Ventilation Basics
Good Design Versus Bad

Ventilation is a method of controlling the environment with air flow and is one of the most important engineering controls available for improving or maintaining the quality of the air in the work environment. Ventilation may be deficient in a number of situations: confined spaces, facilities failing to provide adequate maintenance of ventilation equipment, facilities operated to maximize energy conservation, windowless areas, and facilities with insufficient process control causing emission of contaminants into the workplace air.

VENTILATION SYSTEMS

Industrial ventilation generally involves the use of supply and exhaust ventilation to control emissions, exposures, and chemical hazards in the workplace. Industrial ventilation systems are either dilution or removal by general exhaust or local exhaust ventilation. Non-industrial ventilation systems commonly known as heating, ventilating, and air-conditioning (HVAC) systems are built for comfort and control of temperature, humidity, and odors and not control of industrial contaminants.

COMMON VENTILATION CONCERNS

Inadequate or improper HVAC ventilation is the cause of about half of all indoor air quality (IAQ) problems in non-industrial workplaces.

Dilution ventilation dilutes the concentration of an emitted contaminant to an acceptable level. The contaminant is usually a gas or vapor and the contaminant is of relatively low hazard.

Local exhaust ventilation captures emissions at their source and before the contaminant has a chance to disperse into the workplace air or enter the employees breathing-zone. The design of the hood is very important as the hood may have a tendency to interfere with the work being performed or may provide poor control of contaminants.

ESTABLISH A PREVENTATIVE MAINTENANCE PROGRAM

A preventative maintenance program of existing local exhaust ventilation will include performing visual inspection of hoods, duct, access and clean-out doors, blast gate positions, air cleaner components, fan housing, and pulley belts.

Additional checks may include a check for settled material in a duct by taking a broomstick and tapping the underside of horizontal ducts. If the tapping produces a "clean" sheet metal sound, the duct is clear. If the tapping produces heavy, thudding sounds and no sheet metal vibration, liquids or settled dust may be in the duct.

Preventative maintenance is critical to maintain efficiency of the ventilation system.