	How to Use a Chemical Fume Hood Safely	Effective:	January 25, 2006
		Originator	D. Taddeo
		Last Updated	January 25, 2006
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1. POLICY:

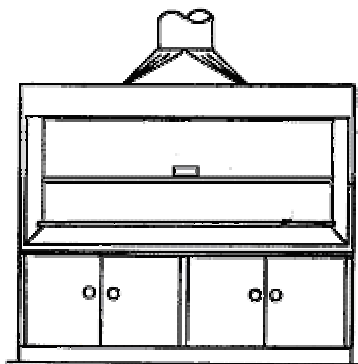
- 1.2. The purpose of this policy is to acquaint persons with the proper procedures of how to use the Chemical Fume Hood Safely.

2. SCOPE:

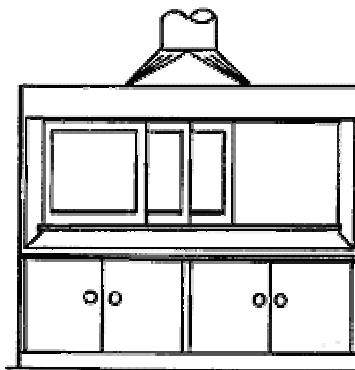
- 2.1. This policy applies to all faculty, staff and students of the Ross University School of Veterinary Medicine.

3. PROCEDURE:

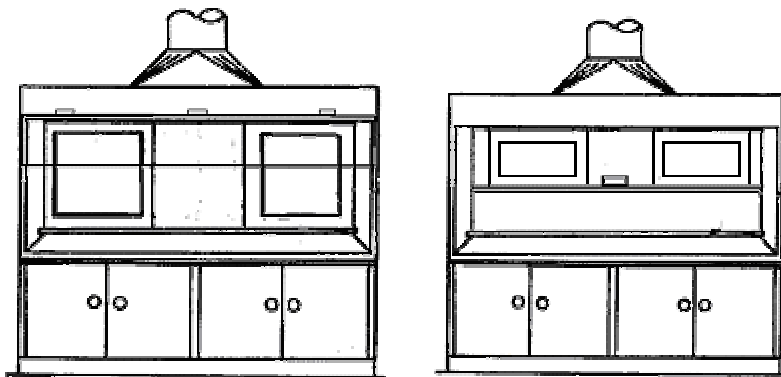
A chemical fume hood is designed to protect the worker from volatile and other airborne contaminants. Protection is provided by a continuous airstream that flows into the hood, captures airborne contaminants, then passes through ductwork and exhausted from the building roof stack. The hood effectiveness is greatly affected by work practices at the face (front) of the hood and conditions within the laboratory.



Vertical Rising Sash Hood



Horizontal Sliding Sash Hood



Horizontal Sliding Sash Hood Combination Vertical Rising/Horizontal
with a Velocity Screen Sliding Sash Hood

- Know the hazard of the materials. Read the Material Safety Data Sheet (MSDS), follow the safety precautions and use protective equipment described in the MSDS.
- Know the location of the nearest exit, emergency eyewash and shower, and fire extinguisher. Make sure the pathways to these areas are unobstructed.
- Check the fume hood certification sticker located above or to the side of the sash. The fume hood certification sticker provides information on when the hood was last tested (at least annually) and gives the average face velocity. The minimum average face velocity is 100 fpm with a maximum of 120 fpm. Typically, general use fume hoods are set at 115 fpm.
- Verify that the fume hood exhaust system is operating properly by checking the hood flow indicator. This is done by:
 - Checking the flow indicator light
 - Comparing the magnetic gauge reading to a marked set-point
 - Observing the draw of a ribbon of magnetic tape
 - Holding a Kim wipe or tissue at the face of the hood and observing the draw into the hood
- Raise hot plates, ovens, magnetic stirrers, vortexes, mi CroFab labs, and other bulky apparatus one to two inches above the work surface. This allows air to flow underneath them, sweeping the work surface and reducing turbulence in the hood. Rubber stoppers work well for raised support.
- Assure all sashes and interior baffles and panels are in place before beginning hazardous material work.
 - Vertical Rising Sash Hoods: Locate necessary equipment and materials at least 6 inches within the hood and then lower the vertical sash to a height at or below the mark/stop at 18 inches.
 - Horizontal Sliding Sash Hoods: locate necessary equipment and materials at least 6 inches within the hood. Check that horizontal sashes are in place. Four-foot hoods need one sash and six-foot hoods need two sashes. Position sliding sash between operator and work in the hood.

