



## INTRODUCTION

Harvard University is committed to:

- Promoting and maintaining a safe and healthy environment for its faculty, staff, students and visitors.
- Protecting the natural environment;
- Complying with all applicable safety, health, and environmental rules and regulations, and
- Being a model of quality in safety and environmental practices as we are in our teaching and research.

This policy lays out the basic University principles and general roles and responsibilities in promoting a culture of safety.

University units with specialized health and safety requirements for their operations based upon federal, state, or other organizational rules must develop further policies and procedures to ensure compliance.

## POLICY STATEMENT

All laboratory work must be performed according to established health and safety laws and regulations, and Harvard University's safe work practices. The procedures listed in this policy are the **minimum practices** that apply to **all university-related laboratory or field teaching and research work, wherever located**. Additionally, all research must be performed according to the University's Chemical Hygiene Plan, Radiation Safety Manual, Laser Safety Manual, and Biosafety Manual as well as other Environmental Health & Safety policies and procedures, as applicable. The policy addresses the roles and responsibilities of University constituents, key components of the laboratory safety program and related resources, documents and policy references.

This policy is issued by the Office of the Vice Provost for Research (OVPR), in consultation with Environmental Health & Safety (EH&S), and approval by the University Laboratory Safety Committee.

## SCOPE OF POLICY

This policy applies to all faculty, staff, students, and visitors when conducting university-related laboratory or field research or teaching activities, wherever located.

## DEFINITIONS

- I. **Laboratory:** A room or space or field site equipped with chemical, biological, radiological or other hazardous materials, research animals, or mechanical equipment, that is used for teaching, research, observation or measurement. For the purposes of this policy, it is intended to include academic, research, teaching, conservation, engineering labs, and shops exclusively operated for these purposes



and is not intended to include computer labs, store rooms, mechanical rooms, or shops used to support operations.

- II. **Principal Investigator:** Laboratory PIs are accountable for the safety of the laboratory staff, students, researchers, and visitors working under their direction or supervision, and must support and model a culture of safety. PIs may delegate or assign some of these responsibilities to a Research Operations Manager, Laboratory Supervisor, or other senior laboratory personnel.
- III. **Laboratory Supervisor:** The Laboratory Supervisor may include the Principal Investigator (“PI”) or Laboratory Manager or Supervisors, Lab Safety Officer, Instructors, or Administrative Supervisors who, under the direction of the PI, have responsibility and oversight for laboratory functions.
- IV. **Laboratory Staff:** Laboratory staff, students, researchers, volunteers and visitors who, in the course of their work, are present in the laboratory or are at risk of possible exposure to hazardous materials or processes. These include, but are not limited to, laboratory technicians, instructors, researchers, undergraduate students, graduate assistants, post-doctoral fellows, high school students, interns, visiting personnel, and part-time and temporary employees.

## ROLES AND RESPONSIBILITIES

A **culture of safety**<sup>1</sup> is established when each individual accepts responsibility for the wellbeing of him/herself as well as those around them. The management structure of the University is complex and generally decentralized, however, the University is considered to be one entity from a legal, regulatory, and public perspective, and is held accountable as such by federal, state, and local authorities and granting agencies. The roles and responsibilities of disparate University units and constituents are identified and described below.

### I. Principal Investigators (PIs)

PIs are accountable for the safety of the laboratory staff under their direction or supervision, and should support a culture of safety as follows:

- a. Insist that everyone who works in the laboratory receives proper safety training, as defined by the Laboratory Safety Policy, including initial lab-specific orientation, initial on-line and project-, task- and equipment-specific training and periodic refreshers. Verify current roster and training assignments and completion. The PI must determine if training has been adequate to reasonably assure that laboratory staff understand and have the ability to execute proper protective measures to mitigate potential hazards and associated risks.

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<sup>1</sup> These strategies come from:

**APLU Council on Research Task Force on Laboratory Safety** (2016). A Guide to Implementing a Safety Culture in Our Universities. CoR Paper 1. Washington, DC: Association of Public and Land-grant Universities. <http://www.aplu.org/library/safety-culture/file>. Viewed August 23, 2017.

**Safe Science: Promoting a Culture of Safety in Academic Chemical Research.** The National Research Council. <http://dels.nas.edu/resources/static-assets/materials-based-on-reports/special-products/Safe-Science-PIs-DeptChairs-Final.pdf>. Viewed August 24, 2017.



