ENVIRONMENTAL HEALTH & SAFETY

UNIVERSITY *of* WASHINGTON

EH&S GUIDE FOR PRINCIPAL INVESTIGATORS

DEVELOPED WITH SUPPORT FROM THE UW SCHOOL OF MEDICINE

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EH&S GUIDE FOR PRINCIPAL INVESTIGATORS (PI GUIDE)

WHY READ THIS GUIDE?

This guide is an introduction to the Environmental Health and Safety Department (EH&S) for principal investigators (PIs) who are new to the University of Washington and is a reference tool for any principal investigator. 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 and 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, consultation and information regarding laboratory safety. The EH&S website has a variety of safety information and resources. EH&S provides resources and guidance for researchers to stay safe and compliant with local, state and federal regulations and policies at all UW campuses and most UW owned or leased facilities. However, specific policies and procedures may vary by location.

TRAINING

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 that address various types of hazards and regulatory requirements. Some courses are required in certain situations. Almost all courses are free.

EH&S TRAINING WEBPAGE

Visit the EH&S Training page to see a schedule of current courses, register for scheduled in-person classes, and complete online courses. Use the Training Course Selection Guides to find courses that address job-specific hazards.

EH&S GENERAL LABORATORY TRAINING

The UW Laboratory Safety Manual outlines training required for you and your laboratory staff as well as other courses offered by EH&S. Guidance for training requirements is provided via the Safety training for Lab Personnel matrix.

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 a principal investigator or laboratory manager 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. Training checklists are provided in Appendix C of the LSM.

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. EH&S will send out registration information prior to the start of Autumn Quarter.

CHEMICAL SAFETY

If you use chemicals in your laboratory, you must have the following to meet the minimum regulatory requirements:

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 the hazards they pose 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 our 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 for you to record 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. You will need to register the first time you setup your inventory location. You can add and remove staff so they have access to your inventory locations.

ENTRY CAUTION SIGN

Laboratories, shops and maker spaces where hazardous materials are use or stored are required to post an up-to-date entry caution sign at the entrance. This sign is intended to alert emergency responders and visitors of potential hazards and precautions for entry.

EH&S installs the sign holder and posts the initial sign. Occupants update signs as needed using the tool available on the MyChem menu.

ACCESS TO MSDS/SDS

Your staff have the right to access hazard information, usually in the form of MSDS/SDSs, for the chemicals they use. Chemical inventories can be printed to view hazard information. Chemicals in inventory are also directly linked to the online MSDS/SDS. Anyone with a UW NetID has immediate access to all of the MSDS/SDSs in MyChem regardless if they have inventory access.

RADIATION SAFETY

The Washington State Department of Health issues a Broad License and a radiation producing device registration to the University of Washington for the use of radioactive materials and all radiation producing devices. EH&S ensures compliance with the license conditions and can revoke authorizations if conditions are not met.

RADIOACTIVE MATERIAL 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 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.

RADIATION PRODUCING DEVICES

If you own a radiation producing device such as an X-ray florescence (XRF), X-ray diffraction (XRD), veterinary radiography, particle accelerator, X-ray irradiator or electron microscope in your laboratory, state regulations required that you register your device with Radiation Safety. Additionally, PIs must ensure that all personnel under their supervision receive general radiation safety training and specific hands-on training for each radiation producing device. See Radiation Producing Devices for more information.

NON-IONIZING RADIATION

Radiation Safety has oversight responsibility for the use of laser and other types of non-ionizing radiation (NIR) on campus to ensure that these hazards are adequately controlled. The Laser Safety Manual and Non-Ionizing Radiation Safety Manual are available on the EH&S website. The services provided by Radiation Safety include review of facility design plans, hazard assessments, consultation on laser control measures, and training. See Laser Safety and Non-Ionizing Radiation Safety for more information.

If your research involves laser, the PI has the following responsibilities:

- Registration of all Class 3B and Class 4 lasers with Radiation Safety and updating the registration as needed, whether procured, loaned, fabricated, removed or disposed of at UW.
- Ensure that all personnel/users receive both the EH&S Laser Worker Safety Training and specific laser system training prior to initial work with laser.
- Enforcement of all laser safety requirements described in the Laser Safety Manual, with particular emphasis on facility design (see Laboratory Safety Design Guide), laser protective eyewear, and laser safety procedures, especially for beam alignment.

If your research involves magnetic field, ultra violet, radiofrequency, and/or microwaves, the PI has the following responsibilities:

- Notify Radiation Safety of the potential NIR hazards in the laboratory.
- Ensure that all personnel are trained and that they comply with all safety requirements.
- Provide engineering and administrative controls that will protect personnel from overexposure. This includes providing appropriate personal protective equipment (PPE) to employees, visitors and subcontractors.
- Ensure that all maintenance and repair work is performed only by qualified, trained individuals in a safe manner.

BIOLOGICAL SAFETY

EH&S is involved in research proposal reviews and approvals that involve biohazards and recombinant DNA, use of biohazardous agents in animals and human gene transfer studies. EH&S also reviews facility design plans, provides consultation on laboratory containment and biohazardous waste, and delivers training for work with biohazardous agents, bloodborne pathogens (BBP), and select agents. For more information, see the Biological Safety webpages

BIOHAZARDOUS AGENTS

The Institutional Biosafety Committee's 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

If your research involves biohazardous agents, you must obtain Biological Use Authorization (BUA) from the Institutional Biosafety Committee (IBC). IBC review and approval for research involving 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 the use of biohazards in animals or human gene transfer, Biological Use Authorization is required prior to approval by the Institutional Animal Care and Use Committee (IACUC) or the Institutional Review Board (IRB).

