Laboratory Safety Inspection Training – Self-audits

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Welcome to the University of California, Riverside online Laboratory Safety Inspection Training for self-audits.

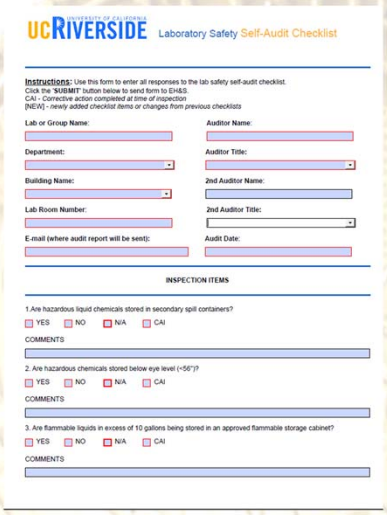
Lab Audit Training Objectives

Use the checklist to:

1. Assess injury and illness prevention measures
2. Determine regulatory compliance
3. Evaluate safe work practice

In addition:

1. Gain valuable safety and inspection tips
2. Learn the lab self-audit process
3. Complete online form (checklist and corrective action)



UC RIVERSIDE Laboratory Safety Self-Audit Checklist

Instructions: Use this form to enter all responses to the lab safety self-audit checklist.
Click the "**SUBMIT**" button below to send form to EH&S.
CAI - *Corrective action completed at time of inspection*
[NEW] - *newly added checklist items or changes from previous checklists*

Lab or Group Name: | Auditor Name:
Department: | Auditor Title:
Building Name: | 2nd Auditor Name:
Lab Room Number: | 2nd Auditor Title:
E-mail (where audit report will be sent): | Audit Date:

INSPECTION ITEMS

1.Are hazardous liquid chemicals stored in secondary spill containers?
☐ YES ☐ NO ☐ N/A ☐ CAI
COMMENTS

2. Are hazardous chemicals stored below eye level (<56")?
☐ YES ☐ NO ☐ N/A ☐ CAI
COMMENTS

3. Are flammable liquids in excess of 10 gallons being stored in an approved flammable storage cabinet?
☐ YES ☐ NO ☐ N/A ☐ CAI
COMMENTS

By the end of this training you should be able to perform a self-audit of your laboratory in accordance with the checklist.

In addition you will learn:

Valuable safety and inspection knowledge
How to recognize hazardous conditions
Verify the laboratory is in alignment with federal, state and UCR policies
Lab safety self-audit process

The goals of the self-inspection program includes:

Promoting a safe work environment

Verifying alignment with regulatory agencies

Address weaknesses in work practices

Before you begin…

Safety Tip: Be sure to wear the appropriate PPE when entering the lab to perform an inspection.

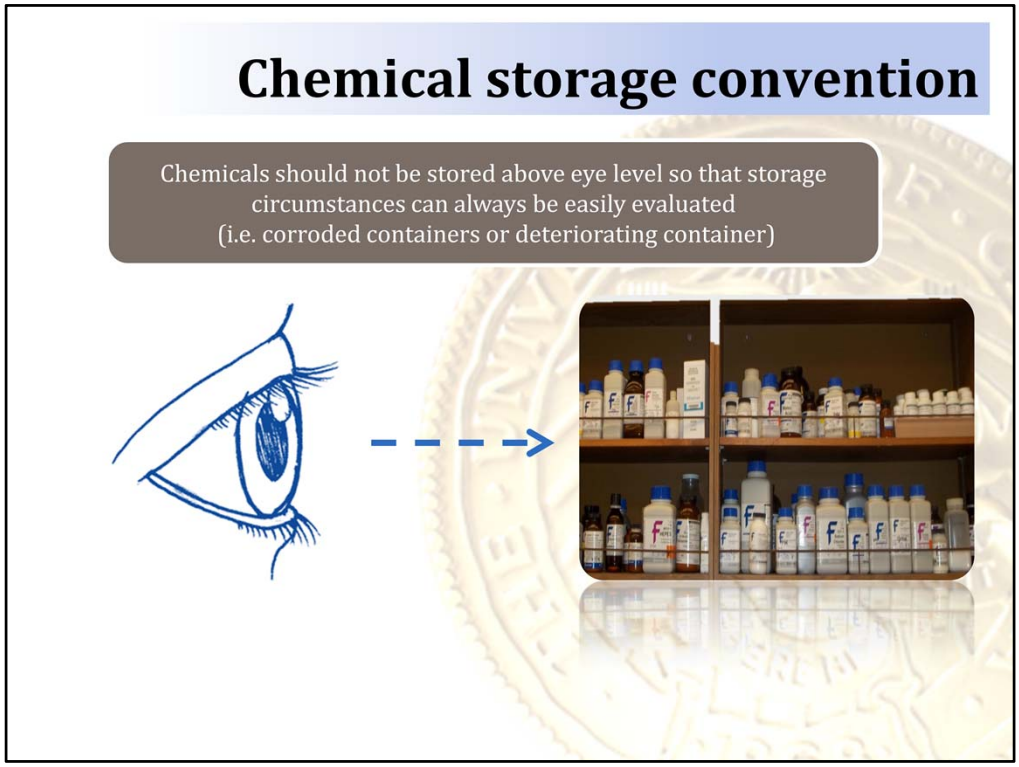
Before you begin conducting your inspection of the lab, care should be taken to wear the appropriate PPE. Check the safety placard for the required PPE used in the lab.

Storage trays or **secondary containment** must be used to minimize the distribution of material in the event a container should leak or break.

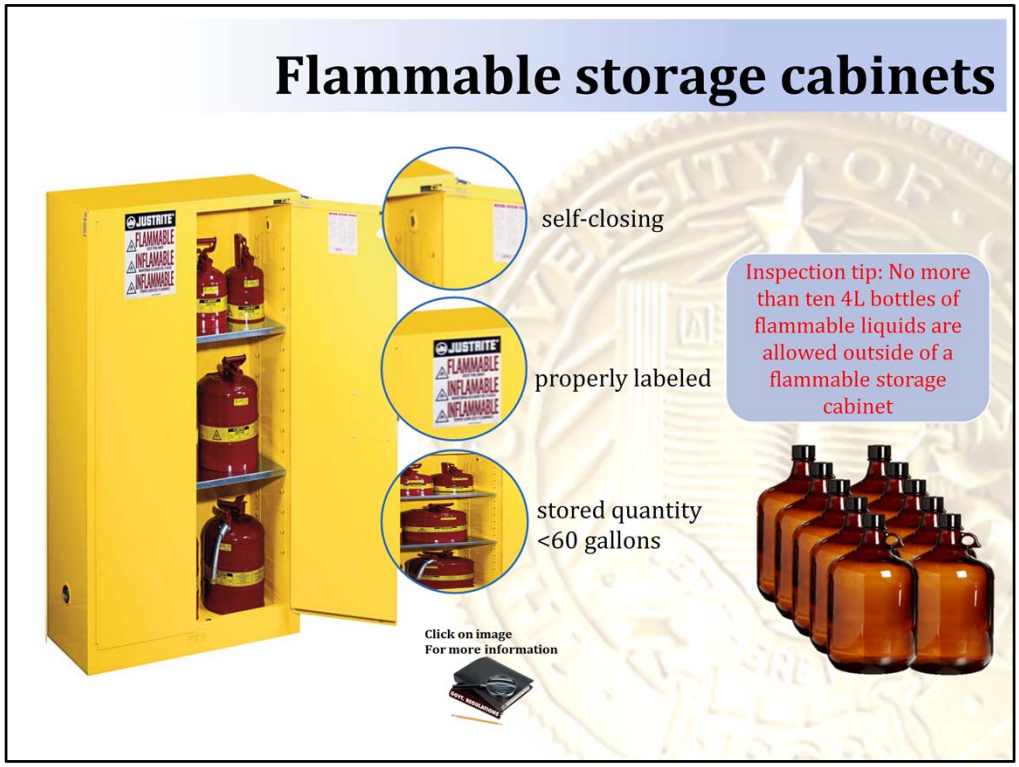
Notice in your lab the secondary containment provided for your hazardous waste bottles. This same principle can be applied to hazardous chemical storage.

Containment systems should have sufficient capacity to contain 110% of the total volume of stored containers.

Containers that do not contain free liquids should not be considered in this determination.

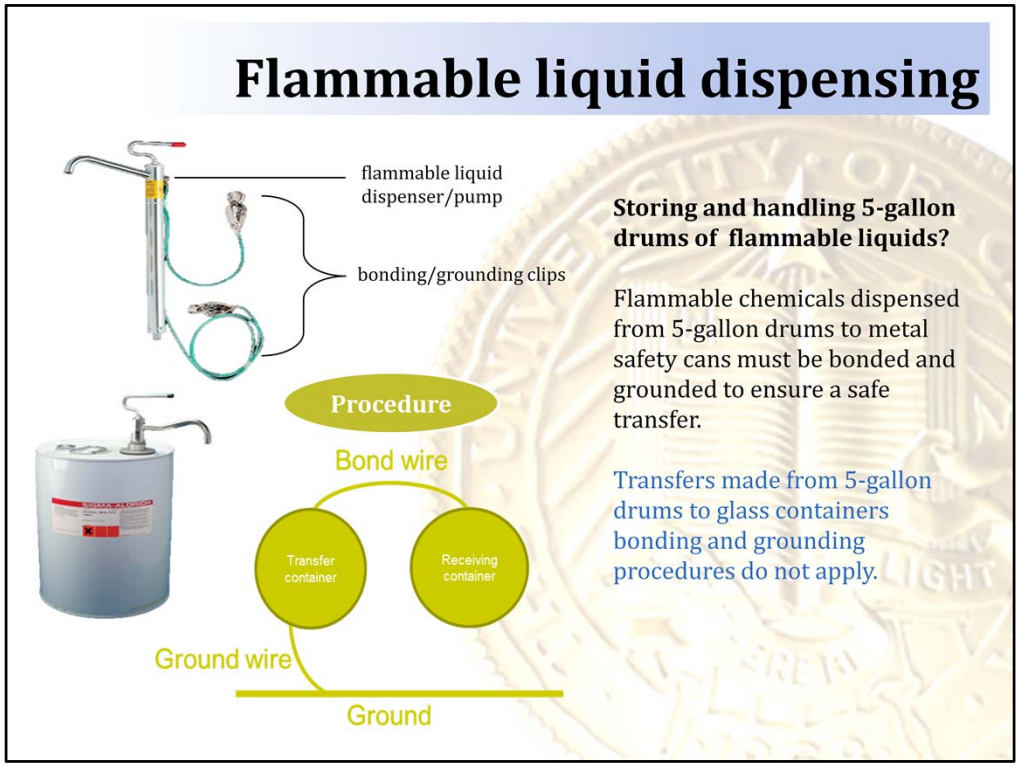


A best practice…store all hazardous laboratory chemicals **below eye level (<56”)**. This simple task greatly reduces the likelihood of something falling from above, breaking and contaminating the laboratory or causing injuries. This practice is especially prudent when storing corrosive materials.



Inspect flammable storage cabinets by opening the doors and releasing them to determine whether the unit is self-closing. Be sure to note that the cabinet is labeled with the appropriate flammable warning message. Look around the lab to see that there are no more that 10 gallons of flammable liquids stored outside of the cabinet. The combined volume of **chemicals exceeding 10 gallons are required** to be stored in an approved flammable storage unit.

