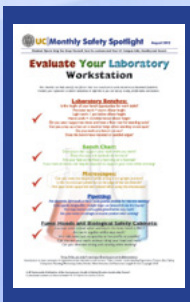


August 2012

Chemical
Laboratory Safety

Poster of the Month

Lab Workstation
Evaluation
Checklist



This month's poster provides an excellent way to relieve your musculo-skeletal

problems. This checklist can help identify risk factors that contribute to poor Laboratory ergonomics. Correct ergonomics in the workplace is a key factor in decreasing possible injuries and increasing productivity!

[Download Poster](#)

Links and Resources

[UC Center for Laboratory Safety](#)

[Material Safety Data Sheets Resources](#)

[OSHA Chemical Hygiene Plan](#)

[Techniques for Efficient Hazardous Chemicals Handling and Disposal](#)

[Laboratory Safety Orientation](#)

[A Systematic Approach to Evaluating Product Hazards](#)

[UC San Diego Lab Safety and Chemical Safety Training](#)



UC Safety Spotlight

A UC System-Wide Publication of the Environment, Health & Safety Leadership Council

What do you have hiding in your lab?



Written By: Tony Schrick

Something seemingly so simple can cause many hidden dangers in a laboratory environment. A can full of rusty syringes, or a third open bottle of the same chemical are just a few examples. The truth of the matter is that as a researcher, you are primarily responsible for ensuring (or helping to ensure) safety in the laboratory. Being aware of what is "hiding in your lab" is critical to your safety and that of your peers.

It is important to minimize the potential hazards associated with chemicals. One good way to achieve this is to minimize the chemicals themselves. I find this is not pursued as closely as it could be. In particular, in many labs, I find multiple open bottles of the same chemical. I am not referring to one open bottle in a case of four because a lab uses a specific chemical in volume, nor am I talking about different grades of the same chemical, such as HPLC grade vs. ACS grade chemicals.

You may therefore ask: "Why shouldn't I keep my partially-full bottle of a chemical?"

If you have not used up a chemical and instead have ordered a fresh bottle, will you ever use the old chemical? It is most likely to end up stored indefinitely, increasing every hazard associated with that chemical within your lab. Indefinite chemical storage can cause the problems labeled above.

How could your laboratory get into this unhealthy state of affairs? Sure, sometimes a bottle is in use by someone else and you open a second bottle, not realizing the chemical is still in stock. This accumulation is clearly the result of chemicals being stored and not used for decades.

Things like this occur when one researcher leaves and does not clean up his or her space, and neither does the incoming researcher. The "raiding" of a closing laboratory also can cause this. The problem is perceiving these chemicals are money while failing to recognize the dangers (and costs) associated with storing them.

How do you fix this problem?

When you do a routine lab cleanup, empty out your flammable storage cabinets, clean the shelves, and look at the bottles. Dispose of older duplicate bottles. Do not take "free" chemicals unless you have an immediate plan of use and put older chemicals of the same type in front so they are used first. (1)

Chemistry projects sometimes involve dangerous substances. We use dangerous chemicals because we believe the benefits outweigh the risks. There is no benefit in storing old chemicals that are not likely to ever be used. They can create hazards that threaten your laboratory, your work and even your life and health. The risks: additional fuel in case of fire, added chemical cleanup after an earthquake, increased exposure to chemical health risks, or just poor use of lab space.

(1) UCLA Lab Safety Manual
<http://www.ehs.ucla.edu/LabSafetyManual.pdf>



Identify Hazardous Chemical Waste

Rule of Thumb:

If the material you believe is waste has a Material Safety Data Sheet, and you would be reluctant to eat, drink, or wear the material, it is probably a hazardous waste per California regulations. Specifically, materials are classified as hazardous waste if they are corrosive, flammable, reactive, toxic, or if they appear on federal or state lists of hazardous wastes. Consult your campus EH&S hazardous waste program for more information.

Anything that meets the following criteria is a waste and must be handled according to applicable local, state, and federal regulations. Regularly check chemical inventories for material that is:

- Unwanted and intended to be discarded or recycled
- Spent material
- Abandoned
- Unusable because it doesn't meet its required specifications
- Past its expiration date
- Unlabeled, and has been unlabeled for more than 10 days
- A container that once held chemicals

The above items are federally classified as waste, while others may be waste depending upon the circumstances.

