

University of California Berkeley
COLLEGE OF CHEMISTRY

PHYSICAL PLANT NOTICE #9

May 22, 1997

SAFE USE OF CHEMICAL FUME HOODS

As we add fume hoods in our buildings, it becomes more critical that we operate them in a safe and efficient manner. In some of the areas where we are adding hoods, the exhaust fans have been sized to, with some modification, accommodate added exhaust requirements. However, in Latimer the supply air that the building provides cannot be increased without major capital outlay. To most efficiently utilize the existing systems, we are installing variable volume air systems locally to each renovated laboratory as we do major renovations. This variable air volume (VAV) system puts a motorized damper on the supply duct as it enters the laboratory and on the fume hoods, thereby allowing the system to provide only the amount of supply air required to balance the amount of air exhausted through the hoods. Tan Hall was designed with a complete building-wide variable volume system that also slows down the supply and exhaust fan motors as demand decreases, resulting in energy savings.

To maximize the effectiveness of a VAV system and to allow an increase in fume hoods without an increase in supply air or major modification to those exhaust fans that are already max'ed out, we are dependent on what is called the "diversity factor". That is, it is assumed that a proportion of the hoods on a system will be closed and some will be open at any one time thus reducing the amount of supply or "make-up" air that is required and putting less demand on individual exhaust systems. It is **therefore very important that when you are not actually working inside your fume hood, you minimize the size of the sash opening. Additionally, whenever possible, please work with your lab mates in labs with multiple hoods to coordinate opening hoods to maximize safety.**

SINGLE OPERATION SASHES

These are the most prevalent hoods in our laboratories and have a non-movable frame in which 4-5 sashes slide left-to-right. If any sashes are missing or damaged, please immediately report this to the College Physical Plant staff (2-5231, donna@cchem or susan@cchem).

Missing sashes impede the efficiency of the fume hood and negatively impact the level of safety in your laboratory.

COMBINATION OPERATION SASHES

Fume hoods with sashes that operate vertically and horizontally can be found throughout Tan Hall as well as in the new renovations that are occurring in the College. These sashes have a frame that can be moved up and down as well as sashes within the frame that can be moved left-to-right. The diagram below illustrates the proper use of these hoods for various types of operations.

The VAV hoods have controllers on the front panel of the hood that give a read-out of the face velocity which should be at or around 100. If the alarm sounds, the red light is lit, or the reading is less than 90 or greater than 140, you can press the "mute" button to silence the alarm the contact the College Physical Plant unit at 2-5231.

Refer to the "Who Does It! Where To Find It! How To Do It Safely!" for more information on fume hoods and ventilation.

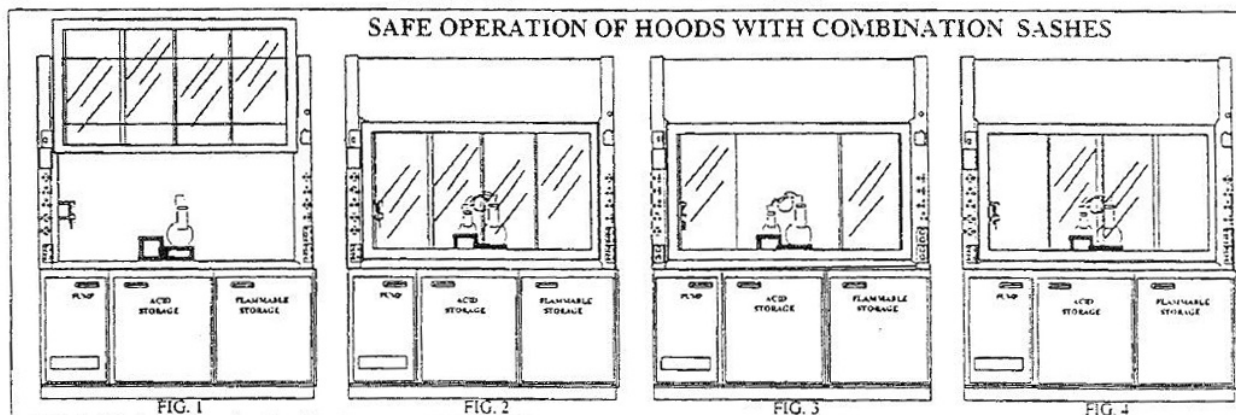


FIG. 1 Horizontal sash raised during equipment set-up.

FIG. 2 Horizontal sash lowered and vertical sashes closed during unattended operation. The hoods in Tan and the newly installed hoods in Latimer have openings under the air foil (front metal overhang that sits on the benchtop) to allow electric cords to pass through minimizing clutter and sash interference.

Because the fume hoods are also tied in to general room ventilation, if the room is not sufficiently negative to the corridor, it may be necessary to slightly open the vertical sashes on the far ends even when unattended. Consult with Building Manager if advice is needed.

FIG. 3 Horizontal sash lowered and vertical sashes open while working in the hood during normal day-to-day operations.

FIG. 4 Horizontal sash lowered and vertical sashes moved in front of experiment. This is recommended when working with potentially explosive compounds. Working around the vertical sashes can provide additional body protection for the researcher.