



Laboratory Safety Training

Responsible Officer:	Chief Risk Officer
Responsible Office:	RK - Risk / EH&S
Issuance Date:	June 12, 2013
Effective Date:	October 31, 2013
Scope:	This policy establishes minimum requirements for all University workers which individual campuses, departments/units, and work groups may exceed as they deem necessary. It applies to workers regardless of their title; e.g., student, graduate student, postdoctoral scholar, faculty or other academic appointee, staff, visitor, volunteer, etc.

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I. POLICY SUMMARY

The University of California is committed to providing a safe and healthy working environment for all members of the campus community. This laboratory safety training policy is designed to prevent workplace injuries and illnesses for all faculty, staff, students, volunteers, and visitors. A primary means to achieve this goal is through safety training. Safety training is particularly important for those who work with hazardous materials, equipment, and processes in research and teaching. Safety training is done within departments, work groups, shops, laboratories, and/or centrally by Environment(al) Health and Safety (EH&S).

This policy identifies minimum training requirements applicable to all workers. A laboratory safety training needs assessment and fundamentals of laboratory safety training shall be completed. Based on the needs assessment, additional safety training may be needed for specific hazardous work activities.

II. DEFINITIONS

Documented Training: Training records shall include at minimum:

- the name of the individual trained;
- name of the individual(s) providing the training for instructor-led training;
- date of the training;
- and brief description of the training topics covered.

Laboratory/Technical Areas: A laboratory/technical area is any location where the use or storage of hazardous materials or equipment may present a potential hazard are used or stored. It includes, but is not limited to:

Research laboratories	Waste accumulation areas/locations
Teaching laboratories	Cold rooms
QA/QC and analytical laboratories	Machine and other Workshops
Stock rooms	Vivaria
Storage rooms	

Student: An individual enrolled in an academic class.

Supervisor: An employee who may have authority to hire personnel, evaluate performance, direct work assignments, apply progressive discipline, direct resources to correct identified safety issues. This includes a Principal Investigator, area manager, unit manager, project manager, superintendent, and foreman/person. Unless specified in writing, the default “supervisor” in laboratory/technical areas is the Principal Investigator.

Training Needs Assessment: Assessment of the training requirements of a target group in terms of (1) risk of hazards present in work activities, (2) their educational and professional background, (3) regulatory requirements for training. The training needs assessment must be documented.

Worker: For purposes of this policy, a worker is an individual who actively performs work functions with hazardous materials or equipment in a laboratory/technical area. A “worker” may be faculty, staff, student volunteer assisting in a non-academic class, or visitor/visiting scholar. For the purpose of this definition, “worker” excludes individuals who only passively participate in tours, lectures, conferences, etc. and enrolled undergraduate students in a teaching laboratory.

Training needs assessment: An assessment of specific laboratory safety training needs will occur and be documented for all workers before the worker undertakes their work duties. The supervisor shall be responsible for accomplishing the needs assessment. See Appendix C for list of potential training areas relative to current regulations.

The extent of Safety Training will depend on the type of work. See “Procedures” Section V for details.

III. COMPLIANCE / RESPONSIBILITIES

The Chancellor has overall responsibility for compliance with health and safety requirements at all facilities and programs under her/his control.

Vice Chancellors/Directors/Deans/Departments Chairs are responsible for communicating, promoting, and enforcing the Policy in areas under their control.

The campus or unit Laboratory and/or Chemical Safety Committee is responsible for promoting a safe working environment in all research and teaching laboratories on campus.

Supervisors are responsible for complying with this Policy and ensuring their staff comply with this Policy. Supervisors are responsible for conducting and documenting the laboratory safety training needs assessment or reviewing and approving the assessment if conducted by others. They are also responsible for ensuring their staff receive the required training. Noncompliance with the policy is handled in accordance with Personnel Policies for Staff Members (PPSM) policies 62-65 pertaining to disciplinary actions and Academic Personnel Manual (APM) policies 015-016 pertaining to the Faculty Code of Conduct and administration of discipline; and APM 140 and 150 pertaining to Non-Senate Academic Appointees.