Cal OSHA 8CCR §5538, 5416

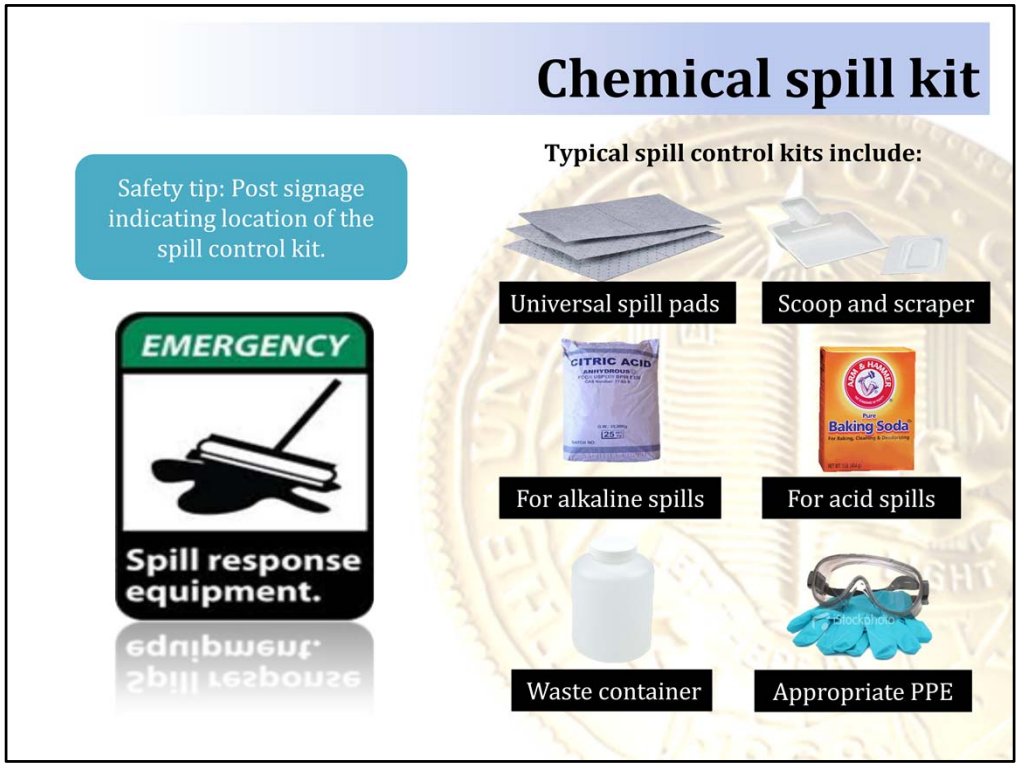


Both bonding and grounding of containers of flammable liquids are required by state and federal regulations.

Transferring a liquid from one metal container to another may result in static electrical sparks. To prevent the build up of static electricity and prevent sparks from causing a fire, it is important to bond metal dispensing and receiving containers together before pouring.

You only need to bond those containers that conduct electricity, such as those made from metal or special, conductive plastics.
If a container is made from a material that does not conduct electricity, such as polyethylene plastic or glass, bonding or grounding is not necessary: in fact grounding the container will not have any effect .

Cal OSHA 8CCR §5168



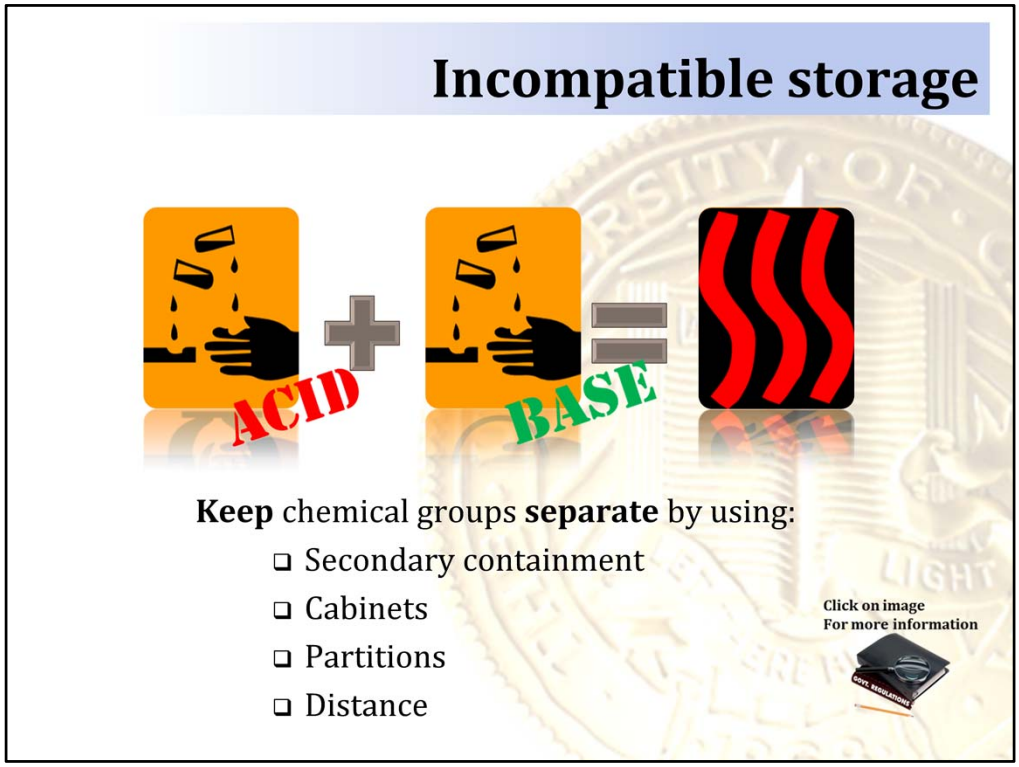
Chemical spill kits must be readily available in the laboratory and lab personnel **trained** on how to use the kit in the event of an accidental release.

All personnel who work in a laboratory are expected to be prepared to clean up spills that are likely to occur in their work areas.

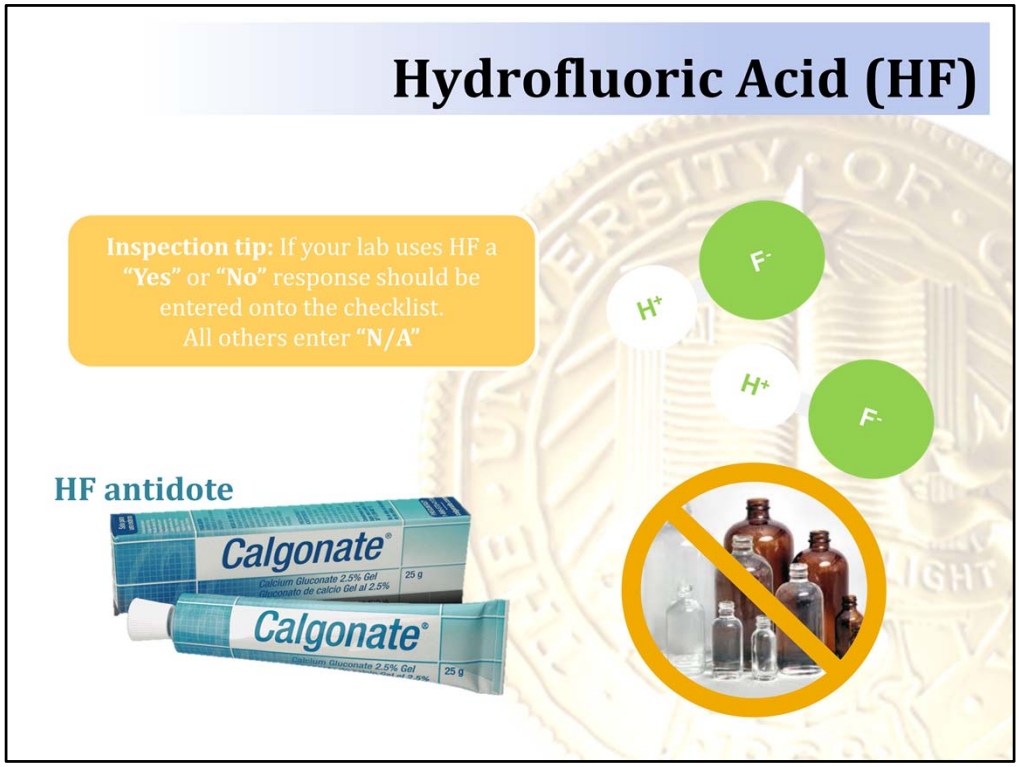
Be sure that each lab member **knows the location** of the spill kit in the lab and is familiar with UCR policy regarding spill control.

Standard kits include acid/base neutralizers, spill pads, collection equipment and personal protective equipment. You can customize a spill kit to meet the potential risks associated with the materials used in your laboratory.

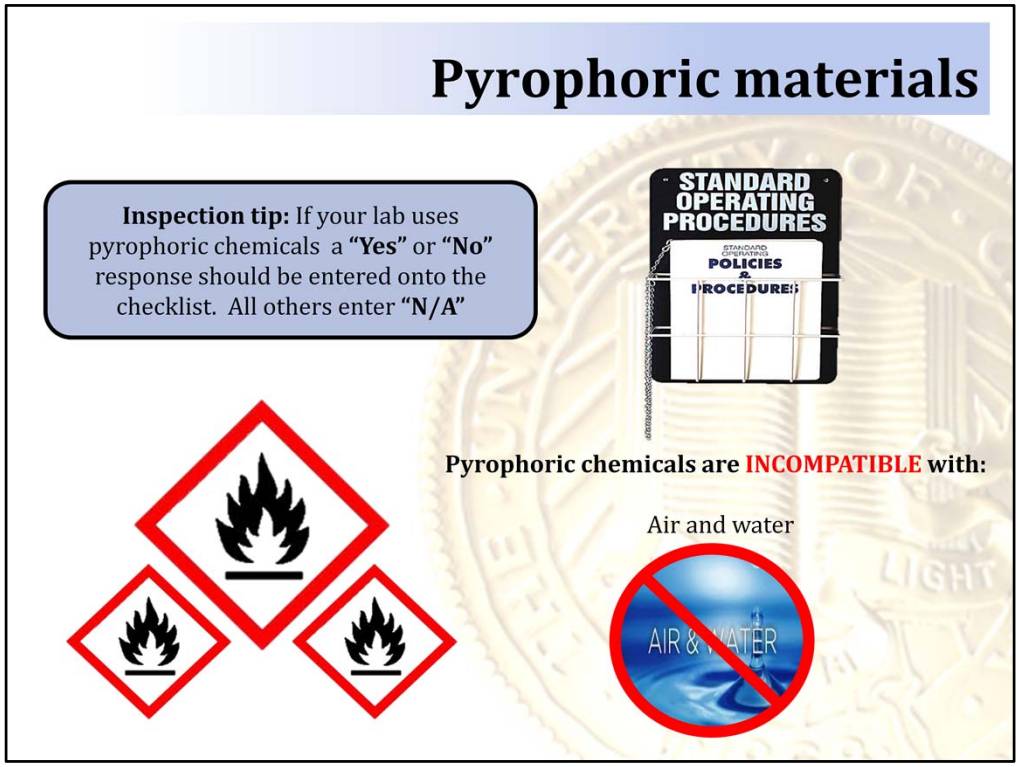
Complete spill kits and accessories are **available at the campus storehouse.**



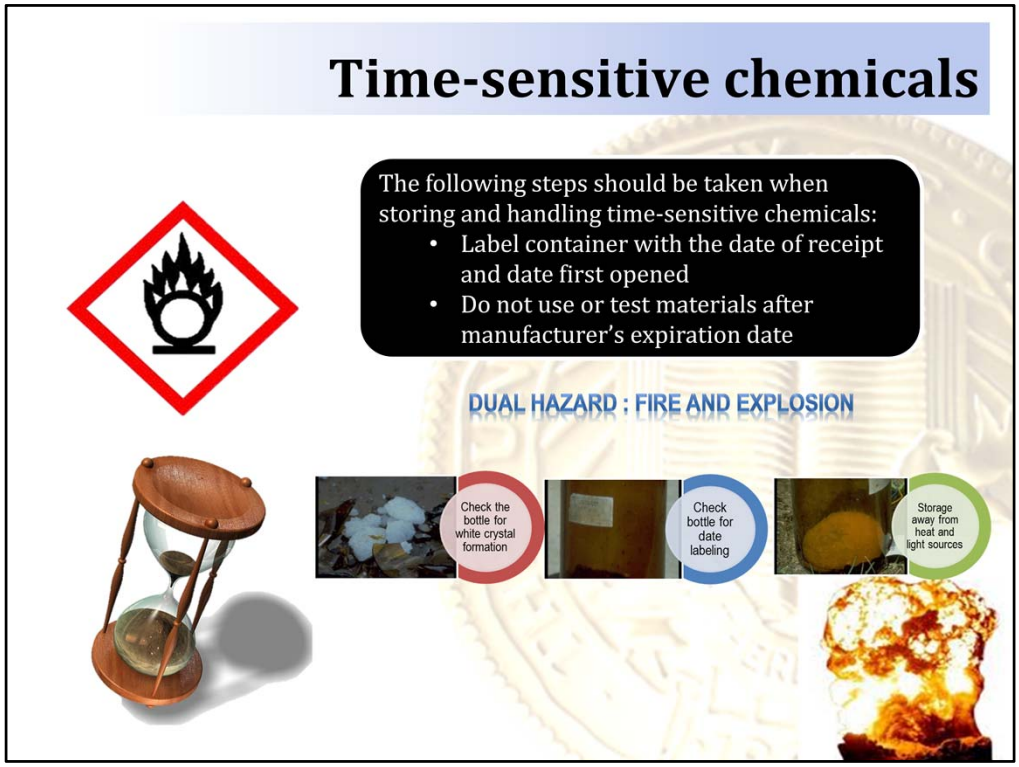
Keep flammable and combustible liquids away from strong oxidizing agents, such as nitric or chromic acid, permanganates, chlorates, perchlorates and peroxides.
Keep acids separate from bases to avoid exothermic reaction (heat release) and residue formation that results in exterior contamination of chemical bottles.
Chemical groups should be kept separate by using:
Secondary containment
Cabinets
Partition (noncombustible)
Distance (no less than 18” above and to the sides of the stored material)
Cal OSHA 8CCR §5164



