of hazardous materials and for the associated documentation used in the event of an emergency. Training, certification, advice and packing materials are available through EH&S. Radioactive material is shipped by EH&S only. See the [Shipping Hazardous Materials web page](#) for more information.

Shipments may also be subject to Import/Export requirements. Information on these requirements and contact information can be found on the [UW Office of Sponsored Program website](#).

EH&S must notify the U.S. Department of Homeland Security before you ship [certain listed substances](#).

## RESEARCH GRANT PROPOSALS

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Many research grants require institutional approval or periodic renewals prior to submittal or funding. In some cases, research cannot start until facilities, processes, and materials are reviewed and approved. EH&S administers several approval processes and should be contacted early to meet deadlines and avoid delays. See the [Office of Research website](#) for more information on grant review and administration.

The list of pre-approvals or requirements includes:

- [Biological Use Authorization](#)
- [Human Gene Transfer/Clinical Trial Submission](#)
- [Select Agent Registration](#)
- [Animal Use Project Review](#)

## EMERGENCY PREPAREDNESS

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Be prepared for emergencies including natural disasters, utility failures, and acts of terrorism. In particular, western Washington is in an earthquake zone. Earthquakes may cause power outages, significant damage to buildings, and physical harm. Be ready for all of appropriate types of emergencies to protect your staff and your research.

### Laboratory

Prepare your laboratory and staff for emergencies by doing the following:

- Post a UW Emergency Flipchart for Laboratories. If you don't have one, email [ehsdept@uw.edu](mailto:ehsdept@uw.edu) to request that one be mailed to you.
- Review Section 9 of the [Laboratory Safety Manual](#): Emergency Preparedness and Response. It outlines how to prepare for and respond to emergencies such as spills, fires, earthquakes, utility outages, gas leaks, unknown odors, and laboratory floods. The manual includes information on chemical spill kit contents, first aid kits, eye washes, safety showers and more.
- Make sure your chemical SOPs include spill and exposure response procedures specific to the chemicals and processes in your laboratory.



- If your research involves radiation, see Emergencies Involving Radiation in the [Radiation Safety Manual](#) or detailed response procedures for spills, injuries, and contamination involving radiation.
- If your research involves biohazardous materials, see Section 4 of the [Biosafety Manual: Procedures for Biohazard Control](#) for emergency preparedness and response procedures for hazards, including decontamination and spill response.
- Maintain a current chemical inventory and emergency contact information in [MyChem](#).
- Train all of your staff on every applicable procedure outlined above.
- Plan ahead to protect your research in the event of a disaster that disrupts basic services or damages buildings so that they are unsafe for quick reentry.

## Classroom

During an emergency, faculty and teaching assistants in classrooms and teaching laboratories are responsible for their students. Refer to the [Classroom and Lecture Halls Emergency Procedures](#) or more information on evacuation and other classroom emergency procedures.

## Department

[Accident Prevention Plans](#) lay the groundwork for preventing accidents and emergencies. Check with your department administrator to learn more about your department's accident prevention plan.

[Fire Safety and Evacuation Plans](#) are written at the building or department level and contain general planning guidelines for emergencies and evacuation procedures. Ask your administrator for your copy. Train all laboratory staff on emergency procedures, evacuation routes, and evacuation assembly points.

## University

[UW Emergency Management](#) develops and implements institution-wide programs and projects for disaster planning, training, mitigation, response, prevention, and recovery and provides several resources.

# DESIGNING/REMODELING A LABORATORY

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If you are constructing a new laboratory or modifying an existing one, refer to the [EH&S Laboratory Safety Design Guide](#), which outlines requirements and recommendations for new laboratories.

At most locations, [Facilities Services](#) must be hired for alterations of laboratory and building infrastructure. This especially includes projects that affect electrical systems, plumbing, or air balancing. New fume hoods and biosafety cabinets must be certified by EH&S before use.

# MOVING INTO OR OUT OF A LABORATORY

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See Appendix E of the [Laboratory Safety Manual](#) for a checklist of health and safety requirements for starting up or moving into a new laboratory. Use the checklist as early as possible; some items

should be completed weeks or even months in advance of your move. The checklist includes the [Notice of Laboratory Moveout Form](#) that must be filled out, signed, and posted on the door before you leave. If biohazardous agents are being moved to a different location, submit a [BUA Change Application](#) to update your Biological Use Authorization Letter.

## RECORDKEEPING

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Health and safety recordkeeping requirements are summarized in the [UW General Records Retention Schedule, UW GS-2](#). See also the following guidance as applicable:

- [Laboratory Safety Manual](#) Section 8: Recordkeeping
- [Radiation Survey Records](#)
- [Radiation Instrument Calibration](#) Records

## EXPOSURE RESPONSE AND ACCIDENT REPORTING

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To be prepared for emergencies, review your laboratory emergency flipchart and other response procedures with staff. See also the [EH&S Emergency Preparedness and Response](#) procedures.

Report all work-related injuries, illnesses, and near misses using the [UW Online Accident Reporting System \(OARS\)](#). Call 911 for emergencies. In the case of a serious or fatal accident or hospitalization, notify EH&S as soon as possible after obtaining emergency care. During business hours, call EH&S at 206.543.7262. After hours, at all locations, call the UW Seattle Police Department Dispatch at 206.685.8973 who will contact an EH&S on-call staff member.

## ROLE OF EH&S DEPARTMENT

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EH&S communicates health and safety regulations to UW employees and also provides many services related to health and safety.

### Education and Outreach

EH&S provides classroom and online courses available at the [EH&S Training](#) web page. To receive regular updates about safety information and resources at the UW, subscribe to the [EH&S newsletter](#). See the safety manuals on the EH&S website for a variety of other resources.

### Audits and Surveys

EH&S does routine audits of laboratory and research spaces for general safety, fire safety, radiation safety, and Biological Use Authorizations.

A general laboratory self-audit checklist is in Appendix E of the [Laboratory Safety Manual](#).



## Consultation

EH&S provides consultation regarding laboratory safety, including issues such as ventilation, exposure control, chemical storage/use, and waste management.

## Services Paid for by Indirect Costs

The majority of EH&S services are funded through indirect costs, including:

- Training (except First Aid)
- Chemical waste collection and disposal
- Health and safety surveys and monitoring
- Assistance meeting health and safety requirements of grant proposals
- Radiation use authorizations
- Radiation dosimetry and bioassay
- Fire prevention services
- Fume hood testing
- Central MSDS/SDS library and inventory system
- Respiratory fit-testing
- Spill advice

## Services Paid for Directly

Some specialized EH&S services are funded by direct recharging to research budgets, including:

- Radioactive waste disposal and radiation instrument calibration
- Biosafety cabinet decontamination and certification
- Contract costs associated with hazardous material spills or improper waste disposal
- Analysis of unknown chemicals and deactivation of unstable chemicals
- First Aid Training and Certification

## Liaison with Regulatory Agencies

EH&S is the UW liaison with government agencies regulating environmental and occupational health and safety issues. See [UW APS 10.2](#) for more information. If a regulatory agency inspector arrives to initiate an inspection, contact EH&S at 206.543.7262 to ensure proper notifications and to assist with the inspection.