- b. Complement initial orientation and basic safety training with ongoing actions and activities to encourage safety and promote a strong, positive safety culture in the research lab such as:
  - i. Walkthroughs and unannounced inspections;
  - ii. Coaching and mentoring, encouraging an open and ongoing dialog about safety;
  - iii. Engagement strategies like the formation of teams;
  - iv. The use of institutional support organizations (e.g. environmental health and safety, facilities); and
  - v. The determination and agreement of appropriate times and schedules for work and approval of all lone-working activities in advance.
- c. Ensure that a hazard analysis is conducted prior to undertaking any experimental procedure. Incorporate hazard analysis into laboratory notebooks prior to experiments and ensure that it is specific to the laboratory and research topic area. Annually and upon new activity or change, certify the Lab Personnel Protective Equipment Assessment (LPPEA).
- d. Empower researchers to assume leadership roles in establishing safety practices within research groups and for entire departments.
- e. Be aware that stress can undermine safety culture and performance.
- f. Serve as a role model by exhibiting good safety behavior.
- g. Encourage research teams and students to question matters related to safety.
- h. Maintain current door placard/emergency contacts and inventories.
- i. Review inspection findings and ensure corrective actions have been made.
- j. Conduct a hazard assessment before approving working alone by his or her laboratory staff, especially after hours.

## **II. PIs and Laboratory Supervisors**

PIs and other Laboratory Supervisors are responsible for the safety of laboratory staff in the research and teaching laboratories in which they work. PIs and Laboratory Supervisors will ensure that the requirements in the Procedures section are followed by all Laboratory Staff. In addition, PIs and Laboratory Supervisors will:

- a. Be responsible for the laboratories and equipment, to ensure they are safe and well-maintained and in compliance with Harvard policies, programs and practices.
- b. Take all appropriate steps to make everyone within their area, including students and visitors, aware of potential hazards and proper management of the risks, including providing training and advising on the proper use of equipment when conducting activities within the area safely.
- c. Complete all required EH&S safety training and ensure all laboratory staff have completed required EH&S training.
- d. Hold laboratory staff accountable for all safety rules, including the use of appropriate PPE.
- e. Encourage anyone within their area to report problems, issues, or improvements without fear of reprisal, and investigate and address reported issues in a timely manner.
- f. Stop an operation under their supervision if it poses an imminent threat to people, the environment, or facilities; empower others in the group to do the same.

## **III. Laboratory Staff**



Staff, students, researchers, volunteers and visitors are responsible for:

- a. Keeping themselves informed of conditions affecting their health and safety. Be knowledgeable about the PI's Lab PPE Assessment and wear all specified PPE. Request additional PPE or safety equipment whenever needed.
- b. Participating in safety training programs as required by Harvard policy and their supervisors and instructors.
- c. Adhering to health and safety practices in the workplace, classroom, and laboratory.
- d. Reporting potentially unsafe practices, accidents, serious injuries, hazards and near misses to supervisors, instructors or EH&S to assist with actions necessary to prevent or correct safety concerns. Anonymous reporting may be made through the University Compliance Hotline at 1-877-694-2275, or through submission of an [online report](#).

## ENVIRONMENTAL HEALTH & SAFETY MANAGEMENT

### Environmental Health & Safety Management System

In order to promote a safe environment, maintain compliance and manage the multitude of issues associated with environmental health and safety regulations, an Environmental Health and Safety Management System (EHSMS) has been established. This management system includes: Harvard's Environmental Health and Safety (EH&S) department, Environmental and Safety Compliance Officers (ESCOs), the use of safety-related University Standing Committees for oversight and policy development, and the Office of the Vice Provost for Research, which provides a framework for the assessment and documentation of compliance activities.

These constituents within this EHSMS are identified and described below:

#### I. Environmental Health and Safety (EH&S)

- a. Review legislation, recommend policies, and monitor compliance with environment and personal health and safety regulations, as well as University health and safety policies and programs. This includes general and construction safety, fire and life safety, community health and sanitation, environmental protection and sustainability, biological safety, chemical and radiation safety, hazardous material handling and waste management.
- b. Develop institutional safety and compliance programs and procedures and assist schools, departments, faculty, and managers with implementation.
- c. Perform inspections of all research and teaching laboratories at least annually (more frequently if required by regulations), maintaining inspection reports and corrective action documentation.
- d. Conduct accident reviews.
- e. Annually, prepare and present to the University Laboratory Safety Committee and University Risk Management Committee a summary report of its inspections, findings and trends observed during the inspections.
- f. Provide guidance and technical assistance to supervisors and managers in the schools, departments, and other work units in identifying, evaluating, and correcting health and safety hazards.
- g. Provide training materials, assistance, and programs on safe laboratory practices.