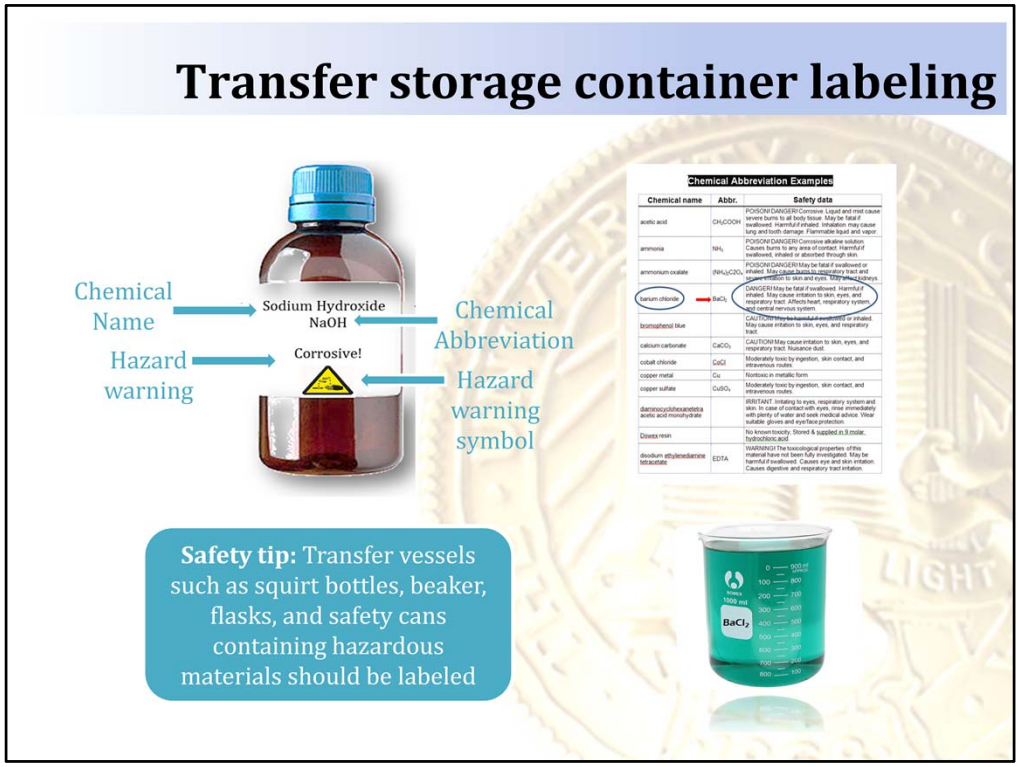
Hydrofluoric acid requires careful handling a storage. Ensure the lab has an SOP for HF. HF is used for etching glass in industrial applications making it highly incompatible with glass. Be sure to verify that this chemical is being stored in plastic, polyethylene-type containers. In addition, calcium gluconate is used to treat HF exposure on the skin. Maintain an up-to-date tube of calcium gluconate in an easily accessible area preferably inside the first aid kit. Discard tube and any unused gel after use or upon expiration. Cal OSHA 8CCR §5191



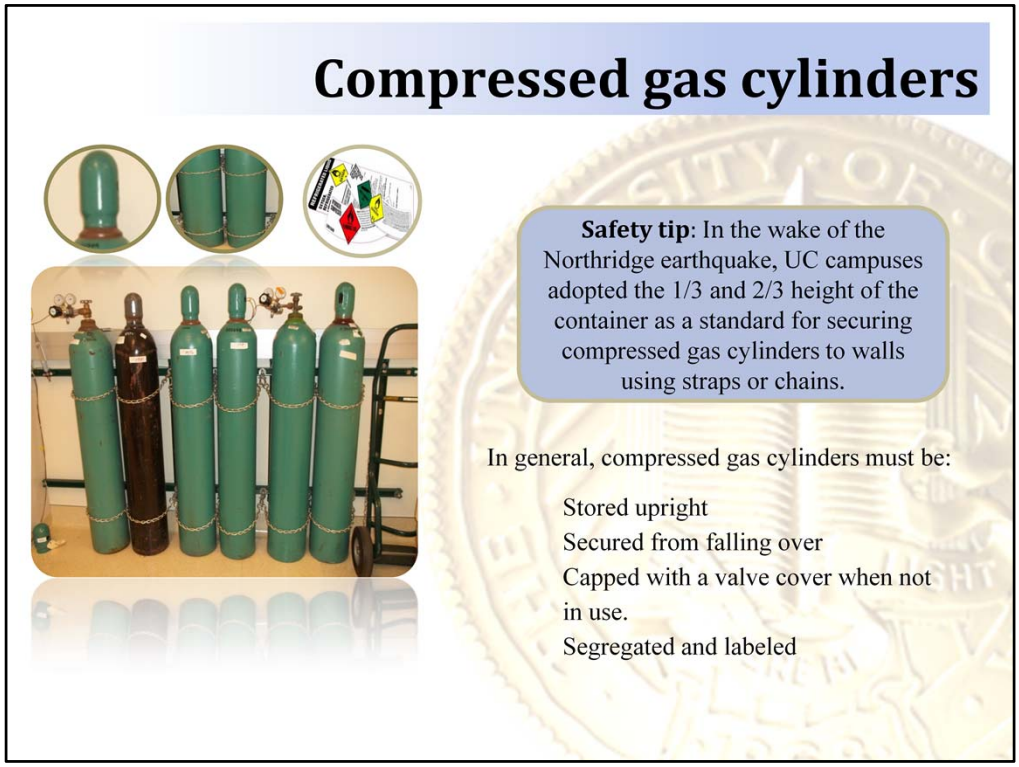
Pyrophoric materials are substances that ignite instantly upon exposure to oxygen. They can also be water-reactive, where heat and hydrogen (a flammable gas) are produced. Due to the extremely hazardous nature of pyrophoric materials it is especially important that the lab has written PI-approved standard operating procedures available. Pyrophoric materials are to be stored and handled in accordance with the SOP.
Cal OSHA 8CCR §5191



Time sensitive chemicals are any chemical or chemical product that develops additional hazards upon prolonged storage.
Time-sensitive chemicals include:
Peroxide- formers (most common)
The following steps should be taken when storing and handling time-sensitive chemicals:
Label container with the date of receipt and date first opened
Tag time-sensitive materials
Do not use or test materials after manufacturer's expiration date
If you discover time-sensitive chemicals that have expired or are outdated:
DO NOT TOUCH THE BOTTLE
Visually inspect for water content
If you determine that the container may have crystals – immediately secure the area and notify EH&S (2-5528)



The contents of all chemical containers, including but not limited to beakers, flasks and reaction vessels are to be properly identified.
Chemical abbreviations and annotations can be used on secondary containers as long as a list is prominently posted indicating the chemical name and hazard indication attached to each abbreviation.
To avoid accidents and orphan chemical bottles, all chemical containers must be properly labeled with the following:
Chemical name
Concentration (if applicable)
Hazard warning(s)
Date of transfer to the vessel (good practice)
Cal OSHA 8CCR §5164, 5191, 5194



In general, compressed gas cylinders must be:
stored upright
secured from falling over
Have protective valve cap in place when not in use.
Segregated and labeled with the contents and associated hazard.

In the wake of the Northridge earthquake, UC campuses adopted the 1/3 and 2/3 height of the container as a standard for securing compressed gas cylinders to walls using straps or chains.

Cal OSHA 8CCR §4650, 5191

Schedule I & II (i.e. morphine, pentobarbital)

Must be stored in a safe or steel cabinet equivalent

Schedule III, IV & V (i.e. chloral hydrate, phenobarbital)

Must be stored in a safe locked drawer or cabinet that is inaccessible from above and below

Detailed **use log and inventory records** must be kept up-to-date, including:

Amounts purchased
Amounts used
Amounts left on hand
Amounts disposed of

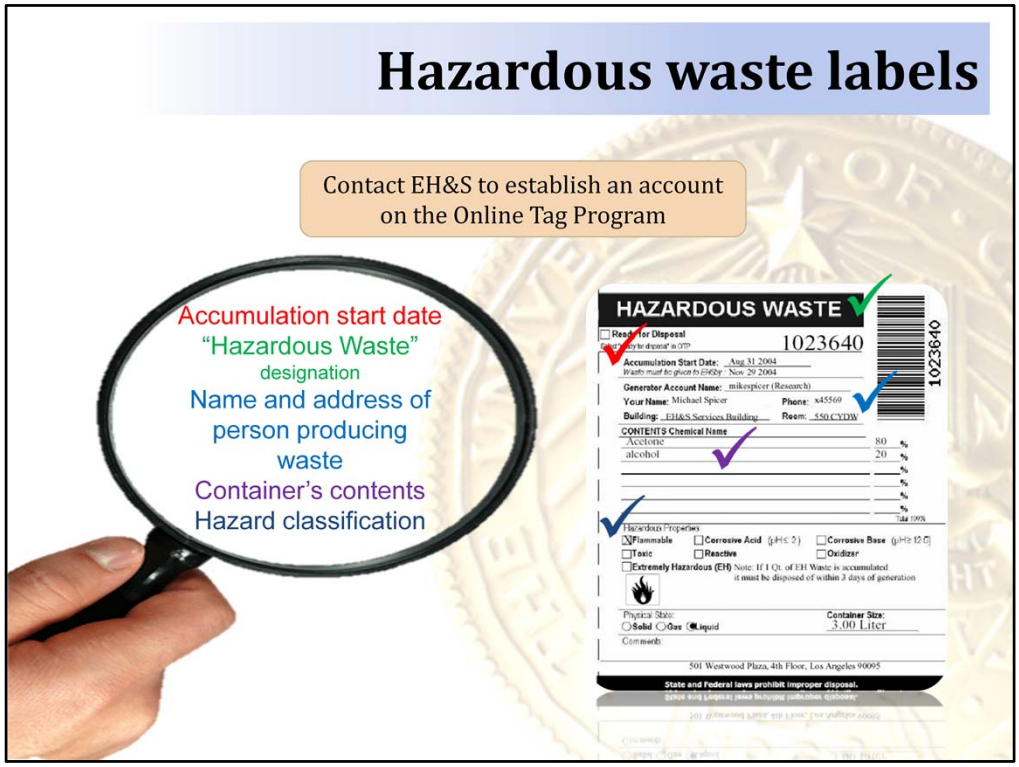
Controlled substance use authorization (CSUA) must be on file to possess and use controlled substances for the purpose of research, teaching, veterinary care or clinical trial.

CSUA must be renewed every 3 years.

UCR Controlled Substances Program

Each Principal Investigator (PI) is required to maintain a current inventory of all potentially hazardous chemicals stored, used, or produced within each laboratory that is under their responsibility. The laboratory's chemical inventory list should be updated on a quarterly basis, or more often if warranted.
An effective chemical inventory is an essential starting point to you managing your chemical risks.
Conduct a physical inventory – Remember to wear PPE!
Update the chemical inventory online and include:
Exact location
Chemical name
Container size and contents
Container type
Chemical manufacturer
Complete the Chemical Inventory Confirmation form.

Verify chemical inventory update status by contacting ehshazmat@ucr.edu
Cal OSHA Title 8 CCR §5191



Chemical, radioactive and biological waste containers are to be labeled the **moment waste is generated**.

Create labels using the campus **On-line Tag Program (OTP)**

OTP-generated labels include the required information which includes:
accumulation start date
hazardous waste designation
name and address of person producing waste
container contents
hazard classification

Cal OSHA Title 8 CCR §5191 • Title 22 CCR §66262

Waste containers should be of seamless construction and made with or lined with materials that will not react with and are otherwise compatible with the waste in the container.