Principal investigators must review BUA letters with staff so that they are aware of hazards and approved use locations. 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 IBC review of all research involving recombinant or synthetic nucleic acids. The Biological Use Authorization (BUA) addresses the NIH Office of Biotechnology Activities' 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 (BBP)

Employees who have a reasonably anticipated potential for exposure to bloodborne pathogens including human blood or 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 to bloodborne pathogens.
- 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 on the EH&S website.
- Ensure staff complete EH&S BBP training prior to initial assignment and every 12 months thereafter.

SELECT AGENTS AND DUAL USE RESEARCH OF CONCERN (DURC)

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 and strict oversight, approval, and ongoing specialized training provided by EH&S. For more information, see the Select Agent Program information on the EH&S website. The also University has a Dual Use Research of Concern (DURC) policy in place for a subset of select agents.

CLINICAL TRIALS INVOLVING HUMAN GENE TRANSFER

The National Institutes of Health (NIH) require that the UW Institutional Biosafety Committee (IBC) review and approve human gene transfer studies prior to initiation. The reviews are focused on protection of research personnel, research subjects, caregivers and the general public. The IBC approval must precede Institutional Review Board approval granted by the 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 whose 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 (BBP) Training is required annually for all personnel who have the potential for exposure to bloodborne pathogens, human source materials, and other potentially infectious material.

RESEARCH OCCUPATIONAL HEALTH

OCCUPATIONAL HEALTH REVIEWS

All animal protocols and protocols involving biohazards are evaluated to determine occupational health risks and mitigation, as well as medical surveillance and vaccination requirements for work with hazardous agents. This information is communicated to you in an Occupational Health Recommendations document (OHR) and/or Biological Use Authorization (BUA) issued by EH&S. Principal investigators must review the information with personnel and make it available in the workplace. In addition, PIs must offer specified vaccinations and medical surveillance to personnel. UW Employee Health Center provides these clinical services.

ANIMAL USE MEDICAL SCREENING (AUMS)

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

DIVING SAFETY

If your research involves SCUBA diving, it must adhere to the American Academy of Underwater Sciences Standards. All research diving and divers must be cleared by the Diving Safety Officer and adhere to the standards outlined in the Scientific Diving Safety Manual.

PURCHASING AUTHORIZATION AND NOTIFICATIONS

New fume hoods and biosafety cabinets must be tested and certified by EH&S before use. See Section 2.C of the Laboratory Safety Manual for more information.

Please note that there are hazardous material quantities that may require the need for a space with hazardous occupancy designation per fire department regulations. Such spaces may not be readily available or even possible in some UW research facilities. Contact EH&S at 206.616.5530 or email cochrd@uw.edu for anticipated work with highly toxic, flammable, or reactive chemicals.

SHIPPING HAZARDOUS MATERIALS

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

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
- Animal Use Project Review
- Clinical Trials Involving Human Gene Transfer
- Select Agent Registration

EMERGENCY PREPAREDNESS

Be prepared for emergencies including natural disasters, utility failures, and active threats. 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. Email ehsdept@uw.edu to request one.
- Post the Exposure Response Poster in all laboratory areas. It tells you exactly what to do in the event of an accident or exposure.
- 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 chemical 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 for detailed response procedures for spills, injuries, and contamination involving radiation.
- If your research involves biohazards, see Section 6 of the Biosafety Manual for emergency preparedness and response procedures for hazards, including biohazardous 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 such that they are unsafe for 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, business continuity and recovery.

DESIGNING/REMODELING A LABORATORY

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 and remodeled laboratories.

At most locations, UW 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

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

Health and safety recordkeeping requirements are summarized in the UW General Records Retention Schedule. See also the following guidance as applicable:

- Biosafety Manual Appendix D
- Laboratory Safety Manual Section 8: Recordkeeping
- Radiation Survey Records
- Radiation Instrument Calibration Records

EXPOSURE RESPONSE AND ACCIDENT REPORTING

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. For biological, chemical or radiological exposures, follow the instructions on the Exposure Response Poster.

Report all work-related injuries, illnesses, and near misses using the UW Online Accident Reporting System (OARS). Call 9-1-1 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.
- Outside of business hours, at all UW locations, call the UW Police Department Dispatch at 206.685.8973 who will contact an EH&S on-call staff member.

ROLE OF EH&S DEPARTMENT

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. Biosafety laboratory inspection checklists are available online at Biological Research Safety.

CONSULTATION

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

PREVENTATIVE HEALTHCARE SERVICES

The EH&S Employee Health Center provides clinical preventive services and post-exposure case management for specific employee groups with occupational risks. As with all health and safety issues, PIs have the ultimate responsibility for ensuring research personnel receive required preventive healthcare services and have information about post-exposure case management services.

SERVICES PAID FOR BY INDIRECT COSTS

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

- Safety training courses (except First Aid Training)
- Hazardous chemical waste collection and disposal
- Health and safety surveys and compliance 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 response advice
- Medical testing and case management related to an occupational exposure

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
- Medical surveillance including labs tests or vaccinations
- Occupationally required vaccinations and medical surveillance

LIASON 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.