

# Laboratory Specific Template for Chemical Safety

**UC DAVIS**  
**HEALTH SYSTEM**  
**SCHOOLS OF HEALTH**  
**EDUCATION & RESEARCH**

Department: \_\_\_\_\_

Building & Room #: \_\_\_\_\_

Department Chairperson/Director & MSO/CAO: See attached list

Principal Investigator: \_\_\_\_\_

Office: \_\_\_\_\_

Phone: \_\_\_\_\_

E-mail: \_\_\_\_\_

Lab Manager: \_\_\_\_\_

Office: \_\_\_\_\_

Phone: \_\_\_\_\_

E-mail: \_\_\_\_\_

Research Location(s) covered by this plan:

## UC Davis Campus:

- \_\_\_ Center for Comparative Medicine
- \_\_\_ Center for Health & Environment
- \_\_\_ Center for Neuroscience
- \_\_\_ Genome Center
- \_\_\_ Med: Neuroscience
- \_\_\_ MRI Facility for Integrative Neuroscience

- \_\_\_ Primate Center
- \_\_\_ Surge I
- \_\_\_ Surge III
- \_\_\_ Temporary Buildings (TB's)
- \_\_\_ Tupper Hall

## UCDHS Sacramento Campus:

- \_\_\_ Cypress Building
- \_\_\_ FSSB-Anatomy Teach Lab
- \_\_\_ Imaging Research Center
- \_\_\_ Institute for Regenerative Cures (IRC)
- \_\_\_ Lawrence Ellison Ambulatory Care
- \_\_\_ Research Lab M.I.N.D. Institute-Wet Lab
- \_\_\_ Oak Park Research Building (OPRB)
- \_\_\_ Patient Support Services Building (PSSB)
- \_\_\_ Shriners Hospital-6<sup>th</sup> Floor Research

- \_\_\_ Research I
- \_\_\_ Research II
- \_\_\_ Research III
- \_\_\_ Sacramento County Coroner's
- \_\_\_ Shriners Hospital-6<sup>th</sup> Floor
- \_\_\_ Specialty Testing Center
- \_\_\_ Ticon I
- \_\_\_ UCDHS-Research Lab (basement)
- \_\_\_ VA-Mather Hospital-Research

Implementation Date: January 01, 2015

Reviewed/Updated: \_\_\_\_\_

Reviewed/Updated: \_\_\_\_\_

Reviewed/Updated: \_\_\_\_\_

## **Site-Specific Information on Chemical Receiving, Storing, or Dispensing (If Applicable)**

Give the location of your laboratory's chemical receiving, storage, or dispensing areas. Describe any ordering policies or procedures for hazardous chemicals. List any chemicals that require prior Principal Investigator approval for purchase.

## **Safety Data Sheets (SDS) and Other Reference Materials Available in the Laboratory**

Please describe how and where SDS's and other reference materials are available in this laboratory. See the EH&S/Safety Services website link <http://safetyservices.ucdavis.edu/ps/cls/msds> for a list of recommended references.

An alternative website link for Vermont SDS is <http://hazard.com/msds/>

The laboratory specific Safety Data Sheets (formerly MSDS) can be found on the desktop lab computer.

SDS's can also be accessed by cell phone, if needed.

# Emergency Response Instructions

## GENERAL PROCEDURES:

The following are some general instructions for actions to take in case of an emergency:

### Medical Emergency

1. Remain calm.
2. Initiate lifesaving measures if required.
3. Call for Emergency Response --- **CALL 911**.
4. Do not move injured persons unless it is necessary to prevent further harm.
5. Keep injured person warm.

### Major Incident

1. Attend to injured or contaminated persons and remove them from exposure.
2. Alert people to evacuate the area.
3. Call for Emergency Response -- **CALL 911**.

- Fire ----- **911**
- Chemical, radiation, biological spill ----- **911**
- (Evenings and Weekends)----- **911**

4. Close doors to affected areas.
5. Have person knowledgeable of incident assist emergency workers.

## LABORATORY-SPECIFIC PROCEDURES:

The following are specific instructions for actions to take during an emergency situation in your laboratory.

