

University of Illinois
F. Seitz Materials
Research Lab (MRL)

October 2018



Important Dates and Reminders

MRL Internal Lab Safety Audits

- Start this month
- Safety Contacts will be emailed with more information

DAILY REMINDERS

- Use buddy system when working in labs
- Do not leave labs unlocked
- Be aware of your surroundings
- Remove lab PPE before leaving lab spaces. PPE is not allowed in public areas

Safety Newsletter

This month's topics are **Chemical Fume Hoods** and **Chemical Storage Cabinets**.

Chemical Fume Hoods

[Chemical fume hoods](#) provide protection from vapors, splashes, and impacts caused by chemicals and their reactions. However, fume hoods do not completely eliminate the hazards, they must be used correctly to minimize the chance of exposure.

Safe Work Practices:

- Open the sash or sashes only as much as is required to perform your work comfortably. Never open it beyond the indicated position when hazardous chemicals are present. Position the sash to maximize protective shielding.
- Verify that the chemical hood is drawing air. Check the flow monitor if present, or hold a Kim wipe in the hood and check its movement. Note: Do not let go of the wipe. Wipes sucked into the ductwork will block airflow and may cause damage requiring expensive repairs.
- Perform all work at least 6 inches into the hood and do not store items near the opening where they interrupt airflow and pose a spill hazard.
- NEVER put your head in the hood when hazardous chemicals are present.
- Do not position large equipment or containers of chemicals in the back of the hood where they block airflow. Elevate equipment by placing it on blocks, jack stands, or legs so that air can flow underneath to the bottom baffle slot. To store items in the back of the hood, install shelves to elevate containers. Keep inside the hood only what needs to be there and remove everything that can be stored outside.
- Route service connections under the airfoil and secure all loose and dangling electrical cords, tubes and tubing with tie-raps, twist ties, or rubber bands.
- Discontinue work and close all containers with hazardous chemicals if the alarm sounds. If possible, mute the alarm, put an out-of-order sign on the hood, and contact your department business office to arrange for repair.
- When the hood is not in use, keep the sash at a six-inch opening. This will significantly reduce energy consumption and the sash will act as a shield in the event of an unexpected release.
- Ductless fume hoods are not recommended due to limitations on chemical use within the hoods and required maintenance. OSH and F&S do not provide support for ductless fume hoods. Verification of proper operation and maintenance/repair is solely the responsibility of the owning department.

For vertical sliding sashes, the maximum operating height of the sash is typically 18 inches; a larger opening limits the performance of the hood. The opening should be minimized on hoods with horizontal sliding sashes and the user should work with one sash directly in front of them with their arms on either side of the sash.

Useful Contacts

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Maximum sash opening are identified using blue stickers. On combination hoods that include both the vertical and horizontal sashes, it is best practice to put the vertical sash all the way down before opening and using the horizontal sashes.

Opening the sash beyond the optimal position will dramatically lower the air velocity and allow vapors to escape into the room. Blocking the airflow with large equipment in the hood can also lead to insufficient vapor capture and potential exposure.

Chemical Storage

Correct storage of chemicals is important to avoid spills and unwanted chemical reactions among incompatible chemicals stored next to each other. Chemicals should be stored in cabinets or on stable shelving. Ventilation is recommended for corrosives, volatile poisons, or malodorous chemicals.

Chemical storage cabinets should be made of chemically resistant material and labeled accordingly.

- Acid - Corrosive
- Base - Corrosive
- Flammable - Keep Fire Away

Shelving must be sturdy and secure. Do not use shelving with questionable stability. Do not store chemicals on shelves higher than six feet. Storage of hazardous chemicals on the bench top is discouraged.

Storage under sinks is limited to non-hazardous chemicals and compatible chemical classes found in average household items such as sodium bicarbonate and bleach.

Incompatible chemical classes must be segregated by cabinets, distance, and/or secondary containment. Review the manufacturer's Safety Data Sheet to identify incompatibilities. For chemicals that fall under multiple hazard categories, store according to priority of hazard level, with flammability and toxicity as the most severe hazards.

- Store flammables, acids, and bases in designated cabinets.
- Separate acids from bases, cyanides, azides, bleach, sulfides, metals. Keep acids away from acid-sensitive chemicals that can create toxic gases, heat, fire, or pressure.
- Separate oxidizing acids (chromic, nitric, perchloric, perbromic, periodic, and sulfuric acids) from organic acids.
- Separate oxidizers from organics and reducing agents. Oxidizers are recognized by a pictogram on the container showing a ring on fire or by a yellow band (containers from Fisher). Be careful not to miss the following common organic oxidizers: PCC (C₅H₅NHClCrO₃) and mCPBA.
- Store organics and inorganics separately. Store organics in ascending order according to the number of carbons. Inorganics may be stored alphabetically or by metal.
- Separate pyrophoric materials from flammables.
- Separate corrosives from gas cylinders, lecture bottles, and equipment. Corrosives can cause serious damage to expensive and sensitive equipment.
- Separate water reactive from water sources. Water-reactive chemicals should be stored away from water sources such as rotovap baths, sinks, eyewash stations, and emergency showers.