- h. Identify and manage a comprehensive system for hazardous materials inventory management.
- i. Report issues or raise questions to the appropriate administrative authority so that action can be taken to prevent or correct safety concerns.
- j. Develop training, technical guidance and regulatory documents.
- k. Certify lab hoods annually and develop a program for inventorying and certifying other local exhaust devices.
- l. Provide liaison with regulatory officials and standard-setting authorities.
- m. Coordinate the University response to matters pertaining to external regulatory inspection, enforcement action, investigations, and employee complaints related to workplace safety and compliance.
- n. Develop and recommend relevant health and safety policies for institutional policy approval by relevant University authorities (e.g., President, Provost, Vice Provost Research, Oversight Committees) depending on the content of the proposed policies.

## II. Environmental and Safety Compliance Officers (“ESCOs”)

Each Dean and Vice President appoints an Environmental and Safety Compliance Officer (ESCO) with responsibility for implementation, management, and enforcement of environmental health and safety programs within the school, administrative department or affiliated unit. The Dean or Vice President will issue a letter of appointment outlining the authority and responsibility of the ESCO. The ESCO will have the authority to:

- a. Act on behalf of the Dean to manage environmental health and safety activities in the school or department;
- b. Establish procedures, investigate complaints and incidents, and audit performance;
- c. Require cessation of any activities that may pose an imminent hazard to persons, property or the environment;
- d. Recommend financial and staff resources to ensure continued compliance with applicable environmental health and safety regulations;
- e. Escalate open inspection findings and non-compliance issues; and
- f. Secure funding to pay costs associated with investigating potential local non-compliance (e.g.: legal and regulatory fees, fines, penalties).

## III. University Standing Committees

Three University Standing Committees are chartered to manage laboratory safety issues. All laboratory safety policies will be reviewed and approved by the appropriate faculty committees.

- a. **Committee on Microbiological Safety (COMS).** [The Office of Biological Safety facilitates COMS](#), a standing faculty committee that reviews all research involving recombinant and synthetic DNA, wild-type and genetically modified microorganisms, bacterial and viral pathogens, prions, regulated biological toxins, human and non-human primate tissues, cells, cell lines, human gene transfer and xeno-transplantation, as well as the creation of transgenic animals and plants and biohazards at Harvard and some of its affiliated medical institutions.



- b. **Laboratory Safety Committee.** The university-wide [Laboratory Safety Committee](#) is a governing body empowered to review and approve University policies related to Laboratory Safety, as well as safety training procedures and content. The Committee is comprised of faculty PIs and Environmental Safety and Compliance Officers from lab-based schools and representatives from a variety of other disciplines across the university. The Laboratory Safety Committee advises the OVPR and EH&S on risk management issues related to laboratory safety, evaluates potential hazards associated with research and teaching activities and reviews the findings of laboratory inspections conducted by EH&S to ensure safety compliance and to facilitate a culture of safety.
- c. **Radiation Safety Committee.** [The Radiation Safety Committee](#) is the governing body for all aspects of radiation protection within the university, including all affiliated research, instructional and service units using ionizing and non-ionizing radiation sources or devices (e.g., lasers, x-rays, ; collectively referred to as “radiation sources”) in facilities owned or controlled by the University. The Committee ensures that all possession, use and disposition of radiation sources at Harvard University complies with pertinent federal and state regulations and with the specific conditions of university licenses, and that all concomitant radiation exposures are maintained As Low As Reasonably Achievable (ALARA).
- d. **School-level Laboratory Safety Committees.** Each school has established local lab safety committees to help EH&S with disseminating pertinent information to ensure that research and teaching are conducted in a safe manner. Each PI designates a Lab Safety Officer to attend committee meetings as a representative of the lab. The Lab Safety Officer is responsible for sharing the information communicated in these meetings with the rest of the personnel in their lab, including the PI. The PI is ultimately responsible for implementing any necessary changes resulting from information shared in safety committee meetings. EH&S Lab Safety Advisors are responsible for coordinating the meetings and are available to assist with any safety related concerns.