In the event of emergency, suspend all laboratory activities in the laboratory.

Refer to laboratory specific animal use and care protocol(s) regarding steps to be taken when working with animals in the laboratory. <http://safetyservices.ucdavis.edu/ps/a>

## **Site-Specific Hazardous Material Control Systems (Engineering Controls)**

Please list below the hazardous material control systems (e.g. fume hoods) available in the laboratory. Include information on restrictions, special precautions or procedures, preventative maintenance schedules, and any other information relevant to safe operation in the laboratory.

Chemical fume hoods will be used, if required, when working with hazardous chemicals in the laboratory.

Avoid overcrowding of the chemical fume hood when actively using it.

Secondary containment of hazardous chemicals and/or hazardous chemical waste when there is a possibility of leakage or overflow.

## **Prior Approvals Required**

Please list prior approvals required for particular laboratory functions. The Principal Investigator will determine which laboratory operations, if any, will require prior approval.

All Standard Operating Procedures (SOPs) will be reviewed, signed and dated by the laboratory worker, prior to beginning work with the material.

All Laboratory Specific Use Authorizations (Biological, Chemical, Carcinogen, Radiation, Laser, etc.) will be reviewed, signed and dated by the laboratory worker, prior to beginning work with the material.

All equipment procedures (e.g. centrifuge, autoclave, glass washing, pipetting, fume hood, biological safety cabinet, liquid nitrogen, etc.) will be reviewed, signed and dated by the laboratory worker, prior to beginning work with the material.

# Personal Protective Equipment Available in the Laboratory

It is widely recognized that the risk of exposure should be addressed through administrative and engineering controls, work practices and training. It is equally recognized that these controls may not prove to be adequate in situations where the risk could not be completely minimized, or in the event of an unplanned exposure. Thus the use of personal protective equipment (PPE) becomes the last line of defense against exposure.

The benefits gained by wearing PPE are:

1. Possible prevention of exposure,
2. Potentially minimizing the risk should an exposure occur,
3. Compliments existing controls to enhance personal protection.

It is also important to recognize the limitations associated with PPE:

1. PPE only protects the individual wearing it, not anyone else in the workplace,
2. Discrepancy between theoretical and actual levels of protection provided exists (with the latter being difficult to assess),
3. PPE is only effective if correctly selected, fitted, used and cared for, and the individual is trained,
4. The choice of PPE may compromise mobility, visibility, communication, etc.
5. See the following section on “Usage and Limitations of the PPE” for additional guidance.

When considering the appropriate type of PPE, it is important to identify and assess all the types of risk one will be exposed to, what risks can be mitigated through other control mechanism and any detrimental impact associated with the selection of the PPE.

The following section will briefly discuss the following types of PPE: gloves, lab coats/gowns, eye protection and respiratory available to laboratory workers and when it should be used.

