

Laboratory Hood Safety

By Peter J. Nowak, Industrial Hygiene Occupational Safety



Chemical Fume Hood

One of the most important pieces of equipment in any lab is the hood. Laboratory hoods serve a variety of functions, but none is more significant than providing a safer work environment for the individuals working in the labs. Hoods function by creating airflow through a blower that draws air through the hood and its vents where it will do no harm. The air that moves near the open front of the hood is known as face velocity.

Face velocity is the primary test used to determine the efficiency of a hood. Many hoods have a sash or door which will allow the user to access the hood. Raising or lowering this sash will change the face velocity of the hood.

There are several different types of hoods some of which are very specialized. The two most common kinds on all 3 campuses are the Fume hood and the Biological Safety Cabinet. These hoods come in a wide range of shapes and sizes and manufacturers. Fume hoods are designed to prevent exposure to chemicals, vapors and particulate matter that lab personnel may be subjected to during routine work. Fume hoods are generally exhausted to the outside.

Biological Safety Cabinets on the other hand serve a more specific function. They protect a user from being contaminated by microorganisms which may be harmful. Biological Safety Cabinets have more controls on filters, face velocity, and exhaust than any other type of hoods to prohibit release of

possibly dangerous microbes to the environment. Biosafety Cabinets pass air through Hepa filters and re-circulate air into the room. As result, they should never be used for hazardous chemicals.

At Tufts all hoods are tested on annual basis. There are over 450 Fume hoods and over 250 Biosafety Cabinets. Though the Environmental Health and Safety Office (EH&S) oversees the annual certification inspection of all hoods, it is the responsibility of lab personnel to assure that the hood has been certified. This is accomplished by locating the dated certification sticker on the front of the hood. *Please notify Environmental Health and Safety if you find any fume hood or Biosafety Cabinet that has not been tested.*

Minor repairs can often be made by facilities staff members, but more serious repairs are the responsibility of individual departments in which the hoods are found. Those repairs have to be contracted to companies certified to make such repairs.

As Tufts renovates or builds new laboratories, energy conservation has become a major factor in the design, purchase and installation of new hoods. Many if not all new Fume hoods are installed with Phoenix Controls which regulate air flow, these controls can sense when the hoods are being used and will raise and lower the amount of air passing through depending on usage. These controls are helping reduce energy expenses throughout Tufts research community. In addition new hood designs are reducing costs even more by building in the controls directly to the hoods.

Good Practices:

1. Do not store chemical containers or equipment in the fume hood; it is a ventilated lab bench and should be open to use by anyone in the lab as needed;
2. Make sure equipment is raised at least 1" above the floor of the hood to all adequate airflow around the piece of equipment;
3. Do not evaporate volatile liquids in a chemical hood as a means of disposal-call EHS to collect the waste and ship off site;
4. Place all equipment at least 6" in from the sash of the hood to ensure that the air contaminants stay in the hood;
5. Check the airflow through the hood opening to make sure it meets the 90-110 ft/min requirement; some hoods are equipped with velo-meters which read out directly in feet per minute; an inexpensive airflow indicator can be installed on any hood
6. Do not use flammable liquids or gases in biological safety cabinets-the electrical system is not explosion proof!

Maintaining Biosafety Cabinets

By Kimberly Parker, Biosafety Manager

Biosafety Cabinets (BSCs) are an essential component for the safe use of biohazardous agents. Maintaining the proper functioning of BSCs is critical. This includes annual certification, decontamination prior to relocating, HEPA filter replacement, and overall general maintenance. Tufts University has recently renewed contracts with service providers to maintain this equipment. Covino Inc. will be providing these services to the Medford and Boston campuses. B&V, Inc. will be providing these services to the Grafton campus.

Technicians will begin visiting the laboratories during the month of October to perform the annual certifications. If you have a need for any of the above services, please contact Kim Parker, Biosafety Manager, at 617-636-2919, for assistance.



Biosafety Cabinet

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