

Laboratory Housekeeping

When working in a laboratory, good housekeeping is an indicator of how safely a lab functions. Generally, a well-kept lab signifies that the regulatory standards that govern that space are being followed and risks involved in working in the lab have been minimized. What is meant by good housekeeping? Good housekeeping means that the area is kept clean, and organized; items are stored in appropriate areas that meet their storage requirements and compatibilities. Egress routes should be kept free of cords and other trip hazards, and surfaces should be free of clutter and chemical residues. This ensures that researchers can work efficiently with the confidence that what they need can be found quickly and accessed with ease.

The function of good housekeeping is to ensure the safety of workers and that experiments are run smoothly. This can help labs become more productive and cost effective. If everything is organized it is easier to know the quantities of material on hand, use them before they expire and avoid purchasing the same chemical multiple times. Many of the criteria used during a lab visit are encompassed by good housekeeping. By maintaining your lab you are closer to meeting OSHA regulatory mandates and having a safe working environment. We will talk about basic housekeeping procedures including some things that get overlooked in many labs and some actions that you can take to ensure good housekeeping.

Maintain Access to Emergency Equipment

Safety showers, eyewashes, exits, fire extinguishers, first aid kits and spill kits are required to be accessible at all times. Sometimes these items go unused for so long that we forget their role as a lifesaving measure or in preventing property loss and damage. Over time they become blocked by other items found in the lab. This can most often be seen in labs as space becomes limited. Electric panels and emergency shut off releases are the most overlooked and commonly blocked safety devices but these also must be accessible in case of an emergency. If your lab has several entrances they must be all kept unobstructed. It's important to not carelessly place items in front of them by dismissing or overlooking their importance. They should not be blocked with boxes or lab equipment. This takes us to another issue seen in labs on campus: Lab spaces that double as storage areas.

Prevent Buildup of Unused Items

Unless you have an area or separate room in your lab for storage, unused items should be removed from the lab. Everything should have a place and be in its place. If there isn't a set space for something it should be removed. As boxes of chemicals or equipment come in they should be opened and sorted right away. Often there are stacks of empty and/or unopened boxes shoved against lab walls. This is bad practice as it begins to limit space for easy movement through the lab. Large pieces of equipment shouldn't be sitting out in the walkways. Move them to a place where people won't have to navigate around them. If you don't reasonably foresee using a piece of equipment or other large item consider

calling SWAP for a pickup. This can provide a new lease on life on an otherwise orphaned item. Call SWAP (608-497-4440) for information.

Clean Lab Surfaces and Walkways

Lab surfaces and instruments are contaminated throughout the day. Be aware that this contamination exists and will occur regardless of its visibility. Minor spills that occur in or on instruments such as balances, centrifuges, hot plates etc. should be cleaned right away so that other workers who use it don't become contaminated with an unknown substance. Although Personal Protective Equipment (PPE) is required in the lab, we still want to keep exposure to a minimum. Countertops and sinks need to be cleaned and wiped down daily. This is especially true when performing tasks that produce lots of splashing or require the use of especially hazardous chemicals.



Image 1: Over-crowded fume hood with no working space and no ventilation.



Image 2: Good fume hood practice with plenty of work space and good ventilation.

The photos above provide examples of good and bad fume hood practices. **Image 1** is a photo of a fume hood that was being used to run experiments despite the amount of equipment stored in it. Keep in mind that as you store equipment, chemicals and trash in a fume hood the less work surface you'll have to work with and your ventilation will likely be decreased. **Image 2** is an example of proper fume hood use.

Try organizing your lab so that unused equipment can be stored in a safe place. Add items to the fume hood as they are needed, giving you a secure working surface. Another good idea is implementing a cleaning schedule. Sinks and other surfaces should be cleaned at the end of each day and scrubbed down weekly. Hang a sheet of paper to be signed after each scrub down as a way to track the cleanings. All working surfaces should be wiped down at the end of each day.

Overcrowding of areas such as the sink and fume hood are common. Each worker should be responsible for cleaning laboratory glassware equipment before leaving the lab. Sharing lab equipment is a common

practice; therefore it is important that these items are accounted for. After washing and drying glassware it should be stored in its proper location so that others can access it. This will also prevent a cluttered sink for the next round of glassware.

