

RECOMMENDED CHEMICAL HOOD USE PROCEDURES

Laboratory chemical hoods are the primary containment devices in the laboratory to control airborne contaminants generated during experimental procedures. Although there are a wide variety of chemical hoods varying in design and purpose, all hoods should be able to withstand corrosion, be easily decontaminated, be suitable for use with flammable materials, and withstand the effects of a fire for a short period of time.

Chemical hoods provide personnel protection by means of directional airflow from the laboratory into the hood through the face opening. This airflow reduces the potential for escape of airborne contaminants into the laboratory. Procedures involving volatile chemicals and those involving solids or liquids that may result in the generation of toxic aerosols should be conducted in a hood rather than on the open bench. Placing a reacting chemical system within a hood, especially with the hood sash closed places a physical barrier between the workers in the laboratory and the chemical reaction. This barrier can afford laboratory workers protection from chemical splash, sprays, fires and minor explosions. Hoods should be evaluated before use to ensure adequate face velocities. Hoods are checked annually by the **Environmental Health and Safety Center (EHSC)** to determine the face velocity and smoke capture. The results are posted on the hood.

Although chemical hoods do protect laboratory personnel from exposures to hazardous materials, they must be used properly in order to maximize their effectiveness. The following practices should therefore be observed when using laboratory hoods:

1. Keep chemical hood exhaust fan on at all times. If the hood loses adequate exhaust ventilation:

- Stop heating and dispensing toxic and hazardous materials. Close the hood sash completely.
- Post a '**DO NOT USE**' sign prominently on your hood until adequate ventilation can be restored. If there is a sticker noting other hoods served by the same fan or fan system, you should also post signs on those hoods.
- Arrange an 'Urgent' maintenance / repair service call with the Facilities Operations Work Center at 515-2991 if you are not on the **College of Veterinary Medicine** campus and at 513-6332 for the **CVM** campus. If you are not familiar with placing requests for service, ask your Building Liaison / Safety Contact for assistance.

A simple test to determine this can easily be performed by holding a 2 to 3 inch long thin strip of tissue paper against the ventilation slot in the back of the hood. If there is not enough exhaust to deflect the tissue, the hood should be repaired. If the strip of tissue paper deflects but you still have doubts about the effectiveness of the hood capture, contact EHSC at Chemical_Hood_Program@ncsu.edu, 515-4190 or 513-1282.

2. Monitor the exhaust flow

Track relative changes in face velocity by following the procedure listed below:

1. Tape a strip of tissue long enough to deflect in the air stream entering the hood to the bottom of the sash
2. Monitor the deflection of the tissue to note relative changes in face velocity.
3. Contact EHSC when dramatic changes in face velocity are noted.

3. Keep hood work surfaces clear of unnecessary equipment and materials, which can disrupt airflow and block vents. Hoods are not to be used for storage of chemicals or chemical wastes. Chemicals placed in the hood should be located to the sides and not in the center. Consult "Common Corrective Action Items For Chemical Hoods" at http://www.ncsu.edu/ehs/hood/corrective_action_hoods.pdf

4. Minimize disruptive room air currents at the hood face by avoiding traffic near hoods and the opening and closing of doors near hoods while experiments are in progress.

5. Configure sashes and panels at the hood face for safety and optimum contaminant containment.

- Keep the sash as low as possible, preferably at 6 to 18 inches, when working in the hood and
- When using horizontal sliding panels, slide at least one to each side and work behind one in the middle of the hood face.

Close sashes and panels completely when not working directly in the hood.

6. Experiments should be planned so that, as much as possible, all of the materials needed for a procedure are present in the hood to eliminate disruption of airflow by carrying equipment in and out during a procedure.

7. Work should be carried out as far back in the hood as possible, with a minimum setback of 6 inches.

8. Perchloric acid hoods are only to be used for perchloric acid work only and are to be labeled as such.

9. Contact us at Chemical_Hood_Program@ncsu.edu to schedule a process hazard review before beginning a process that will evolve significant levels of corrosive vapor, such as acid digestion processes.