

Department of Animal Science Lab Safety Training Guidelines for Anyone Working in a Laboratory (i.e. faculty, staff, students, volunteers, and visiting faculty).

This guideline provides a framework for a consistent training for all individuals working in the laboratories. This can be used for both an initial training for new individuals and for the annual refresher training required by everyone who continues working in a lab, beyond one year. I list many of the EH&S safety nets, as they are excellent training documents and minimizes a lab's need to create their own. Download ones that are needed for your lab, and perhaps at each lab meeting review one safety net in more detail. Additional topics (i.e. specific hazards, SOP's, and dangerous chemicals) that are lab-specific **MUST** be added to this document by the faculty in charge or the lab supervisor or "safety-person".

There is a required on-line "[UC Laboratory Safety Fundamentals](#)" training for all chemical laboratory personnel, and required for all new folks before working in the lab. Go to the safety services website and look under training. This on-line training is required every three years, and covers the baseline information needed to work in a lab, BUT your lab-specific training is still required on an annual basis.

Documentation with signatures, of annual training must be kept in the lab's safety binder, in a clearly labeled section for ease of recovery during inspections. It can also be scanned and kept on the lab computer as long as everyone in the lab can access it. A fall training is recommended as individual labs can then train new individuals and refresh-train any returning individuals. **Long story...short...all individuals must have a documented lab-specific safety training not over one year old.**

The training should be done by the PI, or lab supervisor or assigned "safety-person". Contact your Department Safety Coordinator (Leslie Oberholtzer 752-1816 (ljoberholtzer@ucdavis.edu) for helping to initially set-up this training and for further questions.

STEP 1. "Training Packet" Review: Individuals must read, understand and know the location of the following documents: (see below) Have the lab safety person compile this material in the lab and have everyone review them, BEFORE the safety training meeting.

If this is done then the safety meeting can focus on critical issues and address questions based on individual's review of the materials. The "Training Packet" should include the following, but can be custom-designed to better fit a specific lab and their specific hazards:

a) IIPP and safety PPM 290-15, -50, -65 (in the lab safety notebook(s), or as a link on the desktop, accessible by everyone and a hardcopy in the Animal Science main office).

b) Emergency Action Plan (in the IIPP, can also be a link on the desktop, hard copy in the Main office) and Evacuation Map (posted on lab door).

c) This Training Guideline and the Department of Animal Science Hazard Evaluation and Laboratory Safety Guidelines (separate word files the safety coordinator will provide).

d) Master List of EH&S Safety Nets (download on-line). ([Link to safety net list](#))

e) EH&S Chemical & Laboratory Safety Manual (each lab should have the latest version or access to it [online](#), a link on the desktop is desirable).

f) Lab-specific SOP's (these are VERY important, and guidelines for creating lab SOP's are in [Appendix A](#) of the EH&S Chemical & Laboratory Safety Manual).

g) If your lab has a CUA...then training should include its SOP for use, a safety protocol, and spill clean-up procedures.

h) Post in the lab: Safety Net [#40](#) (Health & Safety Hazards: A Student's Right-To Know), [#8](#) "Guidelines for the Disposal of Chemical Waste", [#13](#) (Guidelines for Chemical Spill Control) and [#52](#) Emergency Medical Care.

STEP 2. Complete Required On-line Trainings: For anyone working in a laboratory with chemicals the on-line "UC Laboratory Safety Fundamentals" training is required.

Individuals working outdoors in the summer (heat illness prevention), with animals (ACU 101), radiation and/or biological will also have required trainings on-line and/or in person. Go to the [Safety Services website](#) under the training link.

STEP 3. Hold the Laboratory Safety Meeting: The following key items should be discussed during the safety training.

A. General Safety Information Available On-Line:

Individuals must be able to navigate to and within the UCD Safety Services website (<http://safetyservices.ucdavis.edu>). There is a wealth of information on safety, specific training classes that can be attended, and numerous sources of SDS's, to list just a few of the links available.

