The Waste-Paper

"Waste is a terrible thing to mind"

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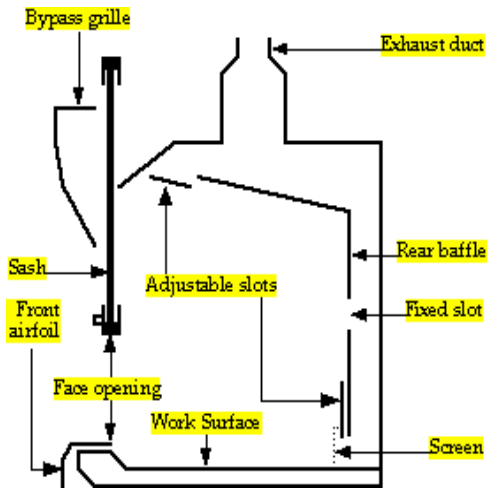
All About Fume Hoods

A common and invaluable safety device in the laboratory is a chemical fume hood. A well-designed and maintained hood can offer a substantial degree of protection to the user, provided that it is used appropriately and its limitations are understood. First and foremost, make sure that what you think is an exhausting chemical use fume hood is, in fact, a fume hood; not a biosafety cabinet or a laminar flow cabinet or a filtered cabinet (class 1 cabinet).

See ehs.princeton.edu for more detailed information.

Design



Fume hoods use exhaust fans situated at the top of the building to pull gases, vapors and airborne contaminants away from the user and exhaust them to the outside atmosphere.

The typical fume hood is equipped with a movable front sash. Depending on its design, the sash may move vertically, horizontally or a combination of the two and provides some protection to the hood user by acting as a physical barrier between the worker and the experiment.

There are basically two major types of fume hoods at Princeton, they are:

- **Constant volume** (CV) –the exhaust flowrate or volume of air pulled through the duct is constant. Therefore, when the sash is lowered and the cross-sectional area of the hood opening decreases the air velocity at the face of the sash entering the hood increases proportionally. Thus, higher face velocities can be obtained by lowering the sash.
- **Variable air volume** (VAV) - the exhaust flowrate or volume of air pulled through the duct varies as the sash is adjusted in order to maintain a set face velocity. Therefore, when the sash is lowered and the cross-sectional area of the hood opening decreases, the air velocity at the face of the sash entering the hood stays the same while less total air volume is exhausted.

EHS Certification

Hood Survey Sticker

Every hood should have a survey sticker. Do not use a hood that has no survey sticker.

(Frick Chemistry is an exception and has only a dated PASS label and the Magnehelic® pressure gauge is marked for desired flow.)

The sticker contains:

- A unique EHS Hood Number. Reference this number when contacting EHS.
- Arrows aligned on the hood indicating the location for the maximum safe sash position during operation.
- EHS contact phone number
- Survey date and name of person that performed the survey.
- A reading from the flow monitoring device.

Fume Hood Operation Verification

Each fume hood is equipped with a flow monitoring device. Confirm that your hood is functioning properly by checking the reading on the hood's flow monitoring device and compare it to the reading on the hood survey sticker. The reading should be within 20% of the value recorded on the survey sticker.

- Magnehelic® – is a pressure gauge that measures the difference in negative pressure between the laboratory and the fume hood exhaust duct.

- Color Coded and Digital Flow Indicators - Some hoods are equipped with color indicating devices, or digital flow rate displays rather than or in addition to Magnehelic® gauges.

These devices constantly measure the face velocity of the hood and point to green (for good) or red, or give the actual digital flow rate value to indicate whether or not the hood is functioning properly.


Date _____

CAUTION

DO NOT USE THIS HOOD

This hood is not suitable for manipulation of hazardous materials.

For service or repair, call Special Facilities. For questions regarding adequacy of hood for particular applications, call EHS at 258-5294.

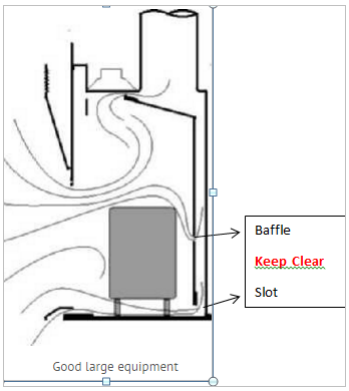
If hood performance is judged to be unsuitable for use with hazardous chemicals, a sticker with this information is placed on the hood instead of the survey sticker.

