

Fume Hood Safety Chemical Protective Clothing

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FUME HOOD



Types of hoods

■ Variable Air Volume

- Maintain constant velocity as the sash moves, but changes the volume of air
- Save energy

■ Standard or Bypass

- Volume of air changes as the sash moves, so velocity increases when sash is lowered
- Bypass hoods have additional vent on top which opens as sash is lowered

Types of hoods

- Auxillary air
- Ductless hoods
 - Filter contaminants and release air back in to room
- Clean hoods
 - Fill the work area with HEPA filtered air
- Biosafety cabinets
 - Removes microbes and spores
 - Should not be used for chemicals

Safety guidelines - 1

- Keep sash lowered
- Check manometer (on outer side of hood)
- Use airflow indicator – piece of crepe paper
- Work at least 6 inches inside hood
- Run hoses or cords under airfoil
 - So that sash can be closed

Safety guidelines-2

- Reduce clutter inside the hood
- Do not store large amount of chemicals
- Do not block airflow to rear baffles
 - Keep necessary reagent bottles elevated so that airflow is not obstructed
- Perchloric acid should only be used in special fume hoods
- Limit traffic near hoods when in use

Other considerations

- Additional shields (e.g. while using Parr reactors or potentially explosive chemicals)
- Run water in hood drains periodically
- In case of power outage, lower sash to within a couple of inches
- Close the sash when not using
 - Better for chemicals being stored
 - Enhances energy conservation

Chemical Protective Clothing



Chemical protective clothing

- Why do we need them?
 - Barrier against chemical hazards
 - Prevent over exposure
 - Prevent taking chemical contamination home
- Lab coats and gloves should be removed while not working in the lab

Chemical protective clothing

- Lab coats, aprons, boots, shoe covers
- Choose according to
 - Specific hazards and degree of protection required
 - Material of the clothing
 - Ability to perform lab work while wearing it
 - Proper size
 - Ease of removal in an emergency
- Should not be ripped or damaged

Chemical protective clothing: Gloves

- Prevent absorption of chemicals through skin
- Prevent cuts and abrasions from sharp objects
- Prevent chemical or thermal burns
- Protect against extreme temperature variations

Glove selection considerations

- Chemical resistance
 - Materials with highest breakthrough times and lowest penetration rates
- Durability
- Proper fit
- Comfort
- Cost

Types of Gloves

- Chemically resistant gloves
 - Natural rubber latex
 - Ketones, alcohols, caustics, organic acids
 - Neoprene
 - Also to mineral acids and petroleum solvents
 - Nitrile
 - Same as latex but stronger
 - Norfoil
 - For highly toxic and skin permeable chemicals
 - Polyvinyl chloride (PVC)
 - Mineral & organic acids, caustics, alcohols
 - Polyvinyl alcohol (PVA)
 - Chlorinated solvents, petroleum solvents and aromatics

Types of Gloves

- Fabric
 - Improve grip
 - Mild heat or cold
- Leather
 - Sparks; rough surfaces; sharps
- Cryogenic
 - Extreme cold
- Metal mesh
 - Cutting tools, sharp instruments

Chemical Protective Clothing: Shoes

- Proper footwear for chemical laboratories
 - Closed toed
 - Leather shoes offer more protection than cloth
 - Steel toed boots for heavy equipment
 - Shoe covers for clean labs