EH&S [Safety Nets](#) cover a variety of general safety and laboratory safety topics. They are all available on line and copies relevant to the lab should be in the safety binder and are useful during training. These hard copies should be replaced every couple years as they are continually revised by EH&S (the most recent revision date is printed at the end of each safety net). Individuals can review the entire master list on-line. For general lab safety, beyond the Department Guidelines, review safety net [#19](#) (General Safety Guidelines for Chemical Laboratories). And [#40](#) (Health & Safety Hazards: A Student's

Right-To-Know), #8 Guidelines for Disposal of Chemical Waste, and #13 Guidelines for Chemical Spill Control should be reviewed at each training.

B. General Laboratory Safety: Discussion of the importance of safety in the lab for self and others working around you.

- 1) Many hazards in the lab: toxins, carcinogens, corrosives, radiation. Focus on your labs' primary hazards.
- 2) Others may be working with hazards around you, keep aware.
- 3) Always wash hands before leaving work and/or eating.
- 4) Electric shock hazards, check cords ([fire net electrical safety](#))
- 5) Proper lifting procedures (safety net #46).
- 6) Tripping and falling hazards (keep a clutter free lab).
- 7) Earthquake: overhead storage awareness.
- 8) General housekeeping policy (simply means everyone cleans after themselves).
- 9) Ergonomic issues; pipetting, computer stations (safety net #17, #27, #41).
- 10) Security issues; locking doors, stranger identification.
- 11) No food, drink, gum, makeup application or smoking in chemical labs (UCD policy and OSHA regulations).

C. Safety Data Sheet (used to be called MSDS's):

Know the potential hazards of each chemical you are using. Review the SDS's, which can be located via a web link to a SDS data base. A shortcut icon to the data base should be on a lab computer desk top and accessible to all in the lab. Safety net #45 (Glossary of SDS Terms) is useful for first time users.

D. Emergency Procedures:

- 1) How and when to call 911 or 530-752-1234 (cell phone or land-line...the "old" do not call 911 on a cell phone has changed, because most cell plans are now able to handle campus 911 calls to stay on-campus and not go out to the CHP).
- 2) Location and use of fire extinguisher and pull stations. (Free fire extinguisher class once a month at the campus fire department)
- 3) Location and use of first aid kit. (No expired products in first aid kit)
- 4) Evacuation plan and assembly area for headcount (posted on lab door). Because the actual persons present in the building will vary hour-to-hour, every lab needs to be responsible for their lab and make sure everyone is evacuated, when required. If someone refuses to evacuate, do not try and force them, but contact (depending on who is actually present) either the lab PI, the Department Safety Coordinator, the Department Chair or Vice Chair, or someone on the Department Safety Committee, depending who is available. Also inform one of the above listed, if you know someone is missing or know something about the emergency (i.e. you pulled the fire alarm) so they can communicate to the emergency responders.
- 5) Injury/Illness must be reported to the supervisor and the necessary forms completed ASAP (within 24 hours). The front office personnel have the injury and workers compensation forms for supervisors, the new online form can be completed at: <https://ehs.ucop.edu/efr/>. The online version is faster and automatically sends notification

to everyone that should be notified. Do the online OR hard copy forms, but not both for the same injury.

E. Chemical Use and Handling:

- 1) Choice and use of PPE (see section G below). Availability and location of safety equipment.
- 2) Location and use of spill kit (see section H below, read safety net [#13](#) and it should be posted).
- 3) Chemical handling; read SDS and follow lab SOP's
- 4) Storage of flammables, corrosives, carcinogens (incompatibles keep segregated, safety net [#4](#)).
- 5) Hazardous waste storage and disposal (who is responsible for completing the label? safety nets [#8](#), [#43](#), [#110](#))
- 6) [List of Prop 65 chemicals](#) known to cause cancer or reproductive toxicity.
- 7) Label all prepared reagents/media (everything, even a wash bottle of water).
- 8) Biohazard labels where needed.

F. Common Areas: PLEASE they are common areas, so keep them clean!

- 1) Label all containers of chemicals (liquid or dry) with lab PI name and date received/opened. Everything needs a label, even if it is plain water!
- 2) Complete label for all reagents/media (full name of chemicals NOT abbreviations or chemical formulas).
- 3) Walk-in refrigerator and freezer storage containers must have the lab PI name, and date stored, date to discard, and if samples...what are they?