Workers are responsible for knowing the training requirements for areas in which they work or enter. All workers are responsible for completing required training. They are responsible for informing others in the area of these requirements and reporting unsafe conditions to the supervisor, or EH&S. As applicable, a staff employee may address issues of noncompliance with the policy through the complaint resolution processes described in PPSM 70 and II-70 (Complaint Resolution) and PPSM 71 and II-70 (Resolution of Concerns) or Collective Bargaining Agreement.

The Office of Environment(al), Health & Safety (EH&S) is responsible for providing interpretation and clarification regarding this Policy. EH&S will also provide consultation and tools to assist supervisors in performing the laboratory safety training needs assessment and with developing training.

The Academic Personnel or Staff Human Resources Offices are responsible for all employee and labor relations issues, including interpretation and clarification of Personnel Policies and Collective Bargaining Agreements related to this Policy.

IV. PROCEDURES

A. Fundamentals of Laboratory Safety Training

Before any worker is granted unescorted access to laboratory/technical areas, they shall successfully complete a "Fundamentals of Laboratory Safety" training as offered/managed by their local EH&S department. Campuses may offer this training via instructor-led, web-based, or both. Minimum training topics are noted in Appendix A. Where offered and applicable, web-based training can be completed in the interim period before the next live training is offered. (If no web-based training option is available, in the interim period before the next live

training is offered, the worker may begin work so long as the PI/laboratory supervisor provides and documents one-on-one safety training and closely supervises the new worker.) *Target audience:* workers whose primary work location is in laboratory/technical areas.

The completion of the “Fundamentals of Laboratory Safety” training requirement does not apply to undergraduate students taking laboratory courses offered in the course catalog of that campus, unless the student is considered to be a “worker” as defined above; however, the teaching laboratory instructor, teaching assistant, and/or classroom laboratory manager is still responsible for conveying the necessary information for students to work safely.

Refresher training for Fundamentals of Laboratory Safety will be provided at a minimum of every three (3) years. More frequent refresher training requirements will be at the discretion of individual campuses.

B. Safety Training - General Requirements

All required safety training shall be completed and documented for each affected worker. All reasonable efforts shall be made to complete required training before the individual begins work with the material, process or equipment in question.

Given the wide diversity of UC activities, any required training may occur at the individual workplace level, centrally through EH&S, or both. Each campus shall determine how the various requirements will be addressed, but in general if needed training is not available centrally through EH&S, the worker’s supervisor is responsible to ensure that appropriate training has been completed. General responsibilities of personnel are addressed in Section III.

C. Laboratory Site Safety Orientation

Laboratory workers are required to receive a safety orientation specific to their unique laboratory work location and the processes common to their laboratory worksite. A “Laboratory Site Safety Orientation” shall be performed by the supervisor on the first day the worker is granted access to or assigned work activities in the laboratory. A sample *Laboratory Site Safety Orientation* checklist can be found in Appendix B. This training orientation will be documented.

D. Hazard-Specific Safety Training

Based on the laboratory safety training needs assessment, workers shall attend training on the specific additional hazards that may be present in the work place. This training may be provided by EH&S, supervisor, or other qualified person. This hazard-specific training might include lock out/tag out, vivarium operations, general radiation or biological safety training. Refer to Appendix C for more information.

E. Site-Specific Operating Procedure Safety Training

This training is most appropriately provided by the supervisor or departmental staff and is focused on the specific procedures and activities unique to the worker’s primary work place. These operating procedures might include work with particularly hazardous substances, pyrophoric chemicals, radioisotopes,

biological agents, lasers, machine tools, autoclaves, etc. This type of training is intended to address specific topics not covered by the trainings described above.

F. Training Documentation

Documentation shall include at minimum: the full name of the individual trained; full name of the individual(s) providing the training for instructor-led training; date of the training; and a brief description of the training topics covered.

Training records shall be maintained for a minimum of one year after the worker leaves the University or as required by the terms of a grant, whichever period is longer. In the event of an accident, records shall be retained 3 years from the date of the accident or one year after the worker leaves the University or as required by the terms of a grant, whichever period is longer.

