Variable Air Volume (VAV) Systems

Variable Air Volume (VAV) systems should be considered to:

- Reduce laboratory operating costs, including energy use, while providing adequate ventilation to protect workers; and
- Maintain a constant air velocity into the hood, regardless of sash height.

If a VAV supply system is not feasible, a local variable room exhaust bypass on the fume hood exhaust system can be installed to provide constant face velocity.

Campus EH&S organizations should develop specific policies regarding diversity, based on the unique characteristics and needs of the individual campus. Decisions concerning diversity shall be based on:

- Use patterns of hoods
- Type, size, and operating times of facility
- Quantity of hoods and researchers
- Sash management (sash habits of users)
- Requirements to maintain a minimum exhaust volume for each hood on the system
- Type of ventilation system
- Type of laboratory chemical hood controls
- Minimum and maximum ventilation rates for each laboratory
- Capacity of any existing equipment
- Expansion considerations
- Thermal loads
- Maintenance department’s ability to perform periodic maintenance

An alarm system shall be installed to warn users when the system is operating beyond the capabilities allowed by system diversity.

ANSI Z9.5 5.1.2
Pressure independent constant volume or variable volume air valves for supply and exhaust shall be provided for pressurization control and continuous air balance control. The air balance shall also be maintained during the night setback/unoccupied schedule.

UC Practice

The mechanism that controls the exhaust fan speed or damper position to regulate the hood exhaust volume shall be designed to ensure a minimum exhaust volume equal to the larger of 50 cfm/ft of hood width, or 25 cfm/ft2 of hood work surface area, except where a written hazard characterization indicates otherwise, or if the hood is not in use.

ANSI Z9.5 3.3.1

VAV hoods shall be provided with an emergency switch that allows the hood exhaust volume to go to a maximum flow velocity.

ANSI Z9.5 5.3.2.4