<b>Gloves:</b>	<p>In general vinyl, nitrile or latex* gloves are used when working in the laboratory. Some of the issues that must be considered in selecting gloves are:</p> <ol style="list-style-type: none"><li>1. Effectiveness of the barrier to bio penetration, hydration and chemicals,</li><li>2. Tensile characteristics, length of cuff,</li><li>3. Quality control and assurance (porous matrix, microscope tears, variation in density and thickness),</li><li>4. Personal comfort.</li></ol> <p>Gloves should be changed frequently, as the integrity of the glove may be compromised by:</p> <ol style="list-style-type: none"><li>1. Hydration (long exposure to liquids),</li><li>2. Physical demands (stretching during donning and use),</li><li>3. Chemical degradation (disinfectants, solvents, drugs),</li><li>4. Environmental degradation (humidity, heat, cold, ultraviolet or fluorescent light).</li></ol> <p>Double gloving may help address the potential weakness associated with the above mentioned conditions.</p> <p><i>*Latex Allergy: is a serious condition for those suffering from this allergy and care and consideration must be offered to them by their employer.</i></p>
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<p><b>Lab Coats/Gowns and Other Protective Clothing:</b></p>	<p>Laboratory Coats (e.g. White Cotton, Barrier, Flame Resistant (FR) and Aprons) are available, based on a risk assessment of the hazardous activity taking place in the laboratory. The choice of the lab coats must allow for complete coverage (knee length and long sleeves) and snap/button/tie closing.</p> <p>If the wrist opening of the lab coat has not been restricted, care must be taken to prevent exposing the skin; this may be achieved by tucking the sleeve into the glove. Dangling sleeves may also result in contamination and/or exposure as a result of the edge of the sleeve dragging over multiple surfaces. An alternate choice is lab coats/gowns with knitted cuffs, generally used when working in a Biological Safety Cabinet (tissue culture hood).</p>
<p><b>Eye Protection:</b></p>	<p>Eye protection is available, based on a risk assessment, when there is hazardous activity taking place in the laboratory.</p> <p>The main hazards to be addressed are: splashes (due to spills, or aerosols/droplet generation), impact (powders, dust, shattered objects), and radiation such as ultraviolet light, x-rays, etc. Not only must the selection address the specific risk, but the eye wear must be comfortable, provide good visibility and be appropriately stored and cared for.</p>
<p><b>Respiratory Protection:</b></p>	<p>Respirators can be offered, based on a risk assessment of the activity taking place in the laboratory.</p> <p>Laboratory workers will be required to complete the respiratory protection medical evaluation, fit testing and training through Employee Health Services before wearing a respiratory in the laboratory.</p> <p>Surgical masks are not respiratory protection devices and are designed to act as a means of preventing hand to mouth contact.</p>
<p><b>Other:</b></p>	<p>Hearing protection can be offered, based on a risk assessment of the activity taking place in the laboratory.</p> <p>Please contact EH&amp;S/Safety Services for a monitoring assessment of the workplace.</p>

# Usage and Limitations of the PPE

PPE	Usage	Limitation
Safety Glasses <sup>1</sup>	Intended to protect the wearer's eyes when working with materials that may fly towards the researcher's face, impacting the eyes with solid materials that may damage the eyeball.	Does not protect against chemical splashes to the face or eye area.
Splash Goggles <sup>2</sup>	Intended to protect the wearer's eyes against the risk of hazardous chemicals.	If there is a risk of an impact by a solid material, safety glasses should be worn under the goggles.
Face Shield <sup>2</sup>	Intended to protect the entire face or portions of it from impact hazards such as flying fragments, objects, large chips, and particles.	Use in combination with safety spectacles or goggles: does not protect employees from impact hazards when worn alone.
Traditional Poplin Lab Coat	Is intended to protect the wearer and the wearer's clothes from incidental splashes of hazardous materials found in research labs.	Not to be used with bloodborne pathogens in quantities large enough to soak through to the skin or flammable materials greater than 1 L or smaller quantities of flammable materials where there is a risk of ignition.
Barrier Lab Coat	Intended to protect the wearer when there is a risk of splash from bloodborne pathogens or other biohazardous materials.	Not to be used with when there is a risk of fire.
Flame Resistant Lab Coat	Intended to protect the wearer when there is a risk of catching personal garments or skin on fire. Resists ignition, prevent the spread of fire over the garment, and quickly self-extinguish following removal of the ignition source.	Not designed to be "fire-proof," nor are they designed to eliminate the risk of burns. FR clothing splashed or contaminated with a flammable substance and ignited will continue to burn on the surface of the garment until the fuel is exhausted. Garment is not fluid resistant and should be immediately removed and replaced (or laundered) if it comes in contact with spilled substances.
Chemical Splash/Flame Resistant Apron	This limited use garment is intended to offer protection from chemical splash and to minimize burn injury during short term exposure to flash fire. A flame resistant lab coat should be worn under the apron.	Not suitable for use with some chemicals and hazardous agents (see safespec.dupont.com). Do not use for protection against continuous thermal loads, molten metal splash, hot liquids, or steam. Undergarments made with non-melting fibers such as cotton, silk, wool, or rayon should be worn.

<sup>1</sup> Must meet the requirements specified in American National Standards Institute, Z87.1-1989 or later.