G. Personal Protection and First Aid:

- 1) Wear eye protection (safety goggles or eye glasses) whenever you are working with materials that can injure your eyes (safety net [#5](#))
- 2) Wear hand protection. Nitrile rubber is recommended when handling corrosives and organics. DO NOT touch non lab surfaces with gloves (door knobs, phones, and elevator buttons). Refer to safety net [#50](#) (Guidelines for the Selection of Chemical-Resistant Gloves) for guidance.
- 3) Wear a lab coat to protect your clothing and to act as a first barrier. Protective aprons should be worn when handling highly corrosive materials.
- 4) Open-toed shoes or sandals, or shorts, leggings, capris etc. are not permitted when working with chemicals or entering the lab, even if no work is being done.
- 5) Know the location of the nearest emergency eye-wash stations, showers, first aid kit, fire alarm pull-stations, fire extinguishers, and exits. Familiarize yourself with the eye wash and shower operation (for a hands on demonstration contact the Department safety coordinator). If you don't know how to use a fire extinguisher, take the free class at UC Davis fire dept, it is held every month.

H. Chemical Emergencies to an Individual; First Aid Measures: In a chemical emergency do not hesitate to follow these procedures because a spill or contact seems too trivial. It is better to overreact.

1) For skin contact, flood the affected area with water immediately and continue flooding for at least 15-20 minutes. If a substantial portion of the body is involved, use a safety shower and remove affected clothing and shoes. Ask for help and modesty controls if needed, as an activation of a hallway shower will alert plenty of assistance.

2) For eye contact, flood eyes (while holding them wide open with your fingers) with water and continue flooding at least 15-20 minutes. Contact lenses if worn will probably be washed out, if not remove them. Ask for assistance as holding your eyes open can be difficult and tiring.

If an eye wash or shower is used, and it is a serious injury (or if you are not sure) then call Emergency Medical Services (**911 or 530-752-1234 on cell or land lines**), EH&S (**2-1493**), and custodial (**2-1831**) in that order. If not life-threatening and you are an employee, call Occupational Health (752-6051) now located at the Cowell Building (former Cowell Student Health Center) or if you are a student, call the Student Health and Wellness Center (752-2349), if after hours/weekends call Sutter Davis Hospital (756-6440). Custodial must be requested to clean up the water. If someone is using the eye wash or shower, someone else should be getting a copy of the SDS of the chemical(s) involved to provide to emergency personnel.

3) For inhalation or ingestion, follow directions on the product SDS and call the contacts listed above.

I. Chemical Spill Emergencies:

1) For Liquid Spill volumes greater than 500 ml (1 pint, about the area of an 8 1/2" x 11" sheet of paper) or any amount of extremely toxic substance, evacuate and seal the area. Call the Fire Department (**911 or 530-752-1234 on cell or land lines**), and EH&S (**2-1493**), in that order. If you suspect or know the substance is flammable, extinguish or remove all ignition sources before sealing the room. If it's a spill in the stairwell, hallway or elevator, pull the fire alarm to evacuate the building.

2) For spill volumes less than 500 ml and the substance is not extremely toxic, check the container or SDS for special instructions. If no instructions are immediately available, encircle and cover the spill with absorbent material until the liquid is adsorbed. Neutralize strong acids with sodium bicarbonate, sodium carbonate or calcium hydroxide after absorbing. For formaldehyde and mercury spills read safety nets #11 and #16, respectively.

3) Solid spills are not usually emergencies. If the spilled material is toxic, use damp cloths or paper towels to transfer the material to plastic bags. Sweeping or brushing dry material may cause airborne dust.

4) Any absorbed spill material must be transferred into double plastic bags, sealed and disposed of as hazardous waste.

J. Radiation Use (if applicable):

- 1) Explain radiation use in the lab. Mandatory training (EH&S class).
- 2) Describe the lab's RUA and protocols (including appropriate PPE).
- 3) Radiation labeling and log book, including date, isotope and amount.
- 4) Read safety nets [#9](#), [#10](#), [#15](#), [#37](#), [#61](#), [#67](#), [#71](#), [#78](#).

K. Specific Training is required for Equipment or Procedures which may have Inherent Dangers: Document any equipment-specific or procedure-specific training (you can create your own training document(s) to cover these. Remember, document all training, with signatures.