- Horizontal Sliding Sash Hoods with Velocity Screens: locate necessary equipment and materials within the hood and then lower and fasten the velocity screen. The velocity screen is required to assure proper containment of hazardous vapors within the hood.
- Combination Vertical Rising/Horizontal Sliding Sash Hoods: locate necessary equipment and materials within the hood and then lower the vertical sash, making sure the horizontal sliding sashes cover the opening. The vertical sash should be lowered to a height at or below the mark/stop at 18 inches.
- Hoods equipped with operator adjustable baffles should be set at the “normal” or middle position.

Specialty Fume Hoods

- Perchloric acid and acid wash down hoods have water systems designed to allow wash down of the hood, baffle, fan and ducts after each use. They also have dedicated exhaust ducts. Perchloric acid hoods and acid hoods are dedicated for that sole use. Do not use other materials, particularly organic solvents, in a perchloric acid hood.
- Biosafety cabinets and glove boxes are specific types of containment devices with airflow characteristics very different than fume hoods. Clean benches (laminar flow hoods) function in reverse, with airflow crossing the bench and blowing out at the operator.
- Radioisotope hoods are similar to fume hoods but have dedicated exhaust ducts. Some may require two-stage HEPA filters to ensure legal concentrations at discharge and additional discharge monitoring at the stack. The radioisotope hoods are chosen for easy decontamination.
- Fume hoods used for carcinogen work may require charcoal and/or HEPA filters.
- Self-contained or ductless hoods (e.g. Gross lab) are sold for pathology procedures. A continuous airstream flows into the hood, captures contaminants, is filtered and returned to the room. The filters last for a short period (average of 1-2 years). The potential for returning contaminated air to the room is high. For this reason, ductless hoods are not approved for airborne contaminant control.

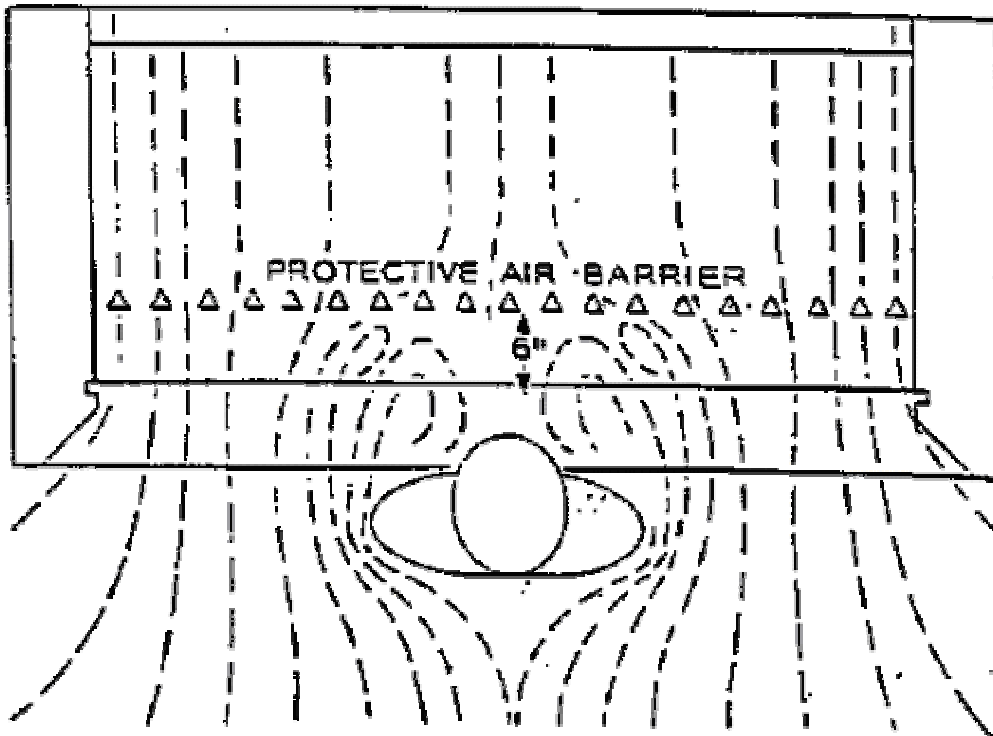
Good Work Practices for Laboratory Hoods

- Perform procedures involving open containers of volatile materials inside a fume hood. For example, flammable solvents (e.g., hexane), corrosive acids (e.g., sulfuric acid digestion), corrosive bases (e.g., sodium hydroxide dissolution), combustible or potentially explosive concentrations of gases, vapors or dusts (e.g., ether distillations), irritating vapors or dusts (e.g., mercaptoethanol), asphyxiating gases (e.g., drying operations using nitrogen), or open sources of volatile radionuclides (e.g., 125I labeling process) must be performed in a fume hood.

