Guidelines for the Maintenance and Demolition of Fume Hood Ductwork and Exhaust Fans and Blowers

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The purpose of a chemical fume hood is to prevent hazardous air contaminants generated inside the fume hood cabinet from entering the breathing zone of the person handling the chemical and to prevent the chemical from entering the laboratory or from re-entering the building through the roof top exhaust stack.

There are several types of air contaminants produced by laboratory operations: dusts, fumes, mists, smoke, gases and vapors.

Fumes, gases and vapors are extremely fine particles, atoms and molecules which remain airborne and will not plate out on the interior of the ductwork or deposit in the bends of the ductwork. For these materials, the airflow scours the interior surfaces of the ductwork leaving no residue.

Dusts, smokes and mists are both small and large particles. The small particles will remain in the airstream and also be scoured from the inside of the ductwork leaving no residue.

Hence, the only possible contaminants of health concern are large particles of solid dusts or liquid mists that fall out of the air in the ductwork. Long runs of horizontal ductwork and right angle bends slow down the air and could contain accumulation of dusts. Note: The mists will evaporate as a result of the airflow leaving dust as a residue.

Removal and/or demolition of ductwork:

The only possible hazard is finding sections of duct with an accumulation of large dust particles. Tufts EHS should be called if accumulations of dust/grit are located in ductwork, elbows and blowers.
Recommendations:

1. All workers handling fume hood ductwork and blowers must wear tear resistant gloves whenever handling ductwork to prevent lacerations from sharp metal edges. These gloves will become contaminated with dust/grit materials if any are found and should be disposed of as solid waste daily.

2. Eye protection, safety glasses with side shields with face shields or goggles to prevent dust materials from falling into the eyes and mouth if found.

3. Removal methods.

Ductwork should be disassembled using snips, screwdrivers and other methods that do not create metal dust and possibly make large dust/grit airborne outside the ductwork.

Use of cutting torches is prohibited and powered sawzall blades should be avoided to prevent dust/grit materials from being spread into the air and into the face of the worker.

If sawzall or other spinning blades are used to cut the ductwork, a dust control system should be used.