Prepare Your Lab for Power Failures

Protect your research and equipment by being prepared for sudden blackouts or power failures.

What to do before the power fails

1. Designate emergency contacts for your lab.
 - Give the contact information to your Safety Coordinator.
 - Post emergency contact phone numbers on the lab safety sign in the hallway outside your lab to aid Facilities Management and emergency responders.
 - Update lab contact phone numbers
2. Put essential equipment on emergency power circuits. Emergency circuits have red cover plates (with the possible exception of older buildings) and are powered by an emergency generator. Only equipment plugged into an emergency power circuit supported by a generator will be energized during a power outage.
 - Install appropriately sized surge protection devices for sensitive or expensive electronics.
 - Consult Facilities Management if you need to install an uninterruptible power source or other backup electrical systems or equipment.
3. Make a list of equipment that must be restarted, reprogrammed, or recalibrated when power returns.
 - Post the list and procedures in a conspicuous place.
 - Program equipment that operates unattended to shut down safely during a power failure and not restart automatically when power returns.
4. Identify an emergency dry ice source if items must be kept cold. Do not plan to use dry ice in walk-in refrigerators or unventilated closed space.

While the power is off

1. Immediately stop all work.
 - Shut down experiments involving hazardous materials. Close all chemical containers.
 - Ensure experiments are stable.
2. Check fume hoods and biosafety cabinets.
 - Stop operations that may be emitting hazardous vapors or fumes.
 - Close caps on chemical containers securely.
 - Put away experiments involving infectious materials.
 - Close fume hood and biosafety cabinet sashes.
3. Make sure equipment on emergency power is running properly. It may take 20-30 seconds for emergency power to activate.
4. Reduce electrical use and risk of power surges.
 - Disconnect non-essential equipment from emergency outlets.
 - Shut off or unplug non-essential equipment and lights. Unplug devices such as water baths and vortexes so important equipment such as incubators and -80C and -200C freezers are re-energized first when power returns.
5. Transfer items that must be kept cold to equipment operating on emergency power.
6. Keep doors closed on refrigerators and freezers without power. They will maintain their temperatures for several hours if unopened.
7. If you feel as though it is unsafe to stay while the power is off, evacuate the building.

When the power returns

1. Reset and restart equipment.
 - Restart, recalibrate, and reprogram equipment. Confirm equipment is operating normally and fume hood airflow is restored.
 - If building systems, including fume hoods, fail to restart or operate correctly, contact Facilities Management.
 - If non-building equipment fails to restart or operate correctly, contact the manufacturer or service provider.
2. Some refrigerators and freezers require a manual restart. Check to make sure refrigerators and freezers have restarted, and keep them closed until they return to safe working temperatures.
3. If system or equipment failures create hazardous conditions, immediately notify:
 - During business hours – Environment, Health & Safety*
 - After business hours – Campus Police: 9-1-1*

*These process steps may vary from one UC site to another. Check with your campus or medical center's EH&S office for specific instructions.

Chemical Labeling

The CalOSHA regulation Title 8 CCR Section 5191 specifies that chemical labels contain specific information. High hazard materials require additional information. Follow these steps for proper labeling:

Accurately label chemicals transferred from their original containers with the following required information, written legibly:

- Chemical name
- Concentration
- Hazard warning

Include the following information required for chemicals that are time-sensitive materials, peroxide formers, and air and water reactives:

- Date received
- Date opened
- Date tested

Prominently post a chemical abbreviation sheet in the lab when abbreviations are used on labels.

Refrigerators used for chemical storage must be posted with a "No Food Storage" label. Post refrigerators that are not approved flammable storage units with a "No Flammable Storage" label.

Lab Safety Videos

[To be \(Safe\) or Not to Be](#)

[Splash Zone](#)

[Proper Use of a Fume Hood](#)

[Pipette Safety & Ergonomics](#)

[A Day in the Lab](#)

[UC Berkeley Emergency Eyewash Video](#)

[UCANR Fire Extinguisher Video](#)

Emergency Eye Wash and Shower Guidelines

Employees who work with hazardous chemicals, should become familiar with the location and operation of the nearest eye wash and emergency shower. Learn how to use them, and be confident they're accessible and function properly. These guidelines apply to laboratories, shops and studios.