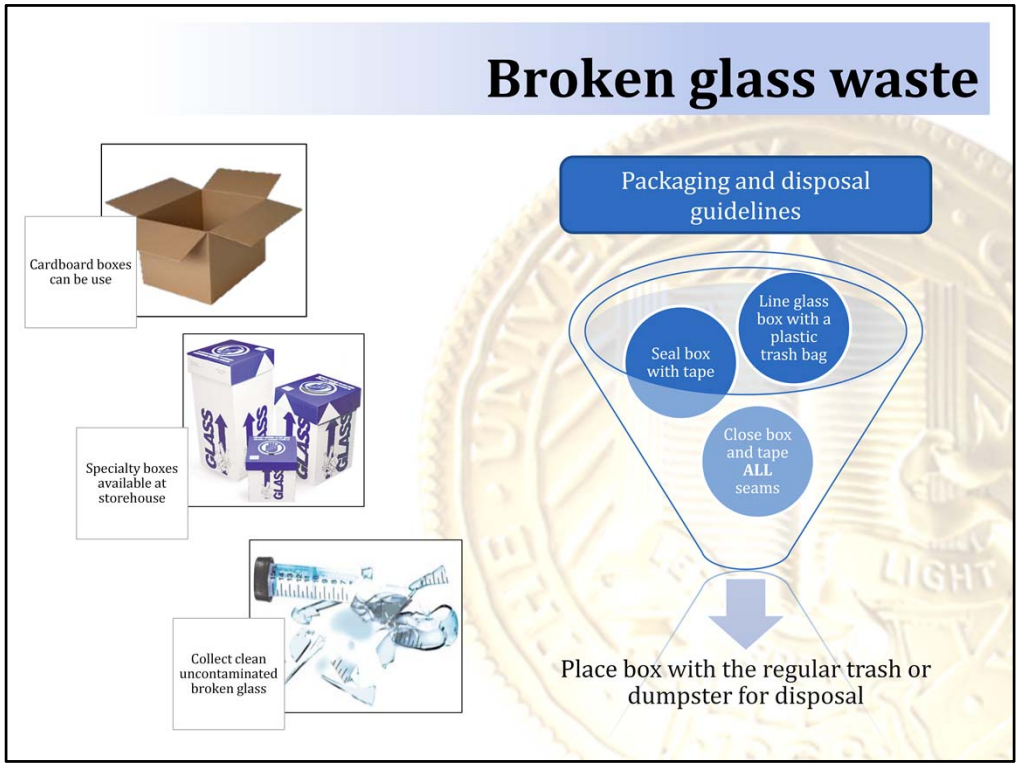
A container holding hazardous waste should be closed during accumulation and storage, except when necessary to add waste.

Incompatible waste cannot be stored in the same secondary spill containment so that in the event of commingling there will be no reactivity.

Cal OSHA Title 22 CCR §66265

Hazardous wastes **shall not be accumulated** longer than six (6) months at satellite sites such as laboratories. The Online Hazardous Waste Tag Program assists with tracking and notifies EH&S when the accumulation of waste exceeds 180 days.

Check the waste label to confirm that the waste is not being collected beyond the 6 month deadline.
Title 22 CCR §66262.34



All **glass waste must be placed in covered bins** and glass is not allowed to be thrown into general waste bins unprotected.

Packaging and disposal guidelines

Use a plastic trash bag to line the box
Close and seal bag with tape

Close the box and tape ALL seams

Place the box in the regular trash or dumpster for disposal

Collect clean, uncontaminated broken glass as carefully and completely as possible. Cardboard boxes can be used to collect broken glass waste specialty glass disposal boxes are available for purchase at the **campus storehouse**.

Cal OSHA 8CCR §5191

Careful handling of contaminated sharps can prevent injury and reduce the risk of infection. Containers for contaminated sharps must be **puncture-resistant**. The sides and the bottom must be **leak-proof**. The container must be **appropriately labeled** or color-coded red to warn everyone that the contents are hazardous.

Common materials treated as sharps waste are:

Needles and syringes
Razor and scalpel blades
Capillary tubes (both plastic and glass)
Lancets
Microscope slides
Contaminated glass and some plastics
Other contaminated sharp objects

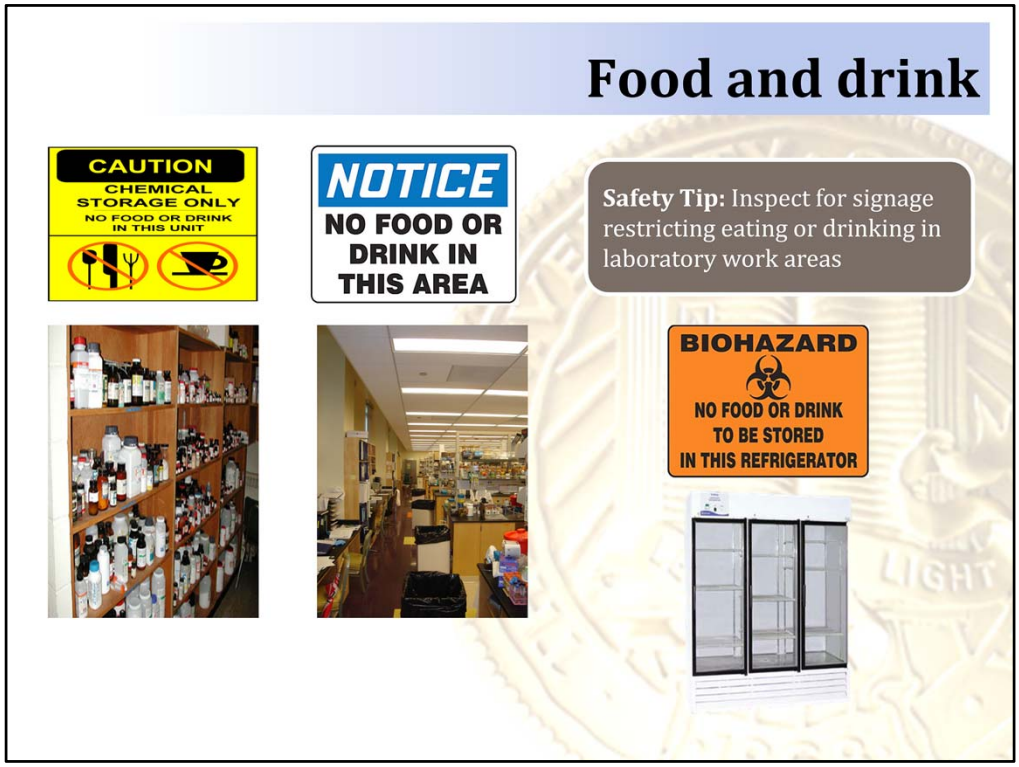
Cal OSHA Title 8 CCR §5193

Biohazard Waste includes any laboratory or research waste that is potentially infectious to humans, plants or animals, or would pose a potential threat to the community or the environment.

Medical Waste includes all sharps and any biohazard waste from research involving the treatment, diagnosis or immunization of humans or animals. Riverside County's UCR Medical Waste Permit requires anyone generating, treating, or storing medical waste to comply with the following procedures:

Check that the waste is double-bagged, containers are compatible with the waste and the red bags have indicator or autoclave tape to ensure proper decontamination prior to disposal as well as a label with the generators building and room number.

Cal OSHA Title 8 CCR §5193 • UCR Disposal Requirement



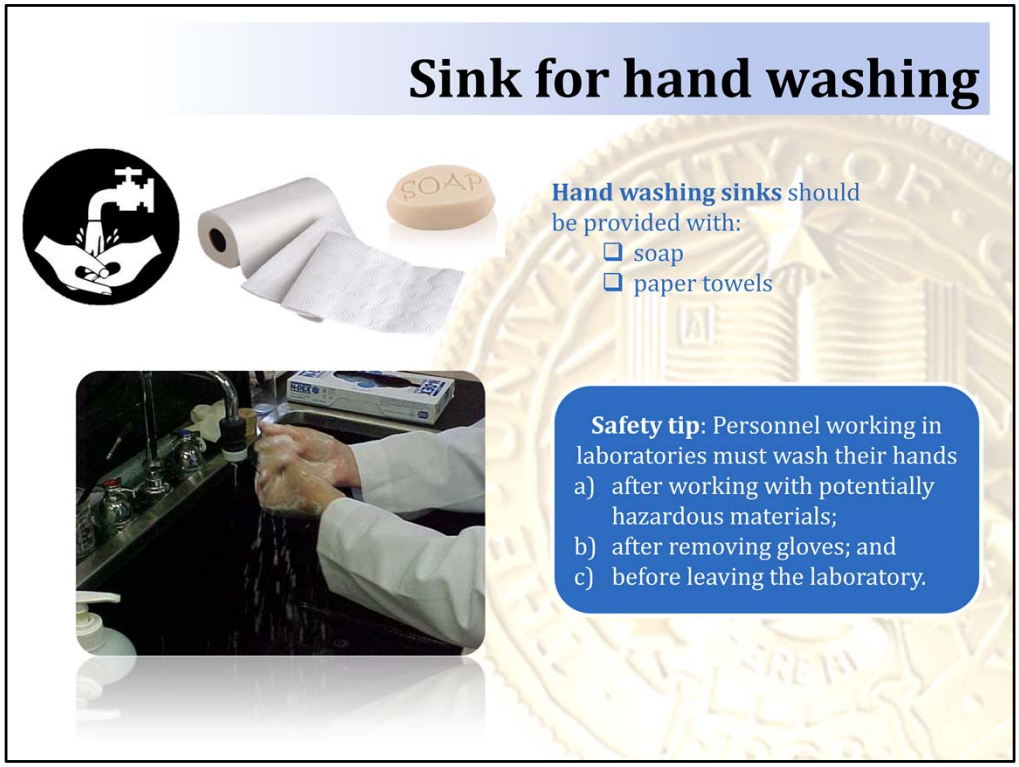
Verify the limitations on where food and drink storage and eating and drinking are allowed are observed. All food and drink should be consumed in specially designated areas, the best way to address this issue is with proper signage. Food and drink should not be stored or prepared in laboratories or chemical storerooms. All food and drink should be consumed in specially designated areas such as a break room.

Avoid storage, handling or consumption of food or beverages in storage areas, refrigerators, glassware or utensils which are also used for laboratory operations.

Do not eat, drink, smoke or apply cosmetics in rooms where chemical, radioactive or biological hazards are present.

Post signs in areas where food and beverage consumption and storage is forbidden.

Cal OSHA Title 8 CCR §3368, 5191



Each laboratory should have a sink available for hand washing to help minimize contamination.

This sink should be clear and not cluttered with glassware. A sink cluttered with glassware might result in breakage and broken glass under water is hard to see. A sink cannot be easily used without removing what is already in it.

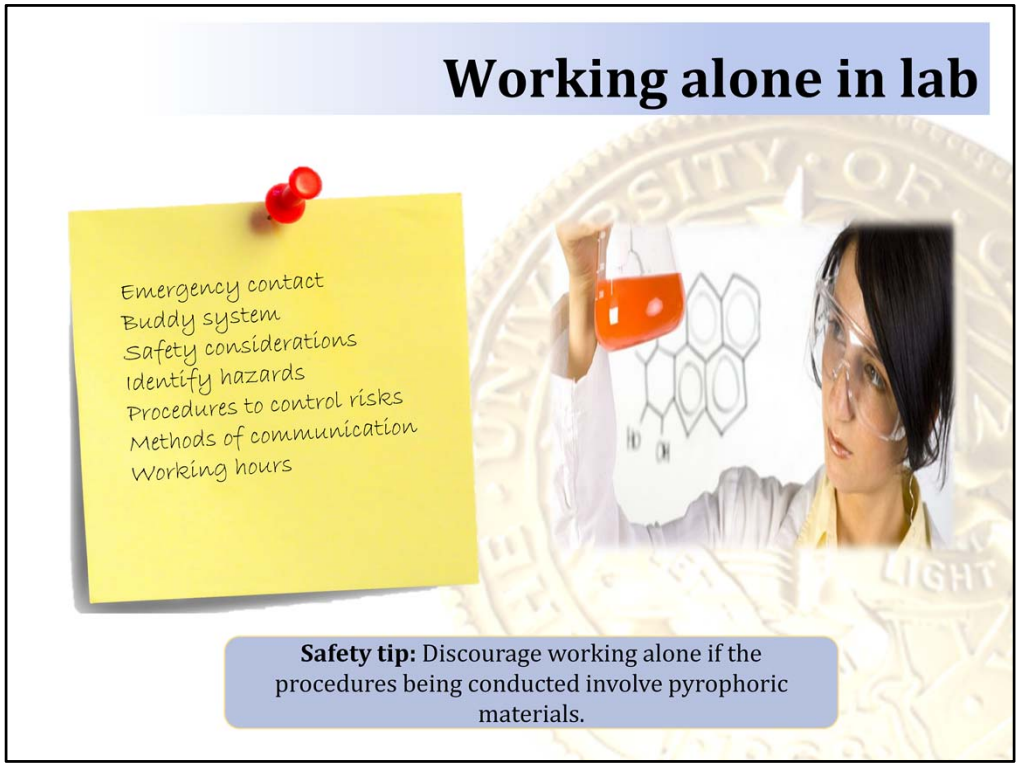
Soap and paper towels should be avilable at each hand washing station.

