

Work Practices for Chemical Fume Hoods

Always use toxic and/or volatile chemicals in a chemical fume hood, **not** on an open bench. Chemical fume hoods are designed to provide protection for the user from chemical and radiological contaminants. However, they **do not** absolutely eliminate exposure, even under ideal conditions. Careless work practices can result in considerable exposure to users who may believe they are protected.

To optimize the performance of the chemical hood, adhere to the following work practices:



Proper use of a chemical fume hood equipped with a vertical sash.

- 1. Ensure that your chemical hood has a current inspection sticker (dated within the last year).** *The face velocity should be between 80 and 120 linear feet per minute (lfpm).*
- 2. Verify that the chemical hood is drawing air.** *Check the flow monitor (if present) or use a "Kimwipe" to demonstrate flow into the hood.*
- 3. Discontinue work if the alarm sounds during normal use.** *Mute the alarm (if possible) and contact your department business office to arrange for repair.*

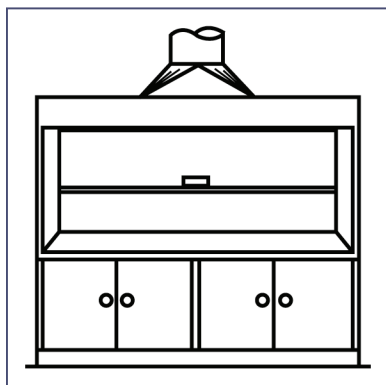


Figure 1. Vertical sliding sash

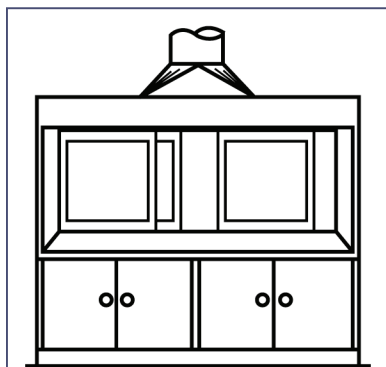


Figure 2. Horizontal sliding sash

- 4. Use sashes to maximize protective shielding and ventilation.**
 - For hoods equipped with vertical sashes, lift sashes only as far as you need to do your work comfortably, no higher than 18 inches. Sash heights higher than necessary reduce protective shielding and ventilation. (Figure 1)*
 - For hoods equipped with horizontal sashes, slide the sashes to minimize the openings, keeping a panel between you and your work. (Figure 2)*
- 5. Keep chemical hood sashes closed to a six inch opening when the hood is not in use.** *The sash will act as a shield in the event of an unexpected release, but the opening will maintain a point of air exhaust for the lab.*
- 6. Do not put your head in the hood when contaminants are being generated.**
- 7. Do not heat perchloric acid in a chemical hood unless it is specifically designated as a "Perchloric Acid Hood."**
- 8. Use small tubs or shallow trays as secondary containment.** *This prevents incidental spills and leaks from going down the drain.*
- 9. Do not evaporate or store hazardous waste for long periods of time inside the hood.** *Submit a request with DRS to pick up waste.*



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10. Perform all work and keep all apparatus at least six inches into the hood. A chemical fume hood provides protective ventilation by means of directional airflow. Eddy currents are generated as the airflow is disrupted at the hood face. At the appropriate face velocity, eddy currents drop off about six inches inside the hood. (Figure 3)

11. Route service connections under the airfoil. These include electrical cords and tubing from compressed gas cylinders. This allows unimpeded airflow into the hood.

12. Store chemicals and equipment outside the hood. Place chemicals in the appropriate type of cabinet (i.e. acid, flammable, or ventilated cabinets). Store unused equipment in cabinets or another location. The chemical hood is not a storage cabinet.

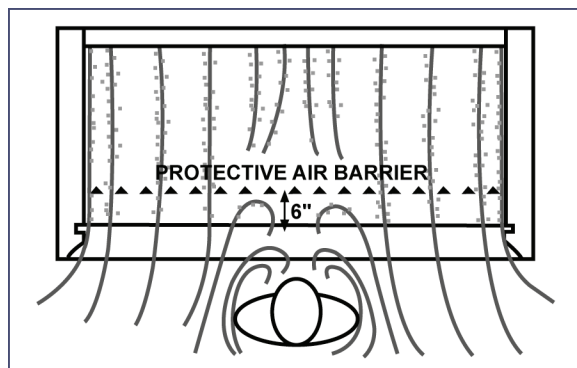


Figure 3. Top view of the air currents created when an individual is working in front of a hood.

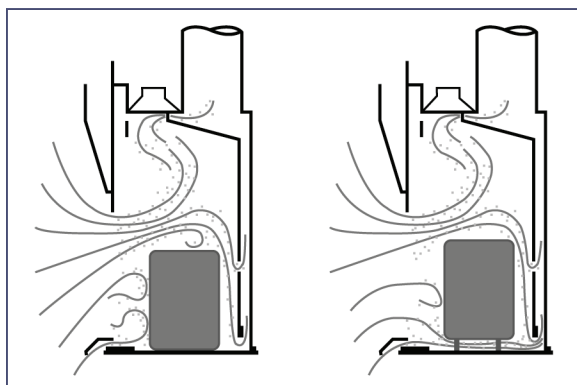


Figure 4. The effect on air currents of large equipment blocking the rear exhaust slots.

13. Do not block the slots in the hood baffle with containers or apparatus. Place equipment on blocks, jack stands or legs, so that air can flow underneath the equipment to the bottom slot of the baffle. (Figure 4)

14. Replace any missing sidewall panels. If a panel is missing, the airflow inside the hood is disrupted, and the ability of the hood to contain a fire is compromised.

15. Locate sources of ignition or spark outside of the hood. These include transformers (Variacs), electrical outlets (such as power strips) and rheostats. (Figure 5)

The Division of Safety and Compliance (S&C) surveys all chemical fume hoods on an annual basis. If the airflow does not seem sufficient, or other repairs are necessary, contact your departmental business representative to have the hood checked by Facilities and Services (F&S).



Figure 5. Aftermath of a hood fire.

Questions?

Contact the Division of Research Safety, Chemical Safety Section (333-2755 or [via e-mail](mailto:css@illinois.edu) at css@illinois.edu) or visit our web site: <http://www.drs.illinois.edu/css/>.

Other Chemical Safety Fact Sheets are available from the Chemical Safety Section at our web site: <http://www.drs.illinois.edu/css/factsheets/>.

