

Safety with flames and alcohol

A training document for the Judelson Lab

Flames are commonly used to sterilize materials, for example in laminar flow cabinets, biosafety cabinets, or lab benches. Often this involves the use of flammable liquids (alcohol) as well. Be aware of the hazards associated with such materials.

A. General information

1. Make sure that flames are not pointing towards any flammable items. These may include the HEPA filter, which is made of paper; the clear front and sides of many cabinets, which are made of a flammable plastic; paper towels; etc.
2. Before working with a flame, know where the safety equipment is (fire extinguisher, fire blanket, telephone, etc).
3. It is always a bad idea to use a flame on top of any paper (like bench-coat paper).
4. Never spray alcohol into a work area in which there is an open flame.
5. Evaporated ethanol can also be flammable when concentrated in the hood. Consequently, if you wipe or spray down a work area with ethanol, let it dissipate before turning on a flame.
6. Never leave a flame unattended.
7. If using a burner attached to a natural gas line, use a hose made from a robust material like butyl rubber. Do not use latex, since this can develop pinholes from which the gas can escape. Replace any hose that shows deterioration.

B. Flaming tools in alcohol

1. Fill the beaker with a minimum amount of alcohol required.
2. Only use a flameproof vessel (glass or metal, not plastic) to hold the alcohol, and a flameproof lid for the vessel.
3. Place items in the workplace to minimize the risk of fire:
 - arrange items so that flaming alcohol can not drip into the alcohol reservoir.
 - keep the flameproof lid far from the flame or alcohol, so that it can be reached easily in case of fire.
4. Hold flaming tools such that the flames or alcohol don't flow over your hand.
5. In case of fire:
 - Don't panic!
 - First make sure your body is safe.
 - If the fire is limited to the alcohol reservoir, cover it with the lid. The fire should go out in a few seconds.
 - If a small amount of flaming alcohol is on the work surface, it will normally burn out quickly without causing further damage.
 - If the HEPA filter is on fire, turn off the fan to the hood. Pull fire alarm. Use fire extinguisher (if feasible).
 - If you or your clothes are on fire, yell for help, wrap the affected area in a fire blanket (or lab coat or jacket), and/or fall to the ground and smother the flames. Do not run around as that will just make the fire worse. *If you see someone else on fire, tackle them to the ground and help smother the fire.*