DUQUESNE UNIVERSITY

Fume Hood Use

Prepared by: Environmental Health and Safety Department

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Fume Hood Background

A laboratory fume hood is a partially enclosed workspace that is designed to contain hazardous vapors and gases and exhaust them outside the building. When used properly, hazardous gases and vapors generated inside the hood are captured before they enter the breathing zone. This serves to minimize your exposure to airborne contaminants. The fume hood is often the primary control device when using flammable and toxic chemicals in the laboratory. It is important for lab personnel to understand how the fume hoods work so they can use them properly and avoid exposure to hazardous chemicals. While it is appropriate to keep chemicals that are being used during a particular experiment inside the fume hood, hoods are not designed for permanent chemical storage. Each item placed on the work surface interferes with the directional airflow, causing turbulence and eddy currents that allow contaminants to be drawn out of the hood. Even with highly volatile materials, as long as a container is properly capped evaporation will not add significantly to worker exposures. Unlike a fume hood, flammable materials storage cabinets provide additional protection in the event of a fire.

Proper Hood Operation

- **Confirm that the hood is operational.** If fitted with a local on/off switch, make sure the switch is in the "on" position; check the airflow gauge if so equipped. In the absence of a gauge, airflow can be visually assessed by noting if a ribbon or tissue is pulled gently into the hood. The most recent hood test data is indicated on the inspection label on the fume hood. Never work with a malfunctioning hood; report problem hoods to Facilities Management (x6011). Advise the EHS office (x4763) of fume hoods that malfunction repeatedly.
- **Maintain operations at least 6" inside the hood face.** Vinyl tape can be attached to the work surface to serve as a visual reminder.
- **Lower sash to optimum height.** Optimum height is the sash height at which airflow is maximized without creating turbulence. A recommended sash height of 6-8 inches will provide optimum operation. With unattended or potentially

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explosive processes, conduct the operation behind a lowered sash or safety shield.

- **Keep head out of hood** except when installing and dismantling equipment.
- **Keep hood storage to an absolute minimum.** Keep only items needed for the ongoing operation inside the hood. Keep the back bottom slot clear at all times as it serves as an exhaust port for chemicals generated near the work surface. Raise large objects at least two inches off the hood surface to minimize air flow disruption.
- **Minimize foot traffic around the fume hood.** A person walking past a chemical hood can create competing currents at the hood face, causing vapors to flow out. Other sources of competing air currents such as open windows and fans must also be avoided while using a chemical hood.
- **Use extreme caution with ignition sources** inside a fume hood. Ignition sources such as electrical connections, controllers and open flames can be used inside a fume hood as long as there are no operations involving flammable or explosive vapors. If possible, ignition sources should remain outside the hood at all times.
- **Replace hood components prior to use.** Every component of a fume hood, whether airfoil, baffle, or sash, plays a vital role in preventing the escape of hazardous materials from the hood. Any hood components removed to conduct maintenance or repair activities, or to set up experimental apparatus, must be replaced prior to using the hood for contaminant control.
- **Chemical handling.** All chemicals should be handled inside the fume hoods, to prevent inhalation. Our fume hoods are the main engineering control of this building.
- **Maintain negative pressure in the laboratory** by keeping the entrance doorways closed at all times.