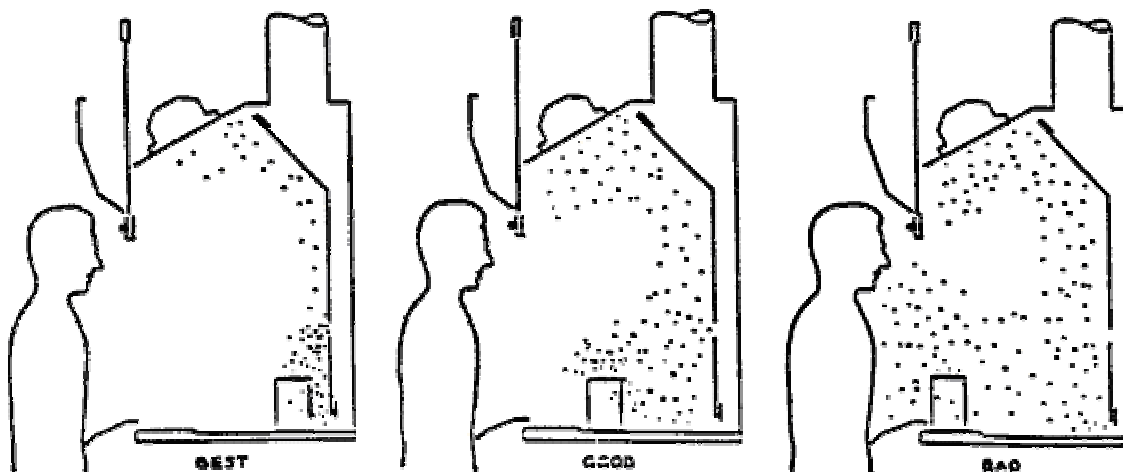
- Keep all apparatus and operations at least 6 inches behind the face of the hood.
- Keep your head outside the hood “cupboard”.
- Move slowly at or near the hood face opening. Rapid movements can create sufficient turbulence to disrupt the inward flow of air into the hood and may result in worker exposure.
- Minimize foot traffic past the face of the hood.
- If there is a chance of splashing, splattering or explosion, use an appropriate barricade constructed of impact glass or material with impact resistance better than or equal to safety glasses.
- Keep the hood sash closed as much as possible. Vertical sashes must be lowered to or below the mark/stop at 18 inches. Both the vertical and horizontal sashes are designed for use as a safety shield to protect against spills and splashes. Warning: Sashes do not provide protection against explosions, implosions, and flying objects. Sashes constructed of safety glass can minimize injuries from embedded glass.
- Keep the slots between horizontal sliding sashes free of obstructions to assure proper containment.
- Some vertical rising sash hoods are designed with airflow bypass either above or below the sash. Keep the airfoil and bypass grill free of obstruction. When a vertical sash is closed, the airflow continues and air that normally enters through the face of the hood is alternatively drawn through an airfoil and a bypass grill at the top of the hood.
- Keep laboratory doors closed to maintain proper laboratory air balance.
- Clean up the work surface after each use. Wipe the walls, baffles, and sashes monthly with wet wipes. This is a good housekeeping practice.
- When fume hoods are shutdown due to system failure, maintenance or repairs, hazardous materials operations in the hood must stop, the hazardous materials must be capped or transferred to a functioning hood, and the sash closed.

Maintaining a Protective Air Barrier

When you stand in front of a laboratory hood, the air passing around your body enters the hood and forms a zone of low air pressure. This zone extends into the hood for about four inches. Since contaminants may enter this turbulent area, you should keep all hazardous materials at least six inches inside the hood, behind this “protective air barrier.”



The farther behind the “protective air barrier” you place the contaminant source, the greater is the protection the hood provides you. Illustrations below demonstrate the effect of contaminant placement with the hood.



You should place the equipment and contaminants you are using as far back inside the hood as you can, being careful not to block the lower slot in the rear baffle. Caution: you should never place the apparatus so far back that you have to put your head into the hood to attend to the apparatus.

Work Practices to Avoid

- Do not store non-essential chemicals or equipment in the hood. Items stored in the hood disrupt the airflow, reduce available workspace, and interfere with the protective air barrier.

- Do not evaporate hazardous waste in the hood.
- Do not place sources of electrical power (multi-outlet power strips or extension cords) or other ignition sources inside the hood.

Hood Shutdown

When Operations & Maintenance conducts routine testing and maintenance, a temporary hood shutdown is necessary. Please remember that your actions may directly affect a co-worker; therefore, cap bottles tightly, tidy the hood, seal experiments contained in the hood, and follow any instructions written on the shutdown notice.

Hoods not functioning properly or making excessive noise should not be used. Report these problems to administration

Hoods posted with a warning sign prohibiting use must not be used until the problem is corrected and approval is received.