V. RELATED INFORMATION

Appendix A Laboratory Safety Fundamentals Training Topics

Appendix B Laboratory Site Safety Orientation

Appendix C Federal and State Safety Training Mandates

California Code of Regulations, Title 8, General Industry Safety Orders:

Section 3203 – Injury and Illness Prevention Program;

Section 5191 – Occupational Exposure to Hazardous Chemicals in Laboratories;

Section 5194 – Hazard Communication

Section 3380 – Personal Protective Devices;

Section 5154.1 – Ventilation Requirements for Laboratory-Type Hood Operations;

Section 3221 – Fire Prevention Plan

California Health & Safety Code, Ch. 6.95, 25504

Resource Conservation and Recovery Act, Title 40, Federal Code of Regulations

University Policy on Management of Health, Safety and the Environment (October 2005)

VI. FREQUENTLY ASKED QUESTIONS

Not applicable

VII. REVISION HISTORY

This is the first version of this policy.

Appendix A

Laboratory Safety Fundamentals Training Topics

Per this policy, laboratory workers subject to the Cal/OSHA standard entitled: Occupational Exposure to Hazardous Chemicals in Laboratories: (Title 8, California Code of Regulations, Section 5191) shall complete a Laboratory Safety Fundamentals Training. This training generally includes, but is not limited to, the following topics:

- A Culture of Safety
- Chemical Hygiene Plan
- Analyze Hazards--Laboratory Physical Hazards
- Analyze Hazards--Chemical Hazards
- Analyze Hazards--Biological Hazards
- Analyze Hazards--Radiological Hazards
- Develop Controls--Administrative
- Develop Controls--Engineering
- Develop Controls--Personal Protective Equipment (PPE)
- Perform Work—Prudent Practices
- Perform Work—Recognition of Exposure
- Perform Work--Emergencies
- Rights and Responsibilities

Based on local campus conditions, additional campus training topics may be added as appropriate.

Appendix B (Non-Mandatory) Laboratory Site Safety Orientation

Before completing this form all laboratory personnel need to have successfully complete the UC *Laboratory Safety Fundamentals* course

Initial	Training Topic
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Emergency Procedures

- _____ **Fire alarm pull station:** Location of and demonstrate how to activate.
- _____ **Eye wash/safety showers:** Location of and demonstrate how to activate.
- _____ **First aid kits:** Locations of and contents.
- _____ **Phone:** Locations of, phone dialing instructions and posting of '911' dialing instructions.
- _____ **Emergency Procedures Guide:** Locations of flipchart, and discuss actions for each of the scenarios listed.
- _____ **Shelter-in-Place:** Review procedures for securing the lab for shelter-in-place orders.
- _____ **Primary and Secondary Routes of Egress:** Walk both pathways to Emergency Assembly Area. Review evacuation procedures for disabled employees.
- _____ **Emergency Assembly Area:** Review Lab gathering point and evacuation procedures.
- _____ **Reverse 911:** Enroll in campus emergency alert system.

Engineering Controls

- _____ **Chemical fume hoods:** Demonstration of proper use and instruction on adjustable controls.
- _____ **Biological safety cabinets:** Demonstration of proper use and instruction on adjustable controls.
- _____ **Chemical storage locations:** Locations and segregation rules.
- _____ **Other engineering controls (glove boxes, gas cabinets):** Demonstration of proper use and instruction on adjustable controls Describe:

Administrative Controls

- _____ **Laboratory Safety Manual (including Chemical Hygiene Plan):** Location of and content description.
- _____ **SDS:** Demonstrate electronic access to Safety Data Sheet repository.
- _____ **Laboratory Standard Operating Procedures (SOPs):** Location of written SOPs, describe the required approvals needed.
- _____ Identification of Chemical Processes / Areas that require specific SOP use.
- _____ Determine additional Hazard-Specific Safety Training courses needed. Enroll in courses.

Personal Protective Equipment

- _____ **Lab Coat:**
Provide at no cost a fitted lab coat. Certain labs require flame resistant lab coats
Type: FR Normal Size: _____
- _____ **Eye protection:**

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Provide at no cost a fitted pair(s) of safety glasses. Safety glasses must be of the type and adjusted accordingly to be worn comfortably and stay securing in place. For laboratory where goggles must be worn provide pair(s) of fitted chemical splash goggles.

Corrective Prescription Y/N Model: _____

_____ **Gloves:**

Location of, knowledge to select the correct type and instructions on how to properly don and doff.

_____ Other:

Waste Disposal

_____ **Hazardous Waste Accumulation Area:** Demonstrate Location, proper labeling, proper storage requirements, and process to request pick-up.