Eye Wash Operation

Use the emergency eyewash immediately if your eyes are exposed to a hazardous chemical.

Note: Some outdoor eye washes may run discolored (rusty) water for a few seconds. Don't hesitate to use them immediately when needed.

Important: The first few seconds after exposure to a hazardous chemical (especially a corrosive chemical) are critical. Delaying treatment, even for a few seconds, may result in irreparable eye damage. Never hesitate to use safety equipment if needed.

Drains are rarely designed into floor plans to accommodate eye wash stations. Never let that stop you from using the equipment if needed. Call Facilities Management as soon as possible to collect water where drains are not installed.

To use emergency eyewash:

- **Immediately flush eyes** for at least 15 minutes.
- **Keep the eyes open and rotate the eyeballs in all directions** to remove contamination from around the eyes. An injured person may need help holding the eyelids open.
- **Call Poison Control (800-222-1222)** and 9-1-1 for advice, and then seek medical attention immediately.
- Have someone bring or fax the Material Safety Data Sheet (www.ucmsds.com) for the chemical to the doctor.
- **Report the injury or exposure.**



Emergency Shower Operation

Use the emergency shower immediately if your skin is exposed to a hazardous chemical.

Note: Some outdoor emergency showers may run discolored (rusty) water for a few seconds. Don't hesitate to use them immediately when needed.

Important: The first few seconds after exposure to a hazardous chemical (especially a corrosive chemical) are critical. Delaying treatment, even for a few seconds, may result in irreparable tissue damage. Never hesitate to use safety equipment if needed.

Drains are rarely designed into floor plans to accommodate emergency shower stations. Never let that stop you from using the equipment if needed. Call Facilities Management as soon as possible to collect water where drains are not installed.

To use emergency shower:

- **Immediately flush the affected area** with copious quantities of water for at least 15 minutes. Protect the eyes from inadvertent contamination.
- Remove contaminated clothing, jewelry, and shoes. **Don't let modesty slow you down. Every second counts.** Use a clean lab coat to provide the victim with privacy and warmth.
- **Call Poison Control** for advice, and then seek medical attention immediately.
- Have someone bring or fax the Material Safety Data Sheet for the chemical to the doctor.
- **Report the injury or exposure.**



Small Fire? Use the P-A-S-S Procedure

Use the P-A-S-S procedure in a small fire only if you know how to use a fire extinguisher, and you have a clear exit behind you.

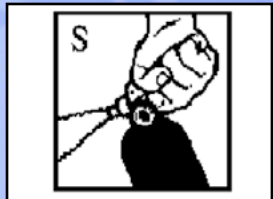
P
Pull the pin in the extinguisher's handle.



A
Aim the nozzle at the base of the flames, holding it within 6 feet of the fire.



S
Squeeze (or press) the handles together.



S
Sweep from side to side at the base of the fire until it is out.



S
Always sound the alarm and call for help!

Biosafety Information Online (BIO)

A University of California EH&S System

Contact Us

Welcome

This system is designed to manage and document the Biological Use Authorization (BUA) process for the University of California.

Principal investigators (PIs) must obtain a Biological Use Authorization (BUA) for recombinant DNA activities (research or teaching) or work with infectious agents (human, animal, plant pathogens, including work with bloodborne pathogens). The BUA describes all the work with biological materials to be conducted by a PI, establishes the biosafety containment conditions set by the Institutional Biosafety Committee (IBC) for the work, and authorizes the PI to conduct the work.

Log in to BIO

Coming soon to your campus! Biosafety Information Online (BIO)

UC San Diego researchers will be the first among UC campuses to use the new system-wide Biosafety Information Online (BIO) application for Biological Use Authorizations. Following the July launch, BIO, which was adapted from UCSD's Biological Use Authorization (BUA) application, will be rolled out to other UC campuses.

BIO will provide researchers with a centralized web interface for completing, submitting, and viewing their BUAs. It will also make it easier to track all their BUAs as well as share those BUAs with laboratory personnel.

BIO will provide the Biosafety staff with tools that help in managing the Biosafety program. The Biosafety staff will have a searchable database for all BUAs in BIO. With a complete BUA database, notification and tracking of BUAs will be easier. BIO will facilitate review of BUAs by IBC members and Biosafety staff.

