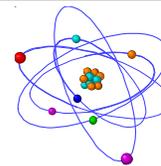




Laboratory Safety Fact Sheet # 8

Safe Use of Perchloric Acid



Due to its strong oxidizing and corrosive properties, perchloric acid is one of the most hazardous substances in the lab and has been associated with many accidents. Hazards include:

- When used above ambient temperature, and/or greater than 72% concentration, perchloric has an unusual hazard in that acid fumes can condense in fume hood ventilation systems to form metallic perchlorates that can be **explosive**. There have been accidents in which explosions from perchlorate-contaminated hoods have resulted in injuries and even death.
- Reacts violently with organic materials (e.g. wood, paper, solvents), particularly if heated, or in concentrations greater than 72%.
- Likewise, certain perchlorate salts of organic and heavy metal cations are explosive and can be set off by heat or shock. The ammonium, alkali metal and alkali earth perchlorates are somewhat more stable. Old synthetic preps calling for other cations should be seriously questioned.
- When concentrated (>72%, or anhydrous) the acid can be spontaneously explosive.
- The acid is very corrosive to skin, eye tissue and mucous membranes.

Controlling the Hazard:

- If possible, engineer out the use of perchloric acid if another material will suffice.
- Evaporations in fume hoods should **only** be done in a special perchloric acid “wash down” hood. These hoods do not allow the buildup of explosive perchlorate salts by keeping the acid in solution. Contact EH&S for further information on these hoods (x4899).
- All work should be done in a well-ventilated area separated from organic materials. All work with >85% perchloric should only be done after consultation with EH&S.
- Wear the proper protective gear - lab coat, splash goggles, rubber gloves, closed shoes, etc.
- Storage: place the acid container inside a secondary container, such as a plastic tub, that will capture the liquid if the bottle breaks or leaks. Store in a separate, labeled (“Oxidizers”) lab area (i.e. cupboard) fully away from organic materials. Don’t store on wooden shelves, or with paper shelf liners.

Accidents

- For skin or eye exposure, immediately wash with water for at least 15 minutes. Seek medical attention for serious exposures. Know the location of nearest emergency shower and eyewash.
- If the material is spilled, isolate the spill from any organic materials. Dilute with water to ~ 5% if possible. Absorb the spill with vermiculite - organic absorbents (e.g., paper) **must not** be used. Contact EH&S at x-3194 if you are not equipped to safely deal with the cleanup.

Disposal

Package and properly label waste per normal waste procedures (x-3293). Complete and submit *Waste Pickup Request Form* - available for electronic submission at <http://ehs.ucsb.edu>