Personnel working in laboratories must wash their hands a) after working with potentially hazardous materials; b) after removing gloves; and c) before leaving the laboratory.

Cal OSHA 8CCR §3363

There is a definite correlation between orderliness and level of safety in the laboratory.
Good housekeeping creates an intrinsically safer workplace and should be maintained scrupulously in areas where highly toxic substances are handled.

The philosophy of good housekeeping and maintenance of your laboratory can go a long way in minimizing hazards.
Keep work areas and storage areas clean and uncluttered.
Chemicals and equipment are to be properly labeled and stored.
Clean up area on completion of an operation or at the end of each day.
Cal OSHA Title 8 CCR §3362, 5191

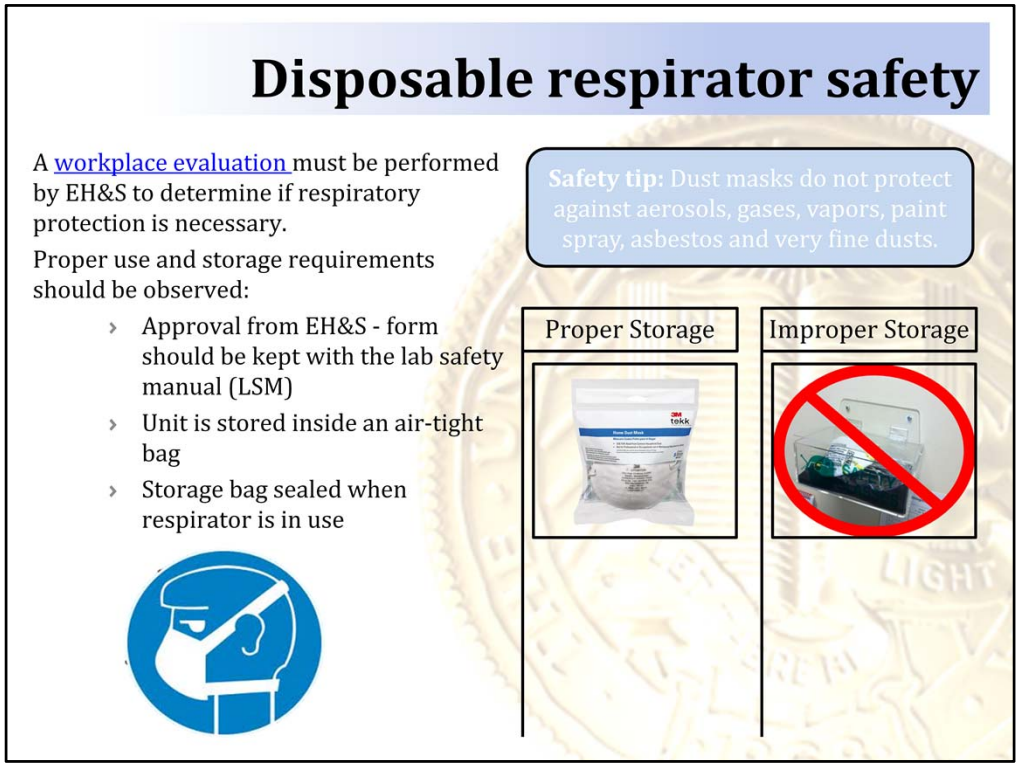


Principal Investigators are responsible for ensuring that lab personnel have received sufficient information, instruction and training to enable the work to be undertaken safely while working alone.
Perform risk assessment which addresses the following:
Identify all the hazards
Evaluate the risks
Describe all existing control measures
Identify any further measure required

Information should be posted indicating how to contact the responsible individual in the event of an emergency.
Be sure to document this training.
Cal OSHA Title 8 CCR §5191

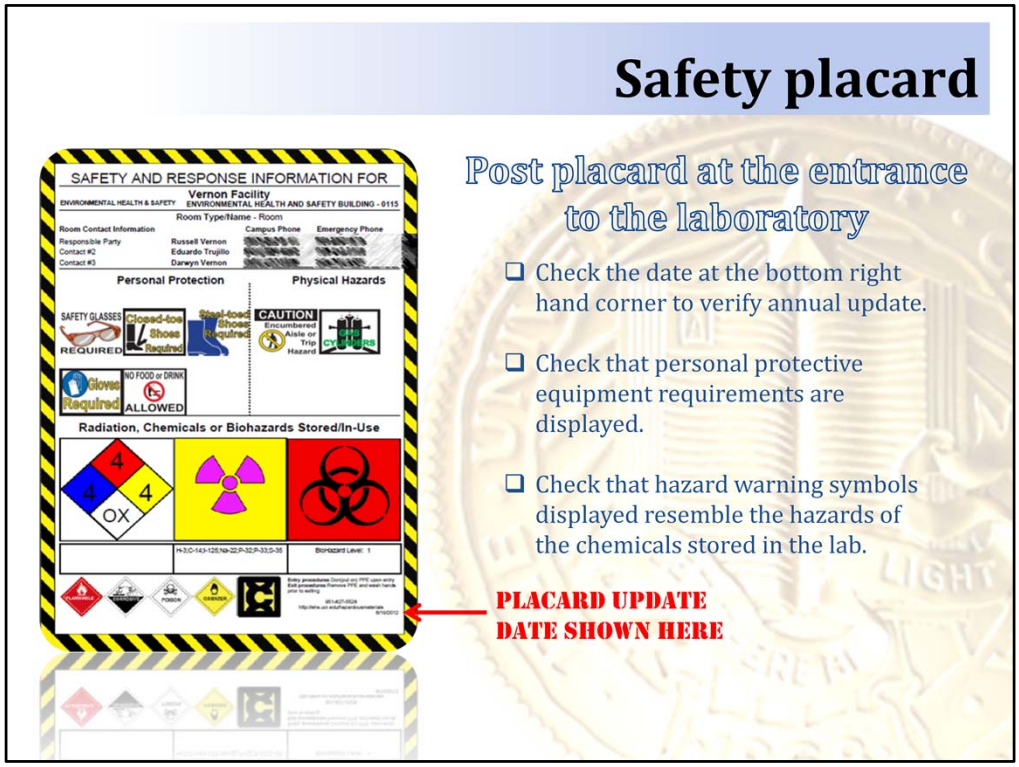
Personal protective equipment (PPE) shall be selected, provided and used to protect laboratory personnel from the hazards and potential hazards they are likely to encounter while performing research. It is the principal investigators responsibility for supplying PPE and enforcing its use. Assess the lab for the availability of PPE and that it is in good condition. Advertise the requirement for wearing PPE by posting signs throughout the lab.

Cal OSHA Title 8 CCR §5191



Many UCR labs and work areas use dust masks. EH&S wants to make sure that the user of a dust mask knows the limitations of the protection. The voluntary use of dust masks at UCR is allowed only in **atmospheres that are not hazardous**.
N95 respirators are the most common and basic for of disposable respirators.
A workplace evaluation must be performed by EH&S to determine if respiratory protection is necessary.
Proper use and storage requirements should be observed
Approval from EH&S - form should be kept with the lab safety manual (LSM)
Unit is stored inside sealed plastic bag
Storage bag sealed when respirator is in use

Cal OSHA Title 8 CCR §5144



To aid emergency responders, and comply with fire safety regulations**, every entrance to an area with chemical, radioactive or biological hazards** must have a placard conveying information regarding the types and degree of hazards within and emergency contacts.

You can **create a placard** at any time using the eContact system.

Ensure that the information on your placard is **updated at least annually** or as often as the information regarding the lab changes.

Cal OSHA 8CCR §3203

Laboratories are unique environments with many potential physical hazards related to equipment use.
Post signs to advertise possible hazards such as electrical, chemical and radiological.
Accident prevention signs will be classified according to use and shall be used to indicate a potentially hazardous situation which precautions should be taken.
Cal OSHA Title 8 CCR §3340, 5191

Prohibiting the storage of food in chemical refrigerators is one of the basic rules of good practice.
It is intended to prevent the ingestion of toxic or infectious materials, therefore do not store food or beverages in the laboratory refrigerator or freezer.
Add permanent labels warning against the storage of food and beverages to all laboratory refrigerators and freezers.
Cal OSHA Title 8 CCR §5191 and UCR CHP

Injuries & Medical Treatment flipchart

University of California Riverside
Injuries and Medical Treatment

If Life threatening, call 911
(if using cell phone on main campus call **951-827-5222**) or transport to:
Riverside Community Hospital
Emergency Services
4445 Magnolia Ave, Riverside, CA 92501
24 hours / 7 days per week
(951) 788-3000

Follow-up treatment for work-related injuries should be obtained at Workers' Compensation Medical Facility Locations *(see tab below).*

Report fatalities or injuries requiring hospitalization for more than 24 hours *within 8 hours to Cal/OSHA and EH&S* following the directions on the "Report severe injuries and fatalities" page

Report all work-related injuries within 48 hours using the Incident Report Form available at http://hr.ucr.edu, or contact Workers' Compensation **(951)827-2636** workerscomp@ucr.edu

LIFE THREATENING EMERGENCY

URGENT MEDICAL ISSUE	FACULTY & STAFF
URGENT MEDICAL ISSUE	VISITORS
URGENT MEDICAL ISSUE	REGISTERED VOLUNTEERS
URGENT MEDICAL ISSUE	POSTDOCTORAL SCHOLARS
URGENT MEDICAL ISSUE	UNDERGRADUATE STUDENTS
URGENT MEDICAL ISSUE	GRADUATE STUDENTS

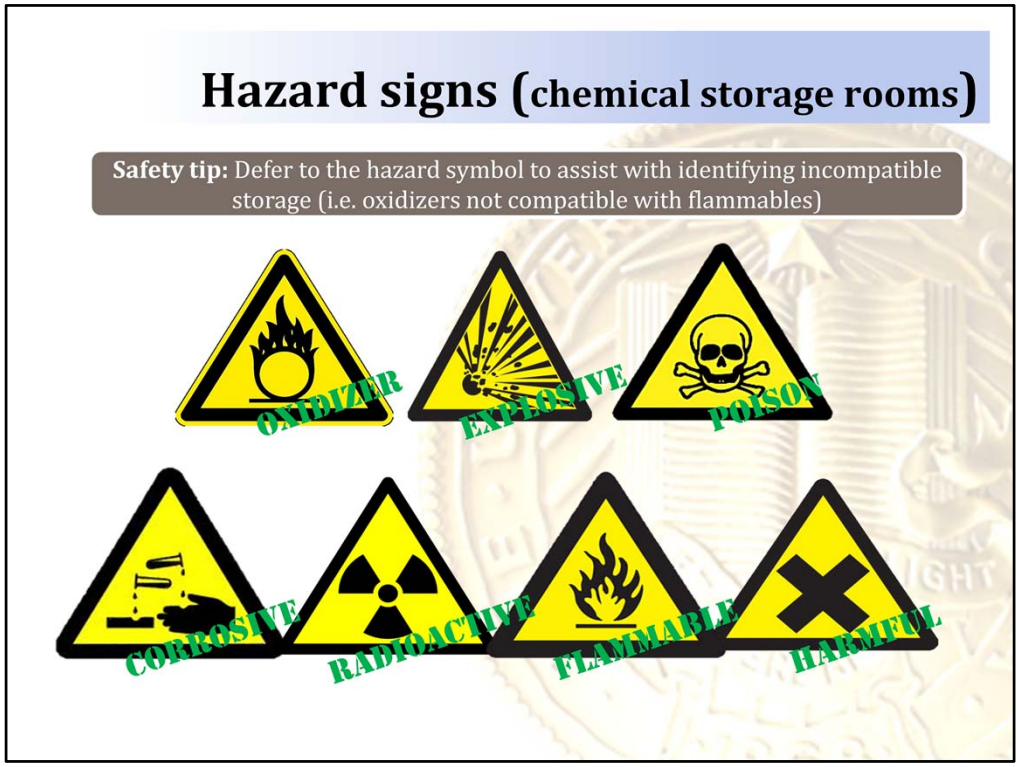
Examples Examples Examples Examples Examples

