

## **Section 8**

# **University Chemical Fume Hood Program**

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## Chemical Fume Hood Program

Chemical fume hoods at Western Washington University shall be used in instructional and research laboratories to contain air contaminants which would otherwise be at or above the appropriate threshold limit value (TLV) or to contain contaminants which are considered hazardous via inhalation.

Chemical fume hoods shall not be used to dispose of volatile hazardous wastes. The Environmental Health and Safety office provides interpretation of regulations regarding evaporation as a means of minimizing quantities of waste.

Chemical fume hoods shall be used for containment of hazardous materials only if they are functioning properly. Those hoods operating below minimum standards shall not be used until adequate ventilation is obtained.

Hoods shall be evaluated for performance when they are installed and following any change or alterations to the ventilation design. The Physical Plant Department monitors chemical fume hoods performance annually. The fans and duct systems are maintained and inspected by the Physical Plant Department. Any problems with hood ventilation or air flow should be reported to the Physical Plant Department immediately for inspection and evaluation. Safety concerns should be reported to the Environmental Health and Safety office.

Perchloric acid shall be used only in a perchloric acid hood. Biological safety cabinets shall not be used as chemical fume hoods. Similarly, other types of ventilated cabinets shall not be used as chemical fume hoods unless they are specifically designed by the manufacturer for such use.

The person responsible for an area containing a chemical fume hood shall ensure that people using, maintaining, repairing or performing other work within the chemical fume hood are instructed in the proper procedures and provided appropriate equipment to ensure protection. This task may be delegated.

General procedures for working in a chemical fume hood, and for performing maintenance or repair work in a fume hood are provided on the following pages.

### Procedure For Chemical Fume Hood Use

A chemical fume hood is a primary barrier against potential exposure to chemicals when accompanied by sound laboratory technique. Chemical fume hoods are used to prevent toxic, carcinogenic, offensive, flammable or other airborne contaminants from entering the general laboratory atmosphere.

With the sash lowered or moved between the work and person working, the fume hood forms a physical barrier to protect laboratory personnel from hazards such as chemical splashes or sprays, fires, and minor explosions. Chemical fume hoods also provide effective containment for accidental spills of chemicals.

Chemical fume hoods are not meant for storage of chemicals. Volatile and odorous chemicals and highly toxic gas in cylinders are to be stored in vented cabinets. Storing chemical containers and equipment in a hood lowers the performance of the hood. Hoods are backup safety devices to protect against toxic vapors or dusts if an accident occurs or if the design of an experiment fails.

Evaporation in hoods shall **never** be used as a means to dispose of hazardous chemicals. Laboratory experiments should be fitted with condensers, scrubbers or other devices to collect and contain highly toxic vapors or dusts before fume hood exhaust is vented to the atmosphere, if possible.

Hood performance is dependent on air flow patterns in the room, including drafts and persons walking by. Working with chemicals and equipment more than six inches from the front edge of the hood (plane of the sash) can reduce vapor concentrations at the face by about 90 percent.

Hoods used for toxic or carcinogenic chemicals are to have a minimum face velocity of 60 to 100 feet per minute. Sashes are to be pulled down as far as workable or moved between the hood user and the

experiment. When not in use, sashes should be closed to within several inches of the work surface. Variable air volume hood sashes shall be closed to the extent possible to conserve energy.

## Reference

National Research Council (U.S.). Committee on Hazardous Substances in the Laboratory. Prudent Practices for Handling Hazardous Chemicals in Laboratories. National Academy Press. Washington, DC 1981.

### Procedure For Performing Maintenance or Repair Work Inside A Chemical Fume Hood

1. Assemble protective equipment:
  - Rubber gloves, disposable, re-useable, or both (re-useable over disposable)
  - Safety eye protection, and
  - Plastic or Tyvek suit
2. Talk with the person in charge of the laboratory. Ask them to remove all chemicals and other equipment from the hood before you work in it.

#### DO NOT WORK IN A HOOD IF CHEMICALS ARE PRESENT

If the hood is dirty, ask the contact person to have the hood cleaned appropriately by laboratory staff.

3. Put on protective equipment before entering the interior of the hood. Eye protection is worn in the laboratory at all times.
4. Keep exhaust ventilation on, if possible, during work.
5. When work is completed inside the chemical fume hood, remove protective equipment. If it is contaminated, it must be cleaned before re-use or it must be thrown away. Call the Environmental Health and Safety office for consultation, as necessary.
6. If you are wearing re-useable gloves, wash them with soap and water while you are wearing them. Use the sink in the laboratory. If you are wearing disposable gloves, remove them with the insides out. Dispose of the gloves as directed by laboratory personnel.
7. Wash your hands with soap and water immediately after removing gloves, before you take a break, and after you finish a job. Be especially careful to wash before you eat, drink, or use a rest room. If your contaminated gloves have touched faucet handles, use a paper towel to wipe off the faucets.
8. If you encounter problems, consult with Environmental Health and Safety staff.