Be aware of storing chemicals and glassware on the floor. They present a trip hazard if they impede the walkway. If it's necessary to store containers on the floor use some form of secondary containment. It's a good practice in case a spill occurs while also keeping bottles contained in one area. Watch out for cords and wires that are lying on the floor. These can be taped down to reduce the chances of a fall.



Image 3: Food items stored along with chemicals.

Eating and Drinking

Eating and drinking in the lab or storing food in a chemical refrigerator is prohibited because it can lead to health issues due to accidental ingestion of chemicals. This should go without saying and for the most part it's followed pretty closely. This idea isn't limited to food and drink alone, but also to cleaning and storing dishes and utensils alongside your lab ware. In most instances this sort of thing doesn't occur. But for some research, things may seem quite benign. You might only work with dilute or very small amounts of alcohol, but even then, it's not a safe practice and is against regulations. Often people prefer to eat and drink in the lab instead of moving to a nearby break room or common area. Our quest for convenience can lead to some undesirable activities. Lab workers must know where to draw the line.

Maintain Personal Protective Equipment (PPE)

Make sure that all the necessary PPE is maintained and readily available. Eye protection is required in all labs with hazardous chemicals present. Reusable gloves should be checked for cracks or signs of degradation. Lab coats accumulate various types of contamination and require cleaning and sometimes repairs. They are easily overlooked and can become a hazard themselves. Missing buttons, holes and tears in lab coats should be repaired or replaced. If it can't be closed completely it's not going to provide the protection it should. While you're at it, check to make sure that the lab coat is the most appropriate for your hazards. For example, a polyester or other synthetic lab coat should not be used where there is a fire hazard.

Some Additional Steps to Ensure Good Housekeeping

In addition to the items discussed above we've listed a few other common housekeeping items as well as a few tips.

- Perform weekly cleanings for heavily trafficked areas.
- Remove gloves before leaving the lab. They should not be worn in hallways, elevators, offices, break rooms or restrooms.

- Go through your chemical inventory regularly and get rid of unwanted or expired items. This should be done annually, at a minimum, but more frequently if you have unstable, hazardous materials. Contact the Chemical Safety Office for a pick-up.
- Label the dates that chemical containers are opened. This is required for peroxide-formers, but also a good idea for all chemicals. If you put a chemical (such as a solvent) into another container, make sure that the container is labeled with the compound's name, primary hazard, date, and name.
- Regularly maintain or check apparatuses such as oil pumps, Schlenk lines glass tubing and large round bottom flasks for damage.
- If your gas cylinders aren't in use they should have their regulators removed and be capped. You should keep the number of cylinders to a minimum. Remember, replacement cylinders for most gases can come in a day or two. If you do have extra cylinders have them stored away until they are needed.
- Never dispose of chemicals in the trash.
- Labs are responsible for flushing their eyewash stations regularly.
- This prevents accumulation of sediment and formation of harmful bacteria.
- Conduct regular self-audits of your lab. This will help you to ensure that employees are being trained to maintain safety and regularly assess their actions. Here is a link to the UW Madison self-assessment form: <http://www.ehs.wisc.edu/documents/chem-labvstwhattoexpect.pdf>
- Finally, you can call EH&S to schedule a lab visit. Someone can come over and identify issues that you may not have noticed or been aware of.

Final Thoughts

Good housekeeping plays an important role in lab safety while preventing accidents and reducing risks. By having regular lab maintenance in place and regularly observing your lab, you can easily maintain an efficient and safe work place. Know what your responsibilities are in maintaining the lab is a fundamental part of nurturing good working habits. PI's are responsible for instilling Good housekeeping and safety culture among workers in the lab. They should also implement regular cleaning and maintenance schedules. Lab workers are responsible for making sure the work area cleaned and ready for the next day or the next worker. Students should hold themselves and others accountable for maintaining the example set forth by the PI.

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For More Information Contact:

Environment, Health and Safety Department
30 East Campus Mall, Madison, WI 53715-1227
Phone (608) 265-5000 · **Fax** (608) 262-6767;
The Chemical Safety Office