WORKERS' COMPENSATION MEDICAL FACILITY LOCATIONS

STUDENT MEDICAL FACILITY LOCATIONS

Report Severe Injuries and Fatalities

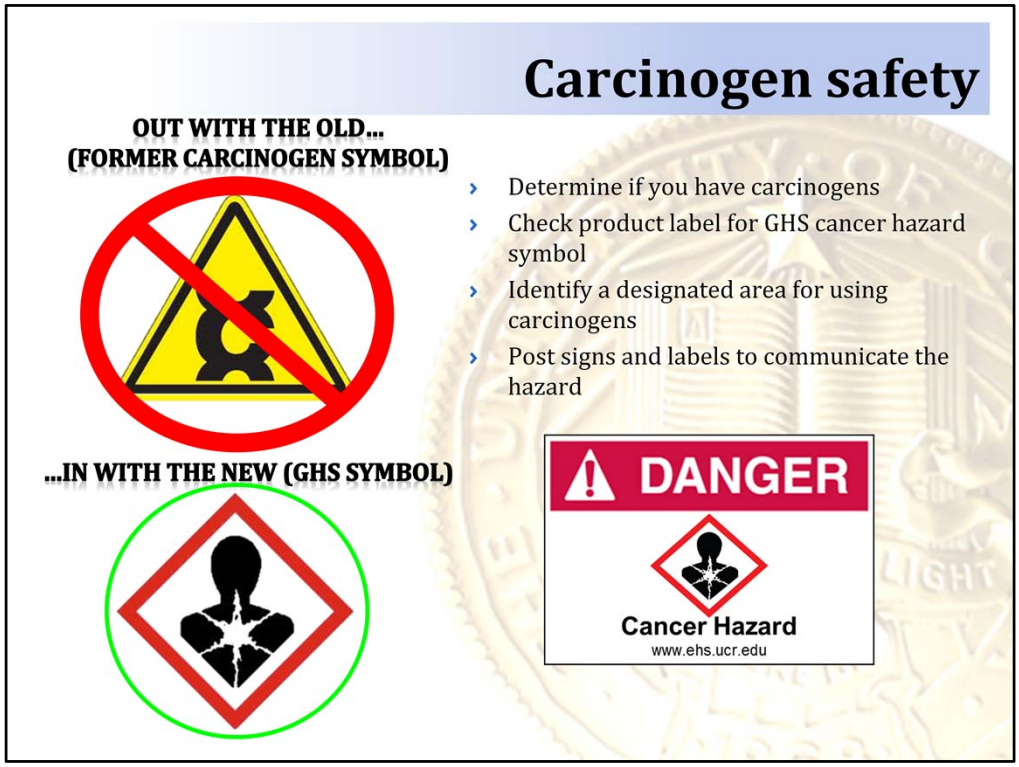
The Injuries & Medical Treatment flipchart is published to provide guidance regarding illness and injury reporting and treatment based on the injured party's classification at the time of the incident.
Every lab **shall post and keep posted** in a common area for lab worker to have access to during the workday
Lab members should **review** the information contained in the posting.
Cal OSHA Title 8 CCR §3203



Chemical hazard warning signs keep your lab members safe by clearly indicating the hazards associated with the materials being stored. Rooms that are used specifically for chemical storage and handling should be controlled-access areas that are identified with **appropriate signage**.

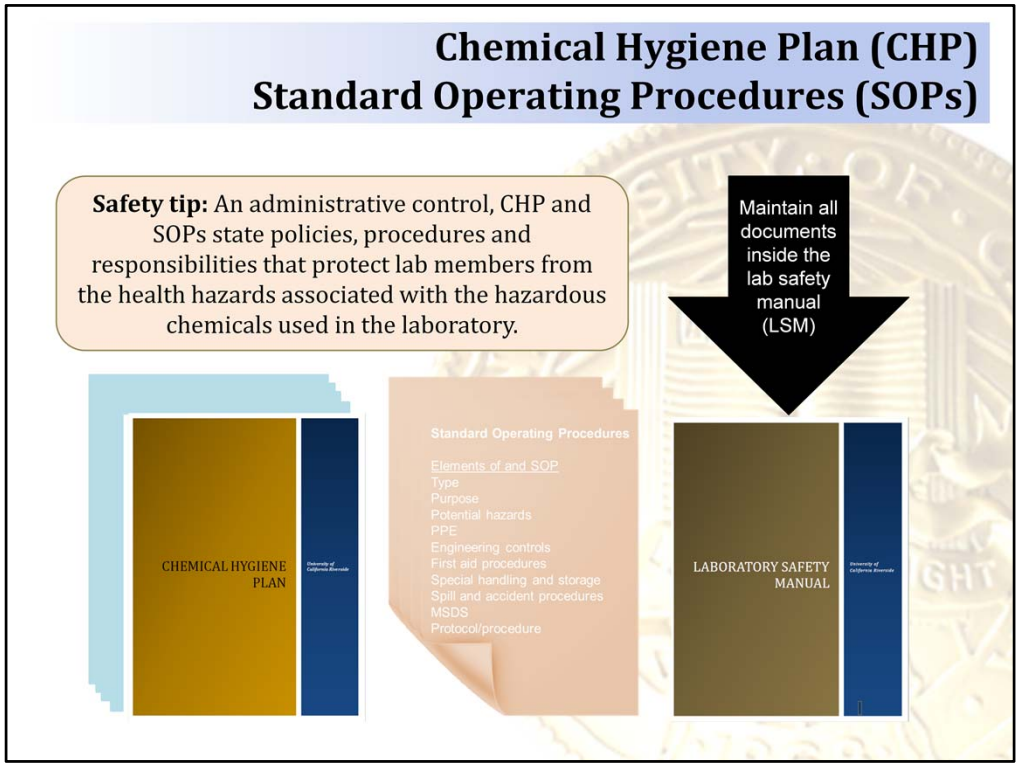
Warning signs serve as a valuable reminder of key hazards present in chemical storage areas.

Cal OSHA Title 8 CCR §5191 • UCR Policy



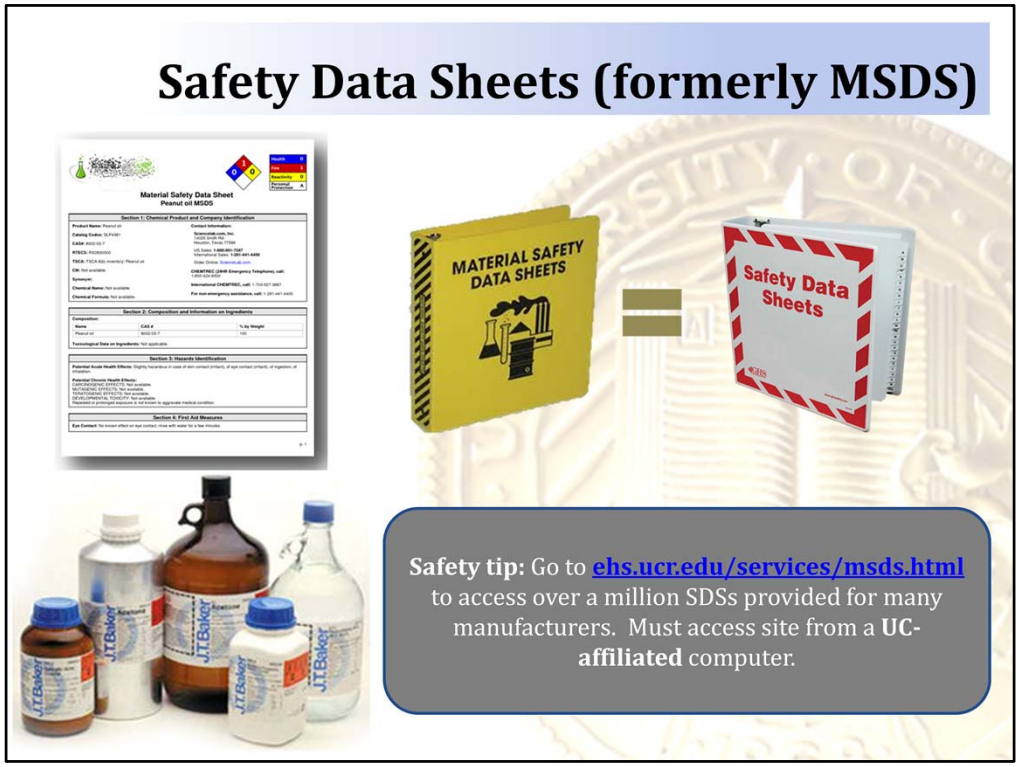
Carcinogens are agents that can cause cancer. In a laboratory setting, there are many potential exposures to carcinogens. Generally, workplace exposures are considered to be at higher levels than for public exposures. Carcinogens are addressed in specific standards and the identification, classification, and regulation of carcinogens. Being unaware of the potential hazards in the workplace yields vulnerability to injury.

Label **carcinogen storage areas** with appropriate warning signs.
Entrances to **regulated areas** shall be posted with signs.
Regulated areas are where carcinogens are stored and handled.
Take precautions when storing carcinogens, reproductive toxins and chemicals with a high degree of acute toxicity:
Store chemicals known to be highly toxic in ventilated storage in unbreakable, chemically resistant secondary containment.
Keep quantities at a minimum working level.
Limit access to storage areas.
Cal OSHA Title 8 CCR §5200-5220, 5191

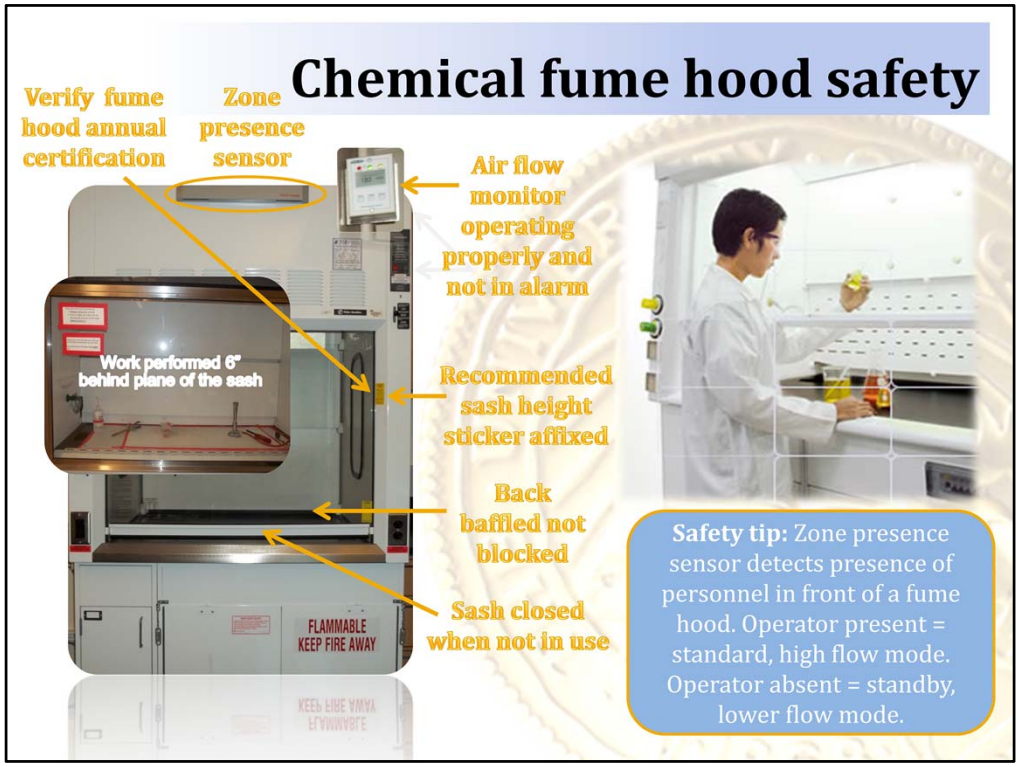


Each laboratory using chemicals must maintain a written chemical hygiene plan (CHP). Your CHP must be updated whenever conditions change, reviewed and **updated at least annually**.
All lab personnel **must review the plan.**

In addition, Standard operating procedures (SOPs) is a set of written instructions that describes in detail how to perform a laboratory process or experiment safely and effectively.
SOPs are an element of the CHP.
SOPs should be PI-approved
All SOPs must be reviewed and signed by laboratory members.
An SOP library is available at ehs.ucr.edu



A safety data sheet is a document containing important information about a hazardous chemical.
Lab workers are expected to be familiar with the hazards of the materials in labs. Lab members should be able to easily consult Safety Data sheets to obtain this information. Hard copies or online access should be available in the lab to serve this purpose.
Cal OSHA Title 8 CCR §5194



Chemical fume hoods are the primary engineering control device for protecting lab workers when working with flammable and/or toxic chemicals. Laboratory fume hoods must be kept clean and clear; do not clutter with bottles or equipment. Allow only materials actively in use to remain in the hood.