If you are uncertain if your hood is functioning correctly contact EHS at 609-258-5294.

Proper Work Practices

The level of protection provided by a fume hood is affected by how the fume hood is operated. No fume hood, however well designed, can provide adequate containment unless good laboratory practices are used. Follow these practices

- Know the Normal Operating Configuration (NOC) of the hood. The NOC refers to the position of the sash and conditions of the fume hood and surroundings when the hood was first commissioned. Design experiments so that the sash position can be maintained whenever hazardous materials are utilized.
- Verify your fume hood is operating properly before each use.
- Keep chemicals and work at least 6 inches inside the hood. This will help to keep materials from escaping the hood when disturbances, like air currents from people walking past the hood, etc., interfere with airflow at the face of the hood.
- Keep the sash lowered as much as practical any time an experiment is in progress or when manipulating chemicals to provide additional personal protection.
- Keep cross drafts, such as open windows, fans and doors to a minimum. Cross drafts may cause turbulence that can allow leaks from the hood into the lab. Open air supply vents may also cause containment issues.
- Place large or bulky equipment near the rear of the fume hood and elevate off the work surface so airflow can move toward the rear of the hood and away from the user.
- Keep baffles and slots (openings in the back wall of the hood) unobstructed so air can move properly away from the worker.
- Do not use the hood as a storage device. Keep only the materials necessary for the experiment inside of the hood. If chemicals must be stored in the hood for a period of time, install shelves on the sides of the hood.



- DO NOT USE A HOOD FOR ANY FUNCTION FOR WHICH IT WAS NOT INTENDED. Certain chemicals or reactions require specially constructed hoods. Examples are perchloric acid or high pressure reactions.

9-Volt Battery Disposal

National Fire Protection Association recognizes that 9-Volt batteries pose a significant fire hazard due to the positive and negative posts being close together. It is easy for conductive objects to cause 9-volt batteries to short circuit. This can result in heat generation and fire.

When disposing of 9-volt alkaline batteries, though we still request that you place them in the regular trash, make sure that you cover the positive and negative posts with duct or electrical tape. Alternatively, you can also seal each battery in a zip-lock bag.

Discard of alkaline batteries as they become spent or unwanted. Avoid storing unwanted batteries. Thank you for your cooperation.

This Month's Waste Disposal Drop Off: Wednesday, March 30, 2016

Lewis Thomas loading dock
- Collection room open from 2:00 - 4:00 PM
- Coordinators: Michael Fredericks (8-1351) for Molecular Biology

Jadwin Loading Dock Receiving Building
- Coordinators: Philip Fairall (8-3913) for Chemistry and Jim Kukon (8-4364) for Physics

E-Quad Room 7 *(E-Quad and Bowen)*
- Collection room open from 2:00 - 3:00 PM
- Coordinators: Joe Laskow (8-4739) or Phil Curry or Anthony Schulz (8-4563)

Hoyt, 185 Nassau
- Waste is collected upon request
- Contact Kyle Angjelo for pick-up (8-2711)

EHS HAZARDOUS WASTE CONTACTS	
Main Office	8-5294
Kyle Angjelo (Chemical Waste)	8-2711
Sue Dupre (Radioactive Waste)	8-6252
Jackie Wagner (Biohazardous Waste)	8-1427
Tom Drexel (Waste Paper)	8-6255
EHS Web Page http://www.princeton.edu/ehs	

Preparing your Regulated Medical Waste for its Final Destination

Take the time to package your regulated medical waste properly to ensure its safe arrival at the incineration facility.

Tape It

Box flaps must be taped closed with 2-inch wide clear packing tape. Please do not "four-way" the top or bottom flaps, as this does not comply with packaging regulations.

Weigh It

Boxes of regulated medical waste should not weigh more than 35 pounds. Purchase and use an inexpensive bathroom scale or shipping scale to avoid over packing.

Label It

Place a Princeton University label on the medical waste box and the inner bag.

Please contact the University Biosafety Officer, Jacqueline Wagner, x8-1427, if you have questions.