

EHS Laboratory Guidance

Fume Hoods

Purpose

Exposure to chemicals, hazardous fumes, mists, dusts, vapors, and other inhalation hazards can be controlled in the laboratory by using fume hoods. Fume hoods are a primary method of exposure control in the laboratory. A fume hood is a ventilated enclosure that vents separately from the building's heating, ventilation, and air conditioning (HVAC) system and is not recirculated into the building. Fume hoods should be used when working with toxic chemicals or compounds with low boiling points. Fume hoods, or other effective local ventilation, must be used when the materials being handled may exceed exposure limits in the laboratory. For more information, see the university's [Chemical Hygiene Plan](#).

Standards for Determining Permissible Exposure Limits

- Occupational Safety and Health Administration Permissible Exposure Limits (OSHA PELs)
- National Institute for Occupational Safety and Health Recommended Exposure Limits (NIOSH RELs)
- American Conference of Governmental Industrial Hygienists threshold limit values (ACGIH TLVs®)
- American Industrial Hygiene Association Workplace Environmental Exposure Limits (AIHA WEELs)

Types of Fume Hoods

Fume hoods are categorized into one of two groups: 1) standard flow and 2) low flow. Standard flow fume hoods are designed to operate at 100 linear feet per minute (LFM) at 18 inches sash height. Low flow fume hoods are designed to operate at 70 LFM at 18 inches sash height. At the University of Idaho, we follow ASHRAE Standard 110-2016: Fume hoods shall comply with performance standards listed within ASHRAE 110-2016 (latest edition). Fume hood face velocity shall be 100 feet per minute (FPM), averaged across the face opening at normal sash operating height.

Fume Hood Testing and Inspections

EHS personnel perform annual functional performance tests to assure hoods operate as required (in accordance with ANSI Z9.5). The test includes an assessment of the face velocity, containment, airflow monitor performance, and alarm functionality. EHS personnel may also note any observed problems with housekeeping, controls, the sash, baffles, plumbing, lights, or corrosion in the hood. If a hood fails an inspection, it will be taken out of service until repaired. EHS staff will notify the lab user and U of I Facilities of the situation and post a "Do Not Use" sign on the hood. When U of I Facilities has completed repairs, EHS personnel will retest the hood and put it back in service.

Lab User Responsibilities

Lab users must:

- Use a fume hood or other engineering control(s), rather than the benchtop, when there is a possibility of exposure to air contaminants generated by the laboratory activity.
- Decontaminate their fume hoods in the event of a decommissioning, change of PI or type of research, and for certain maintenance services and repairs.
- Be aware of HVAC system shutdowns and not use the affected lab when the ventilation system serving the room is shut down.

Fume Hood Alarms

Most fume hoods are equipped with monitors that will generate an audible alarm when the airflow drops below approximately 80% of the design velocity. The following guidelines should be followed if your alarm activates:

- Be certain the sash is at or below the sash stop or EHS certification label. If the alarm persists, close the sash and wait a moment and then reopen the sash to your working height.
- If the alarm continues, stop using the hood, close the sash and contact EHS.

Before Purchasing/Replacing a Fume Hood

Contact EHS and U of I Architectural and Engineering Services (AES) for assistance in selecting an appropriate hood and determining if the building's infrastructure can support the installation. Installing and replacing a fume hood may require design and planning, asbestos abatement, lead paint abatement, decontamination, and other work beyond simply connecting the hood. An evaluation by a qualified third party may be requested before procurement is authorized by U of I Architecture and Engineering Services (AES).

Some Suggested Fume Hood Suppliers:

Manufacturer	Conventional Flow Face Velocity (100 fpm)
KEWAUNEE SCIENTIFIC CORP www.kewaunee.in	Supreme Air®
LABCONCO www.labconco.com	"Protector" models
MOTT MANUFACTURING www.mott.ca	Sigma Pro®