L. Discuss Open-Door Policy for Safety Issues:

- 1) Name of key individuals (lab's safety person, Department safety coordinator, Chair of the Department, can call EH&S or CalOSHA ("whistle blower" laws).
- 2) Explain that all complaints are addressed and their names are kept confidential.
- 3) The "Students/Employees Rights to Know" (safety nets [#40](#)) must be made available, and is legally mandatory. It is no longer required to post the "Students/Employees Right to Know". It is on a bulletin board in the lab side, and available at the Safety Services website, and linked above.
- 4) Inform employees of the pregnancy policy at UCD (EH&S monitoring) (Safety Nets [#54](#), [107](#), 108)

Since CUPA is one of the critical inspections on-campus (and also CALOSHA) the following must be carefully reviewed each year.

CUPA Requirements (read Safety Net #120): Every three years the county will inspect all chemical laboratories that have hazardous materials, they are specifically looking at waste handling and training documentation. And technically they may inspect any lab at any time. Because of this each lab must conduct an annual CUPA self audit (on the EH&S website), and the following should be reviewed at each initial and refresher training:

- (1) Are chemical hazardous waste containers disposed of through EH&S within 9 months of the date that waste was first placed in the containers, or 90 days if 1 pound or 1 quart of acutely hazardous waste is accumulated? (Acutely hazardous chemicals list available on the EH&S website).
- (2) Does each waste container have a completely filled out waste label?
- (3) Are waste containers kept closed with a secure lid except when adding waste?
- (4) Are waste containers in good condition and compatible with the chemical waste?
- (5) Are waste containers properly managed? (i.e., incompatibles segregated, secondary containment).
- (6) Is an accurate updated (at least annually) chemical inventory submitted to EH&S via the on-line CIS (chemical inventory system)?
- (7) Are SDS's available for all chemicals present in the lab?
- (8) Are personnel in the lab trained on procedures for spills? Are spill procedures posted in the lab (safety net #13)?

Relative to the CUPA Inspections, the following should also be reviewed:

- a) Methods for safe handling of lab-specific hazardous materials should be reviewed.
 - b) Based on SDS wear appropriate PPE (safety goggles, gloves, lab coats, closed-toed shoes, long pants, etc.).
 - c) Know the location of the labs SDS's, and chemical spill control kit.
 - d) Know the location of the nearest eyewash, shower, and fire alarm.
 - e) Know the procedures for evacuation and notification of emergency personnel.
- If it is a spill larger than a piece of paper, evacuate the lab of all individuals, make sure doors are closed and call 911. If it is a large spill that could effect those outside the lab pull the fire alarm to evacuate the building (i.e., a spill of one gallon of formalin in the stairwell, a gallon of phenol in a lab). If you are not sure...pull the fire alarm.
- f) Meeting site for the Department of Animal Science during an evacuation is the asphalt path north of Meyer Hall.

STEP 4. Closing Remarks, Training Quiz and Documentation: Remember if it is not documented it did not happen and the safety quiz helps show that material was actually reviewed (by answering questions). After all documents are reviewed in the "Training Packet" and the safety quiz and meeting is completed:

- 1) Have the employee(s) and student(s) sign an individual training form (template below).
- 2) Explain to them that they have been trained and are agreeing to abide by the safety procedures in the work area.
- 3) Explain that safety is their responsibility and everyone in the lab (and between labs) should police each other (remember peer pressure is the most important method of compliance).
- 4) Inform the individuals that failure to comply with safety regulations, by an employee or student, can result in disciplinary action or dismissal by the Department and/or UCD.
- 5) Keep this training document and quiz in the training records binder of the lab, or keep the original in the Animal Science main office and an electronic version in the lab. And send a copy of the training documentation to the Department safety coordinator.

IMPORTANT NOTE: I strongly encourage the lab safety person to keep a separate tab of training records for each academic year, for ease of finding during inspections.

Have a master roster list of the people in the lab on the front page of each "year" so at quick glance you can verify who has been trained, who needs a refresher, etc. Fumbling through a pile of old records to find a specific current one, when an inspector is looking over your shoulder is not very impressive. The more organized you are the less time it will take for an inspector to go through your lab.