Other

_____ Understands safety procedures for specific operations (e.g., UV light, laser, safe use of specialized equipment, high voltage equipment, confined space, etc.). Describe:

Appendix C Federal and State Safety Training Mandates

Safety training clearly fosters a safer work environment and reduces the likelihood of injuries, property damage, hazardous materials releases, etc. However, *documented* safety training is also a regulatory requirement within numerous state and federal regulatory frameworks, such as OSHA, Health & Safety Code, Fire Code, etc. These training requirements intersect a host of specific research-related activities.

Below is a list of the major research safety training issues mandated by various regulatory agencies. The list is *not* comprehensive, but attempts to convey the breadth of the major requirements.

Cal-OSHA, Title 8 General Industry Safety Orders	Section	Typical Job Classification	Frequency
Injury & Illness Prevention Program	3203	All employees	Initial w/ updates
Fume hoods	5154.1	Users	Initial
Chemical Hygiene Plan	5191	Chemical users	Initial w/ updates
Regulated Carcinogens	5200-5220	Exposed employees	Initial
Personal Protective Equipment	3380	PPE users	Initial
Bloodborne Pathogens	5193	Potentially exposed employees	Initial, annual
Aerosol Transmittable Diseases	5199	Potentially exposed employees	Initial, annual
Emergency Action Plan	3220	Impacted employees	Initial w/ updates
Fire Extinguishers	6151	Assigned employees	Initial, annual
Material Safety Data Sheets	5194	Chemical users	Initial
Haz. Waste Ops. & Emerg. Response	5192	Assigned employees	Initial, annual
Heat stress (field operations)	3395	Exposed employees	Initial
Laser equipment	1801	Operators	Initial
Control of Haz. Energy (lockout/blockout)	3314	Affected employees	Initial
Respiratory Protection	5144	Users	Initial, annual
Permissible Exposure Limits	5155	Chemical users	Initial
Confined Spaces	5157	Affected employees	Initial

Beyond meeting training mandates on specific issues, Cal-OSHA also has broad language/ authority under their *Injury & Illness Prevention Program* regulation regarding training:

Every employer shall establish, implement and maintain an effective Injury and Illness Prevention Program. The Program shall... provide training and instruction:

- (A) *When the program is first established;*
- (B) *To all new employees;*
- (C) *To all employees given new job assignments for which training has not previously been received;*
- (D) *Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard;*
- (E) *Whenever the employer is made aware of a new or previously unrecognized hazard; and,*

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- (F) *For supervisors to familiarize themselves with the safety and health hazards to which employees under their immediate direction and control may be exposed.*

For more information see the Cal-OSHA website:

http://www.dir.ca.gov/dosh/dosh_publications/TrainingReq.htm

Or see the UC Systemwide Training and Education Workgroup training matrix (includes non-lab training mandates):<http://stew.ucdavis.edu/Matrix/>

Other Research-related Areas that Mandate Training (not comprehensive)

- Infectious biological materials (Biosafety in Microbiological and Biomedical Laboratories - NIH/CDC Guidelines)
Training on safe work practices to obtain/maintain PI-authorization from local Institutional Biosafety Committee
- Ionizing radiation or radiation producing equipment (California Code of Regulations, Title 17, Div. 1, Ch. 5)
Training on safe work practices to obtain/maintain PI-authorization from local Radiation Safety Committee
- Research animals (Association for Assessment and Accreditation of Laboratory Animal Care - AAALAC)
Training on proper and ethical animal handling to maintain institutional accreditation and PI-authorization from local animal care committee
- Chemical waste generators (CA Health and Safety Code 25200.3.1(b)(1))
Waste accumulation area is managed by personnel who have received training commensurate with their responsibilities and authority for managing hazardous wastes
- Hazardous materials users (California Health & Safety Code, Section 25504c. - Business Plan)
Initial and annual training on emergency response procedures for workers potentially affected by hazardous materials
- Hazardous materials users (California Fire Code, Section 2703.9.1 - Hazardous Materials General Provisions)
Affected workers shall be familiar with chemical nature of materials and mitigating actions in event of fire, leak, spill
- Receive/package/ship hazardous materials (Code of Federal Regulations, 49, Part 172, Subpart H)
Training on regulations and procedures