#### IV. Office of the Vice Provost for Research (OVPR)

OVPR, on behalf of the institution, assures that Harvard will support and maintain a strong commitment to safety, health and environmental protection through:

- a. Providing oversight of the University Laboratory Safety Committee.
- b. Assuring compliance with federal, state and local safety, health and environmental requirements.
- c. Approving the implementation of policies and programs for safety and compliance.
- d. Empowering faculty, staff, and students to demonstrate individual and institutional leadership in all matters pertaining to safety, health and environmental protection while preserving academic freedom in research and education.

## PROCEDURES

### I. Hazard Identification and Correction



Harvard University encourages employees and students to report health and safety hazards to their supervisors, managers, or EH&S. Per Harvard's Non-Retaliation Policy, employees and students will not be retaliated against for reporting concerns in good faith. Laboratory Supervisors must inform students and staff of this policy and encourage reporting of workplace hazards. Anonymous reporting may be made through the University Compliance Hotline at 1-877-694-2275, or through submission of an online report.

## **II. Safety Training**

Environmental Health and Safety training, including regular refresher courses, is required for all PIs students, staff, and visitors before working with potentially hazardous materials, equipment, or conditions. Safety Training should include a discussion of:

- a. General health and safety practices of the workplace or laboratory, including emergency procedures.
- b. Job-specific health and safety practices and hazards.
- c. Recognition and assessment of health and safety risks.
- d. Minimization of risks through sound safety practices and use of protective equipment.
- e. Appropriate practices to protect the environment.

## **III. Personal Protective Equipment (PPE)**

The Laboratory Supervisor must ensure that all required PPE is readily available to researchers and properly used in the laboratory, and that PPE needs are regularly assessed and restocked/replaced when necessary. Environmental health and Safety posts a PPE policy and helpful resources online at <https://www.ehs.harvard.edu/programs/lab-personal-protective-equipment-ppe>.

## **IV. Shutdown of Dangerous Activities**

EH&S has the authority to curtail or shut down any University activity considered to constitute a clear and imminent danger to health or safety. In the event of such curtailment or shutdown, the cognizant Environmental Safety and Compliance Office, dean, director or vice president and the Provost (or designate) must be immediately notified.

## **V. Laboratory Close-Out**

- a. Documentation and records as required by regulation must be kept to demonstrate compliance with applicable statutes, regulations and policies.
- b. Proper disposition of all hazardous materials in advance of the laboratory move or the laboratory being vacated is the responsibility of the Principal Investigator (PI) or researcher to whom a laboratory is assigned. For more information, see the EH&S webpage on [Lab Closeout and Decontamination](#).
- c. EH&S will inspect the laboratory for removal of all hazardous materials.

## **VI. Lab Specific Training**





The Laboratory Supervisor must provide and maintain a record of training specific to the work conducted in the laboratory for their laboratory staff. This training includes, but is not limited to:

- a. Location of emergency equipment, including fire alarms, fire blankets, fire extinguishers, eyewashes, emergency showers, spill kits, and decontamination materials. Demonstrate how to use the equipment.
- b. The EH&S training courses required for the type of research conducted in the laboratory.
- c. Specific safety precautions that must be taken with hazardous chemicals, biological materials, or radiation, including proper disposal based on EH&S policies, laboratory-, task- and equipment- specific hazard reviews and Standard Operating Procedures (SOPs).

## **VII. Laboratory Inspections**

- a. EH&S will conduct annual or biennial inspections of all laboratories and provide copies of their findings to the PI.
- b. EH&S will provide annual regular reports of its findings to the appropriate safety committee.
- c. Lab Supervisors will monitor the conditions and work practices in the laboratory with the frequency necessary to maintain safety. The EH&S lab inspection checklist provides a useful reference.

## **VIII. Accidents and Incidents**

- a. EH&S shall maintain an incident/accident reporting and response system.
- b. The program shall be operated 24 hours a day, through an Operations Center.
- c. All laboratory accidents/incidents must be reported to the emergency response number immediately in accordance with established procedures, as described [online](#).