Questions? Contact ERM@ucop.edu or (530) 638-HELP (3375)

Tips for Relieving those Ergonomic Stresses in the Lab

Evaluate your actions. You could be creating stresses without even knowing it.



- Something as seemingly insignificant as constantly changing position to look through your bifocals can create a repetitive motion. Consider prescription eyewear specific for your laboratory activities.
- Eliminate constant reaching and bending by placing things closer to you.
- Leaning arms and elbows against the top edges of hard workbenches can injure tendons, nerves and blood vessels. Reduce the contact stress of hard surfaces or edges with closed-cell foam padding.
- Be foot friendly. Wear closed-toe, supportive shoes.
- If you stand for long periods, put anti-fatigue matting on the floor or use footwear with shock-absorbing or anti-fatigue insoles.
- Support your back while sitting.
- Use chairs that can be easily adjusted and readjusted to suit different postures for different tasks, especially forward leaning postures.
- Pipetting and other lab activities require leaning forward over your workbench for long periods of time. Look into ways to support your body in this position, thus relieving lower back muscles.
- Use keyboards and terminals correctly. Ensure that your computer workstation is set up properly.
- Keep wrists in neutral (not angled up or down) position, use minimum force to operate the keyboard, type with elbows at waist height. A variety of devices are available to help keyboard users maintain the correct wrist posture. Adjust the monitor so you can view the screen without tilting your neck. Keep the screen at arms-length distance from your face.
- Stay rested and relaxed.
- Fatigued, stressed workers are more susceptible to CTD injury than rested, relaxed ones. Keep your lab environment calm and comfortable by reducing noise and commotion and ensuring good airflow and adequate glare-free lighting.

Careless Chris

Careless Chris Sees How Important Protective Eyewear Is!



Summer had arrived, the weather was beautiful, and Chris had been working hard all week. At 4:50 in the afternoon on Friday, the main thing consuming his attention was his imminent vacation. Every year Chris took a week off and headed to South Lake Tahoe with his family and, after months of planning and anticipation, that week was due to start in less than 10 minutes...

[Read the story](#)

Feedback, Please

Send an email to safetyspotlight@ucdavis.edu to submit your comments on the August 2012 issue or to suggest content ideas for future issues. We look forward to hearing from you!

COMING SOON!

Traffic Safety



Check out our September issue which will focus on all things traffic safety - whether you are on foot, on bike, or traveling by car - this is the issue for you!

connect

Know where to turn on your UC campus for the information you need to keep yourself, your workplace and your environment safe and secure. Click on the campus links below to connect to local program, educational and informational resources.

[UC Berkeley](#)

[UC Riverside](#)

[UCOP](#)

[UC Davis](#)

[UC San Diego](#)

[UC ANR](#)

[UC Irvine](#)

[UCSF](#)

[UCLA](#)

[UC Santa Barbara](#)

[UC Merced](#)

[UC Santa Cruz](#)

safety strategies



Grace Crickette's Blog Article Featured in the Harvard Business Review

Grace Crickette (Chief Risk Officer for the University of California) was recently named one of the top 100 influential people in Finance - credited with putting safety programs in place, improving claims management systems, all while implementing Enterprise Risk Management systemwide.

At this year's annual Risk Summit, Grace announced that we were able to, yet again, drive down the Cost of Risk, from a rate of \$18.46/\$1000 of the operating budget in fiscal year 03/04 to \$12.49/\$1000 for fiscal year 10/11. This provides us with an approximate savings of over \$600 million since fiscal year 03/04.

Throughout this effort, we have also expanded services to staff, faculty, students, patients and guests, which has improved their experience with the University of California. Visit the article and show "Everyone is a Risk Manager."

View the entire blog at the following link: http://blogs.hbr.org/cs/2012/06/make_everyone_a_risk_manager.html

Risk Summit Recap!

Risk Summit 2012 was a success! To view the slide decks, photos and other material from this year's Risk Summit, please visit the following links:

- o For campus locations: <https://spssso.ucop.edu/sites/risk/bmp/rsksumt/Default.aspx>
- o UCOP employees: <https://sp.ucop.edu/sites/risk/bmp/rsksumt/Default.aspx>

