

## SAFE USE OF PERCHLORIC ACID

### SafetyNet #18

Perchloric acid is a strong inorganic acid used for complete digestions of organic material. It is normally supplied in bottles of up to one-gallon capacity at 70-72% strength. In many respects, its hazards are similar to those of nitric acid, as both are strong oxidizers. Perchloric acid presents an additional hazard in that perchloric acid mists and fumes can condense in ventilation systems to form metallic perchlorates that can be explosive.

Researchers using or anticipating using perchloric acid in their experiments should keep the following in mind:

- Perchloric acid digestions of any size must only be performed in a fume hood. No open benchtop digestions should be performed.
- All perchloric acid digestions performed above ambient temperature (hot digestions) require a special perchloric acid hood with a wash down system. These hoods used for hot digestion must be posted with a label stating "Perchloric Acid Hood Only. Organic Chemicals Prohibited." Labels are available from EH&S.
- Regardless of the size of the digestion, no organic solvents are to be in the hood during the digestion. Solvents must never be stored or used in a designated perchloric acid hood at any time.
- When diluting perchloric (or any other) acid, always **add acid to water**, not the reverse.
- Perchloric acid will digest human tissues as readily as it will digest samples of organic material. To prevent injury, goggles or face shield, gloves and apron should be worn when handling perchloric acid.
- Because of the potential for explosion, no repair or maintenance should be done on a hood used for perchloric acid digestions until it has been thoroughly washed.
- Perchloric acid waste must not be mixed with any other waste. It should be put into acid-resistant bottles (preferably the original acid container), clearly labeled and treated as hazardous chemical waste. See SafetyNet #8, "Guidelines for Disposal of Chemical Waste" for more information.
- When stored, Perchloric acid should be segregated from all other chemicals. If this is not possible, it may be stored in the same cabinet with other inorganic acids such as hydrochloric, sulfuric or nitric acid, provided the container of perchloric acid is kept in appropriate secondary containment (such as a Pyrex baking dish or plastic dish pan) capable of collecting any spilled material. Perchloric acid may **not** be stored near organic acids (e.g., acetic acid), near bases or near any other organic or flammable material.
- In the event of a spill contact UC Davis Fire Department at 911.

If you have any questions about safe use and handling of perchloric acid, or wish to have a fume hood approved for use with perchloric acid, please contact your EH&S Safety Advisor, EH&S at 530-752-1493 or [ehsdesk@ucdavis.edu](mailto:ehsdesk@ucdavis.edu).