## **IX. Laboratory Security**

Laboratory security is everyone's responsibility. The basic requirements are:

- a. Control access. Restrict labs to authorized personnel only.
- b. Keep laboratory door locked when no one is in the lab.
- c. Maintain an inventory. Know where and how much hazardous materials are in the lab.
- d. Secure all primary stock vials of radioactive materials in a lockbox provided by EH&S.
- e. Report any unaccounted loss of hazardous material to University Police.
- f. Report annual inventory of certain regulated materials to EH&S, as required.
- g. Train all laboratory staff on security procedures and why they are important. In addition to the on-line Lab Security module of the initial Lab Safety 101 Training, lab-specific security measures should be discussed.

## **RELATED RESOURCES, DOCUMENTS AND POLICIES**

### **I. Hazard Identification and Correction**





Lab Waste Guide

[https://www.ehs.harvard.edu/sites/ehs.harvard.edu/files/lab\\_waste\\_guide.pdf](https://www.ehs.harvard.edu/sites/ehs.harvard.edu/files/lab_waste_guide.pdf)

Lab Chemical Storage Guide

[https://www.ehs.harvard.edu/sites/ehs.harvard.edu/files/lab\\_chemical\\_storage\\_guide.pdf](https://www.ehs.harvard.edu/sites/ehs.harvard.edu/files/lab_chemical_storage_guide.pdf)

Lab Pointe Door Placard and Inventory System

<https://www.pin1.harvard.edu/cas/login?service=https%3a%2f%2fehs.sph.harvard.edu%2findex.cfm>

Chemical Hygiene Plan

[https://www.ehs.harvard.edu/sites/ehs.harvard.edu/files/chemical\\_hygiene\\_plan\\_1.pdf](https://www.ehs.harvard.edu/sites/ehs.harvard.edu/files/chemical_hygiene_plan_1.pdf)

Hazardous Materials Shipping & Transportation

<https://www.ehs.harvard.edu/programs/hazardous-materials-shipping-transportation>

Oil Storage and Tank Management (SPCC)

<https://www.ehs.harvard.edu/programs/oil-storage-and-tank-management-spcc>

Solid Waste

<https://www.ehs.harvard.edu/programs/solid-waste>

Toxic Substance Control (TSCA)

<https://www.ehs.harvard.edu/programs/toxic-substance-control-tsca>

Release Reporting

<https://www.ehs.harvard.edu/programs/release-reporting>

Hazard Communication Standard Pictogram - OSHA

<https://www.ehs.harvard.edu/node/7752>

## **II. Safety Training and Maintenance of Lab Roster**

Harvard Training Portal

<http://trainingportal.harvard.edu/>

## **III. Personal Protective Equipment**

Laboratory Personal Protective Equipment (PPE)

<https://www.ehs.harvard.edu/programs/lab-personal-protective-equipment-ppe>

## **IV. Laboratory Move- in, Move, and Close-Out**

Lab Closeout & Decontamination

<https://www.ehs.harvard.edu/programs/lab-closeout-decontamination>



## **V. Laboratory Inspections**

Lab Safety Assessments & Inspections

<https://www.ehs.harvard.edu/programs/lab-safety-assessments-inspections>

## **VI. Lab Specific Training**

Local Lab Safety Committees

<https://www.ehs.harvard.edu/programs/laboratory-safety-committees>

## **VII. Accidents and Incidents**

Accident Reporting & Investigation

<https://www.ehs.harvard.edu/programs/accident-reporting-investigation>

## **CONTACTS**

### **I. Environmental Health & Safety**

#### **Cambridge Office**

46 Blackstone Street  
Cambridge, MA 02139  
Phone: (617) 495 - 2060  
Fax: (617) 495 - 0593

#### **Longwood Office**

107 Avenue Louis Pasteur  
Boston, MA 02115  
Phone: (617) 432 - 1720  
Fax: (617) 432 - 4730

Email: [lab\\_safety@harvard.edu](mailto:lab_safety@harvard.edu)

EH&S staff listing: <https://www.ehs.harvard.edu/staff>

### **II. Anonymous Reporting**

University Compliance Hotline: 1-877-694-2275

Online: <https://www.integrity-helpline.com/HarvardUniversity.jsp>.

### **III. Office of the Vice Provost for Research**

Email: [viceprovost\\_research@harvard.edu](mailto:viceprovost_research@harvard.edu)

