
The Waste-Paper

The Hazardous Waste Disposal Monthly Update

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Special Chemical Storage Edition

Mercury Spill from Improper Storage in Non-Lab Area

A recent incident on campus involving an improperly stored mercury device resulted in a potential mercury exposure and very costly cleanup. The device was a mercury manometer, stored in a closet within a computer room, unlabelled and unsealed. An unsuspecting technician moved the device to service cabling within the closet. Unbeknownst to the technician, the device had over 100 mL of mercury (a neurotoxin) stored inside. Upon moving the device, about one-fifth of the mercury was released from the device and the resulting spray contaminated everything within a 15 foot radius of the closet, including the technician. This incident caused tens of thousands of dollars in damage and cleanup costs. It could have been easily avoided.

No hazardous research chemicals should be kept in non-laboratory areas. This includes chemical-containing devices, containers and contaminated apparatus. Laboratories are easily over-run with research equipment, chemicals and science literature. To alleviate a cramped laboratory, your lab may have expanded its storage into a non-laboratory space such as a computer or study room. Only the following are allowed to be moved into a non-lab space:

- Clean dry glassware and apparatus
- Empty containers
- Electronic devices/equipment free of chemicals
- Research literature

When moving these items into storage, ensure they are free from any chemical residues.

ABCs of Chemical Storage

A very common way to keep a chemical inventory organized is to alphabetize the entire stock and keep it stored all together on a shelf. This has proven very useful, but potentially dangerous, as it can lead to incompatible items being stored next to each other, with the potential for causing highly hazardous reactions.

Use common sense when setting up chemical storage. Segregation that disrupts normal workflow can increase the potential for spills.

There are several possible storage plans for segregation. In general, dry reagents, liquids and compressed gases should be stored separately, then by hazard class, then alphabetically (if desired).

Segregate dry reagents as follows:

- Oxidizing salts
- Flammable solids
- Water-reactive solids
- All other solids

Segregate liquids as follows:

- [Acids](#) Separate mineral acids (hydrochloric, sulfuric) from organic acids (picric, acetic)
- Bases
- Oxidizers
- Perchlorates
- [Flammable or combustible liquids](#)
- All other liquids

See the [Lab Safety Manual](#) for additional information about storing chemicals safely.

Next Waste Pick-up: July 26, 2007

Drop off waste to your collection area Wednesday, July 25th

See the EHS web page for instructions: <http://web.princeton.edu/sites/ehs/chemwaste/procedures.htm>

Chemical Storage in Fume Hoods

The fume hood is one of the primary safety devices in a chemical lab. However, improperly storing materials and placing large equipment in the hood can seriously affect its performance.

First, you have to understand how a fume hood works. An exhaust fan situated on the top of the laboratory building pulls air and airborne contaminants from within away from the user through slots in the back of the hood through ductwork and out of the building.

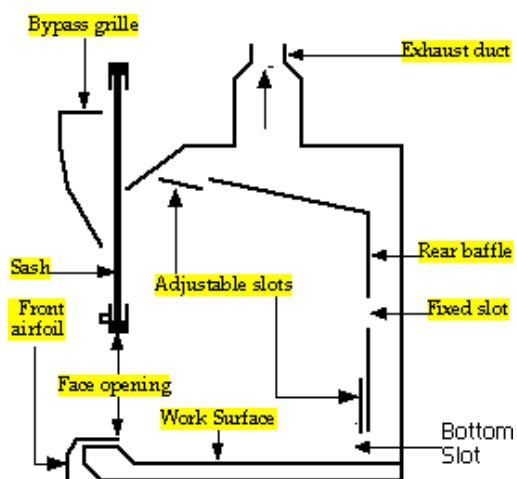


Figure 1: Side view of fume hood.

The *slots* are openings in the back wall of the hood generally at the bottom middle and top. In many hoods, they may be adjusted to allow the most even flow. **It is critically important that the slots are not closed or blocked** since this impedes the most optimum exhaust path. The airfoil allows even airflow into the hood, and should never be blocked or covered with paper.



Figure 2: Improper chemical storage in a hood blocks the slot and air foil.

It is not uncommon to see hoods in our labs where lab workers have lined up bottles, boxes and equipment, etc. horizontally along the bottom rear slot, nearly or completely blocking the opening. The exhausting air will follow the path of least resistance and if it can not move out through the bottom slot, which moves it away from the user and then up, it potentially will move up in front of the users breathing zone.

In general, items should not be stored in the hood, leaving the hood work surface clear and the bottom rear slot unobstructed. If it is necessary to store some items in the hood, avoid placing them in such a way that they block the slots or air foil. If large equipment must be placed in the hood, put it on blocks to raise it approximately 2 inches above the surface so that air may pass beneath it.

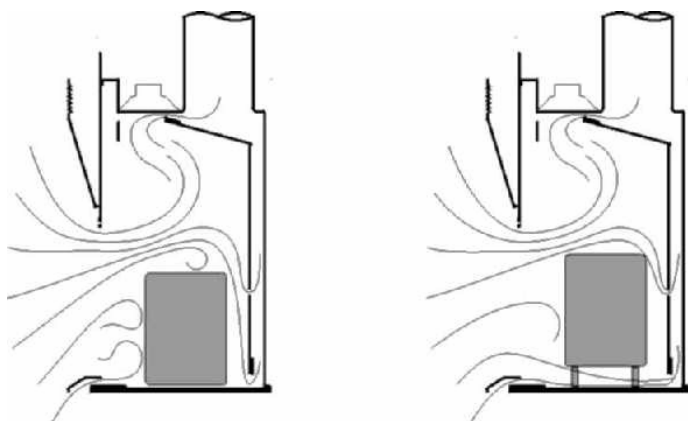


Figure 3: Improper (left) and proper storage of large items in the hood.

Consult the [Laboratory Safety Manual section on Controlling Chemical Exposures](#) for more information regarding fume hood use, operation, maintenance, etc. EHS surveys each fume hood annually. Contact [Joan Hutzly](#) with any questions or concerns.

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EHS Web Page <http://www.princeton.edu/ehs>