Promptly report any hood that is not functioning properly to EH&S.
Inspect for the following fume hood safety standards:
Air flow monitor operating properly and not in alarm
Sash is stationed at the recommended height.
Back baffle unobstructed
Fume hood certified annually
Materials are kept inside the hood at least six inches from the sash opening
Sash is closed when not working

Disabling a fume hood alarm by any means should be discouraged.
Lab workers must be trained how to use the hood and its features safely. Document all chemical fume hood training.
Cal OSHA 8CCR §5154

Properly maintained Biological Safety Cabinets protect laboratory workers and the immediate lab environment from infectious aerosols generated within the cabinet.
Biological safety cabinets must be certified when installed, whenever they are moved and at least annually.
Records of tests performed are to be retained for at least 5 years.
Verify the cabinet is operating properly by checking the airflow gauges
Do not disturb the airflow by covering any of the grill or slots with materials.
Lab members should be trained on how to use the BSC and this training should be documented.
Cal OSHA Title 8 CCR §5154

Machines having a rolling, mixing, pressing, cutting, punching, shearing, drawing, squeezing, grinding or similar action, in which a lab worker comes within the danger zone must be guarded at the point of operation.
When ensuring proper equipment guarding check for the following:

Be secure – guards are firmly secured to the machine

Prevent contact – the guards prevent hands, arms or any part of a person's body or clothing from making contact with dangerous moving parts

Protect from falling objects – the guards ensure that no objects can fall into moving parts

If a guard is defective or damaged or in any way does not meet the requirements of these procedures, do not use the machine

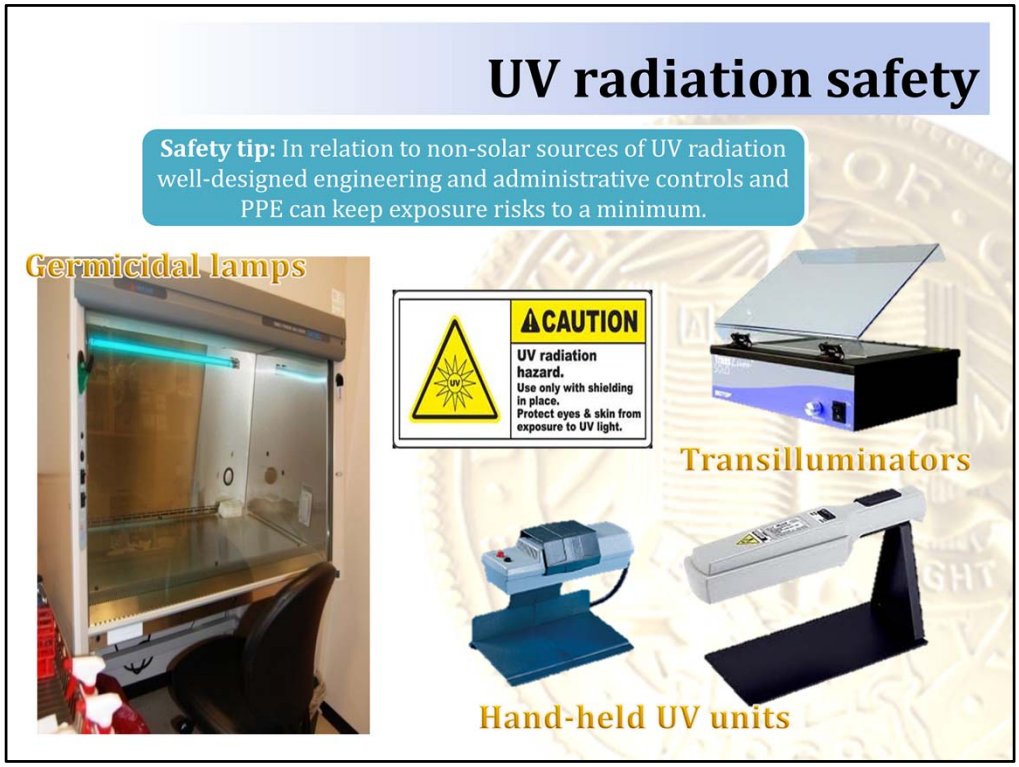
Cal OSHA Title 8 CCR §4184

Falls from portable ladders are one of the leading causes of occupational fatalities and injuries. Overreaching is the most common cause of ladder accidents.

If a mobile step ladder is used in lab verify unit meets the following safety criteria:

- Ladders having steps with 4 or more risers should be equipped with handrails
- Top step ≥ 48 inches from the floor shall have guardrail protection
- Top step ≥ 30 inches but < 48 inches have a guardrail at least 30 inches (+1 inch) in height.
-

Never use a mobile ladder for any purpose other than the one for which it is intended. Cal OSHA Title 8 CCR §3627



Ultra-violet (UV) producing equipment is arranged or shielded to prevent exposure. Some equipment used in lab such as hand-held UV units, biosafety cabinets and transilluminators present a UV exposure hazard. Inspect these instruments to ensure the proper shielding controls are in place.

If such arrangement or shielding is not practical, goggles or face shields designed to protect against the UV wavelength should be provided.

Warning signs should be posted where UV exposure may occur.

Cal OSHA Title 8 CCR §5079

Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body must be provided within the work area for immediate emergency use.

Approved emergency eye wash and safety showers provided within the work area must be:

Unobstructed and have signs posted to the location.

Readily accessible (no more than 10 seconds for the injured person to reach).

Activated monthly (by Physical Plant) to flush line and ensure proper operation (verify testing by checking the monthly inspection tag).

Instruct all lab member about the proper use and location of the unit.

Don't forget to document this training!

Cal OSHA Title 8 CCR §5162

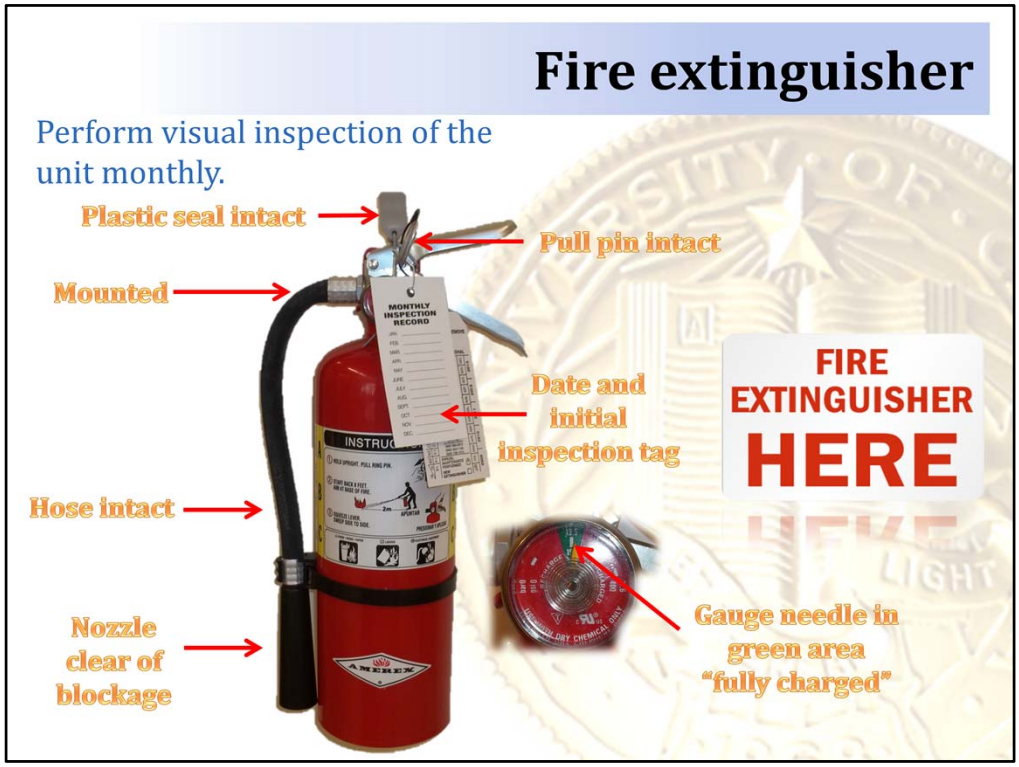
Adequate first aid materials, approved by the campus physician should be readily available.

First aid kit materials must be:
Kept in sanitary and usable condition.
Inspect the kit frequently removing expired items and replenish as necessary.

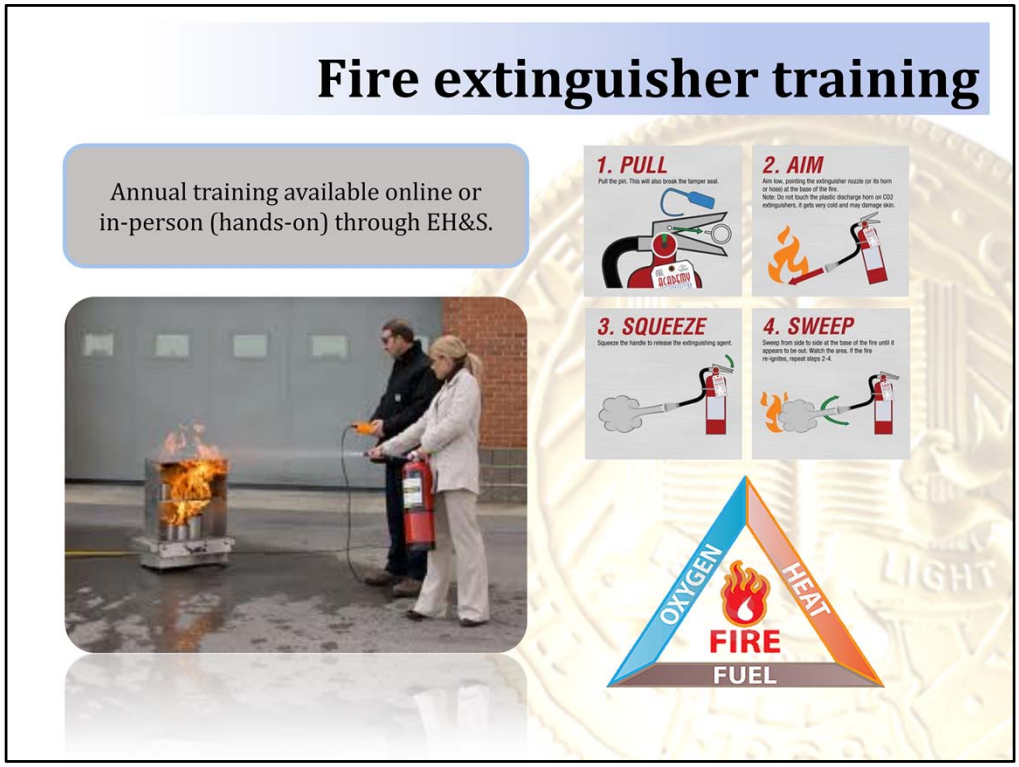
Approved first aid kits are available for purchase at the campus storehouse.
Cal OSHA Title 8 CCR §3400

Exits must be arranged and maintained as to provide free and unobstructed egress from all parts of the building or structure at all times when it is occupied.
Access to exits, emergency equipment and utility controls should never be obstructed.
Exits and aisles must be clear and free of potential obstructions.
Cal OSHA Title 8 §3272

Identify overhead storage fall hazards by avoiding storage of materials and equipment on top of cabinets.
With all stored items, maintain a minimum vertical clearance between sprinklers and material below 18” so not to impede proper functioning of the sprinkler system.
Any overhead storage of supplies on top of cabinets **should be limited** to lightweight items only.
Cal OSHA Title 8 §6170



Portable fire extinguishers must be available for use within a travel distance of 75’ for Class A (paper) fires and 50’ for Class B (flammable liquids) fires.
Inspect for the following conditions:
The unit must be readily accessible and unobstructed.
In addition, check that the unit is mounted, pressure gauges show adequate pressure, pin and seals are in place, show no visual sign of damage or abuse and nozzles are free of blockage. Document inspection by initialing and dating inspection tag.
Visual inspections are to be conducted monthly.
Cal OSHA Title 8 CCR§6151, 6184



Where portable fire extinguishers are used in the workplace, lab personnel must be trained on the principles and use of fire extinguishers.
Training shall be provided upon initial appointment and at least annually thereafter.
This training is covered in the **Laboratory Safety Orientation (fundamentals)** online course.
Cal OSHA Title 8 CCR§6151

