UW-Green Bay
Laboratory Ventilation

Use of appropriate ventilation is an important way of protecting laboratory workers from exposure to hazardous airborne substances generated in a lab procedure. There are two types of ventilation used in the Laboratory Science Building:

- Dilution ventilation
- Local ventilation

With dilution ventilation no air is recirculated back in to the building; all air from the lab and building is exhausted directly to the outside. Airborne contaminants created at the lab bench mix with room air which reduces the concentration of contaminants. This diluted mixture is exhausted from the laboratory. Dilution ventilation is limited to control of vapors and gases of low toxicity or very small amounts of moderately toxic vapors or gases. Dilution ventilation is **not** sufficient when working with acutely hazardous substances or moderate to large quantities of moderately toxic vapors or gases.

Local ventilation works on the principle of capturing toxic material at their source before they reach the breathing zone of the lab worker and before they contaminate the general air in the room. The most common type of local ventilation in the laboratory is the chemical fume hood. Over 50 chemical hoods are located throughout the laboratories in the Laboratory Science Building. All of these hoods are designed to provide a face velocity of 100 fpm (optimal contaminant capture) when sash opening is at 18". Hoods are equipped with air flow monitors. See accompanying page for explanation of monitor controls. The Safety Manager does annual certification to verify face velocity is a minimum 100 fpm with a sash opening at 18". A label verifying hood certification is affixed to the front of the hood.

Two other types of local ventilation are in use in Laboratory Sciences. Snorkel hoods are used to control contaminants emitted from some lab equipment. Several biological safety cabinets (BSC) are also located in Laboratory Sciences. BSCs are designed to contain aerosols generated during work with infectious agents. Check with the laboratory supervisor before using a BSC. Most BSCs are vented into the lab after contaminants pass through a HEPA filter. Therefore, many BSCs are not suited for work with toxic or flammable material.

Chemical Fume Hood Components

Hood Body is the visible part of the hood that serves to contain hazardous gases and vapors

Hood Baffles are the moveable partitions used to create slotted openings along that are located on the back wall of the hood. They keep air flow uniform across the hood opening, eliminate dead spots and optimize capture efficiency.

The **Sash** is the sliding door to the hood the improve containment of contaminants and provide some protection to the user in case of an incident in the hood. Sashes can be designed to move vertically and horizontally. Many of the chemical hoods located in Jarvis have a combined vertical/horizontal sash.

The **Sash Stop** located on the frame of the hood is designed so that face velocity will be maintained at 100 fpm if the sash opening is kept below the sash stop level. One can over ride the sash stop. But this

should only be done when setting up or taking down equipment. Hood alarm will sound if one over rides the sash stop signaling that face velocity has gone below the 100 fpm capture rate.

The **Airfoil** is the bent metal piece at the front edge of the hood. It prevents creation of eddy currents which can carry vapors out of the hood.

Spill control – a raised lip surrounds the work surface providing some spill containment in case of a spill. Keep in mind that this is limited spill containment. A spill kit should be readily available and additional secondary containment should be considered when working with some hazardous substances.

Lab sinks in hoods are connected to the sanitary sewer system. Do not pour substances down the hood sinks unless you have permission from the laboratory supervisor.

Mechanical controls are located on the frame of the hood. Depending on the hood these may include: natural gas, compressed air, vacuum, light switch and electrical outlets.

Hood monitors are located on the front frame of the hood. They serve as an alarm system to alert you when face velocity falls below 100 fpm.

Safe Operating Procedures

- Confirm hood is running properly. Check for current (within one year) hood certification. Check hood monitor to ensure face velocity is 100 fpm at a minimum at a sash opening of 18". If not, immediately notify the laboratory supervisor. Do not proceed with experiment until hood face velocity is a minimum 100 fpm at a sash opening of 18".
- Keep sash as low as possible when working in hood to optimize contaminant capture and provide additional protection in case of incident in hood. Never work with the sash raised higher than 18" – the sash stop level.
- Keep head out of hood except when installing and dismantling equipment.
- Work at least 6" into hood to optimize contaminant capture.
- Raise large lab equipment 1-2" from work surface to minimize air flow disruption.
- Keep hood free of clutter. Avoid blocking baffle exhaust slots in any manner. Objects in hood tend to increase turbulence and increase possibility of accidental fire and/or spill.
- Minimize movement in front of the hood. People walking in front of the hood create competing currents at hood face potentially causing hazardous gases or vapors to flow out of the hood.
- Use of a fume hood is not a substitute for required eye protection. Wear required eye protection at all times when in the laboratory.