Fire alarm system

Visual alarms

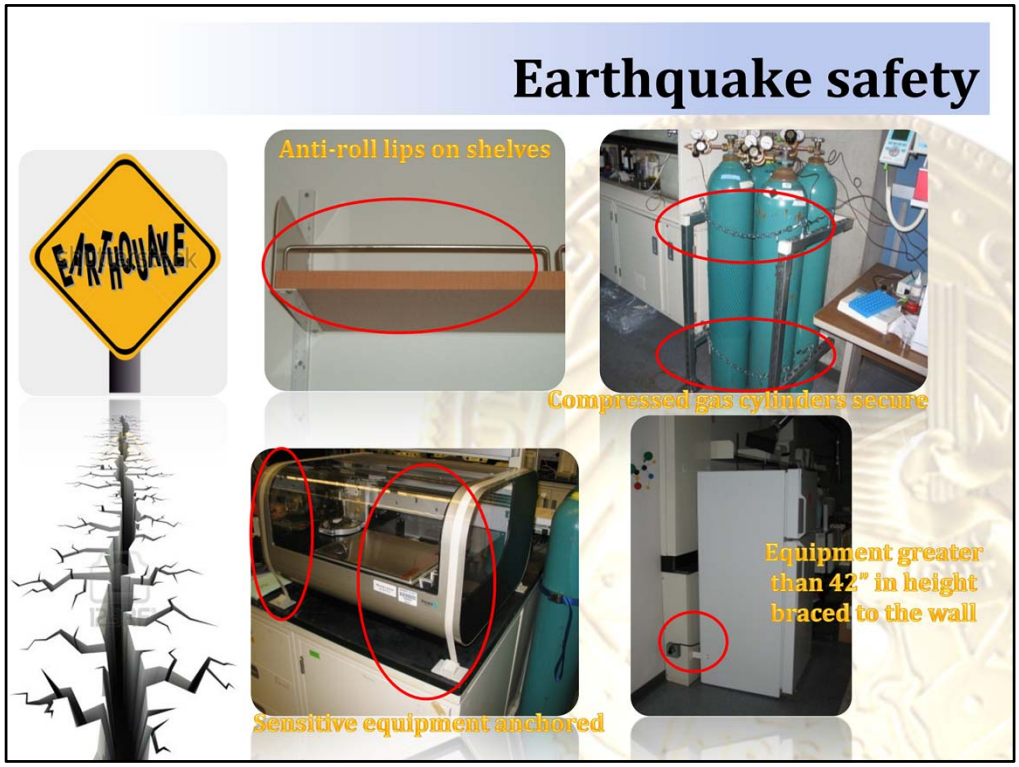
Strobe lights use high intensity flash tubes that are ideally suited for areas where high ambient light levels make traditional rotating or flashing lights difficult to distinguish or where ambient noise makes audible signals difficult to hear.

Audible alarms

Horns produce a very loud distinctive sound that immediately attracts attention. Horns can be useful to call attention to critical situations. Signals other than those used for evacuation purposes do not have to produce the temporal coded signal.

Vibrating bells are the most common signal device. Bells are commonly used in schools for fire alarms.

Do a visual check to ensure that alarm devices are not obstructed/installed in a manner that would prevent sound or light from reaching or entering the protected areas.
Fire alarm bells, horns/strobes must not be visually blocked or muffled.
Access to theses devices are critical to alerting occupants to workplace emergencies.
Cal OSHA Title 8 CCR§6184



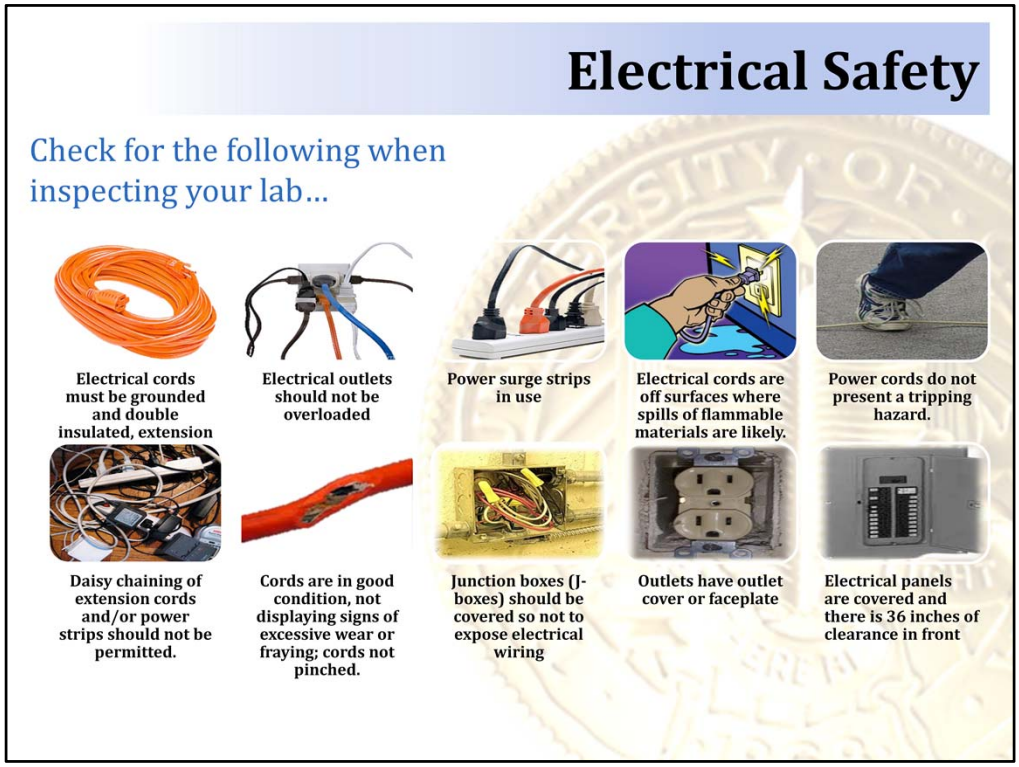
To mitigate falling hazards, shelving and other storage units and other items of significant mass should be secured and contain a front-edge lip to prevent containers from falling. Sensitive equipment such as computers and analytical equipment should be anchored or braced to a support structure (i.e. desk, bench top). Avoid storing materials and equipment on top of cabinets.

Equipment, cabinets and bookshelves greater than 48" in height must be anchored or braced to the wall. All freestanding equipment that may shift or fall during an earthquake should be secured.

Items on open shelves should be appropriately organized (i.e. heavier items below, anti-roll lips, restraints where needed).

It is recommended that compressed gas cylinders be secured by two straps or chains located at 1/3 and 2/3 of the cylinder height above the floor, because cylinders secured by a single strap have been found to escape the strap during an earthquake.

Cal OSHA 8CCR §3241



Electricity has long been recognized as a serious workplace hazard. Many workers are unaware of the potential electrical hazards present in their work environment, which makes them more vulnerable to the danger of electrocution. Precautions must be taken to ensure electrical safety in the lab.

Inspecting your workplace for the following conditions will aid in recognizing electrical hazards.

Turn off the power to equipment before inspecting it.

Items to **inspect** include:

The condition of electrical cords

Evidence of daisy chaining

Electrical outlets

Electrical panel access

Tripping hazards

Make sure that any electrical equipment and cords are off surfaces where spill of flammable materials are likely.

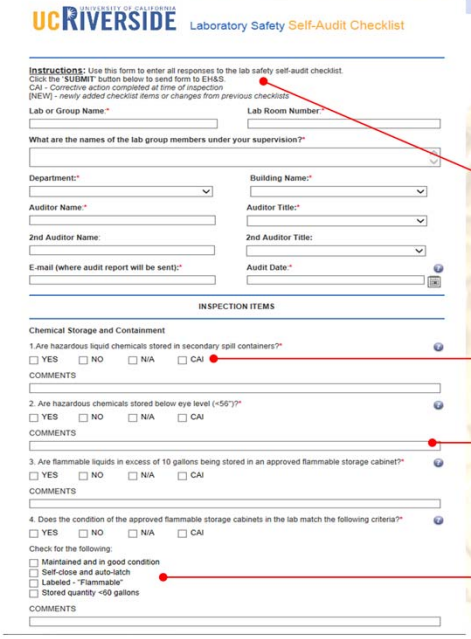
Cal OSHA 8CCR §2390, 2473

The lab safety audit entails a comparison of all items on the lab safety checklist with the actual conditions in the laboratory. The lab audit process has been divided into 3 simple steps.

One, complete the training and review the checklist before you begin your audit
Two, inspect the lab area according to the lab safety checklist
Three, enter collected data into the online audit form for each lab room that is inspected

Self-audits should be performed annually.

Lab Self-Audit Checklist



UC RIVERSIDE UNIVERSITY OF CALIFORNIA Laboratory Safety Self-Audit Checklist

Instructions: Use this form to enter all responses to the lab safety self-audit checklist.
Click the "**SUBMIT**" button below to send form to EH&S.
CAI - Corrective action completed at time of inspection
[NEW] - newly added checklist items or changes from previous checklists

Lab or Group Name:* **Lab Room Number:***

What are the names of the lab group members under your supervision?*

Department:* **Building Name:***

Auditor Name:* **Auditor Title:***

2nd Auditor Name: **2nd Auditor Title:**

E-mail (where audit report will be sent):* **Audit Date:***

INSPECTION ITEMS

Chemical Storage and Containment

1.Are hazardous liquid chemicals stored in secondary spill containers?*
☐ YES ☐ NO ☐ N/A ☐ CAI
COMMENTS

2. Are hazardous chemicals stored below eye level (<56")?*
☐ YES ☐ NO ☐ N/A ☐ CAI
COMMENTS

3. Are flammable liquids in excess of 10 gallons being stored in an approved flammable storage cabinet?*
☐ YES ☐ NO ☐ N/A ☐ CAI
COMMENTS

4. Does the condition of the approved flammable storage cabinets in the lab match the following criteria?*
☐ YES ☐ NO ☐ N/A ☐ CAI
Check for the following:
☐ Maintained and in good condition
☐ Self-close and auto-latch
☐ Labeled - "Flammable"
☐ Stored quantity <60 gallons
COMMENTS

Available online:
www.ehs.ucr.edu/laboratory/laboratory_safety_audits.html

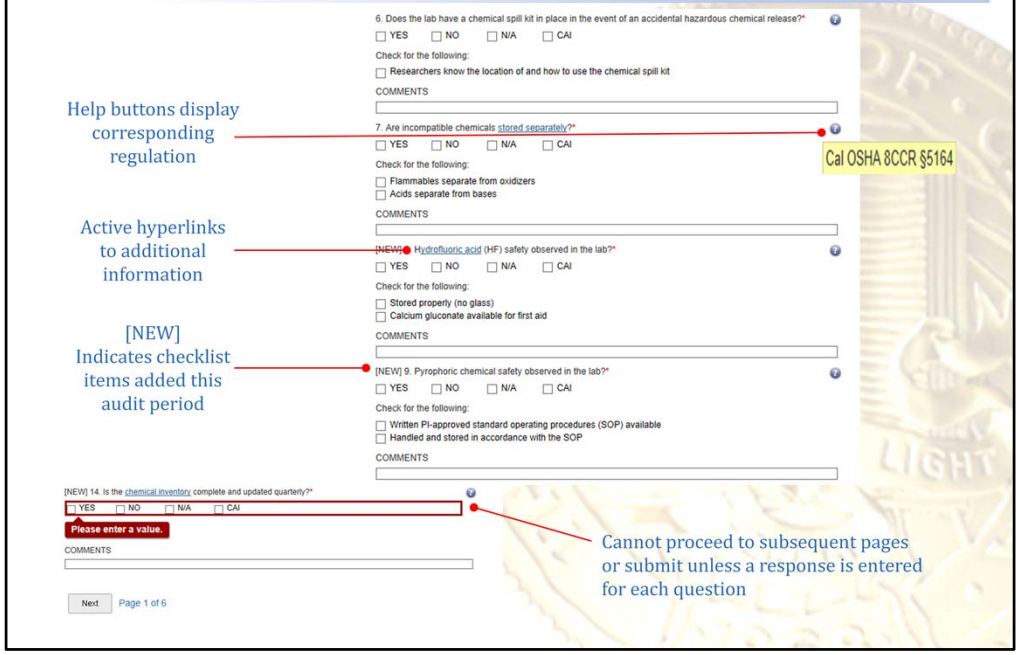
Read instructions

Select "CAI"
(CORRECTED AT TIME OF INSPECTION)
when corrections are made
during audit

Enter comments as needed

Determine whether each condition is met;
Check each box as you confirm each condition
Mark "No" if one or more conditions have not been met
Mark "Yes" if all conditions have been met

Lab Self-Audit Checklist



Help buttons display corresponding regulation

Active hyperlinks to additional information

[NEW] Indicates checklist items added this audit period

Cannot proceed to subsequent pages or submit unless a response is entered for each question

For more information

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