

Corrosives

Last Updated: September 2022

Corrosives are materials that cause injury to exposed tissues. They are available as solids, pure liquids, solutions, or gases. Strong corrosive solutions typically have a pH <2.5 (acids) or >11 (bases) and include inorganic or organic substances dissolved in water. Corrosives cause damage either through the generation of hydronium (H_3O^+) or hydroxide (OH^-) ions in solution, reaction with skin and eye moisture to generate these same ions, or by damaging cell membranes through lipophilic action (e.g. certain detergents). All corrosives can cause serious eye damage or skin burns in the event of an exposure.



Chemicals covered by this SOP may have additional hazardous properties (such as flammability toxicity, or oxidizing properties).

Personal Protective Equipment & Personnel Monitoring



Lab Coat

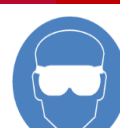
Traditional white lab coat; A chemical-resistant apron should be worn over lab coat when working with large volumes.



Gloves

Nitrile or neoprene gloves. Consult glove selection chart for heavy handling of corrosives.

Do not wear latex gloves.



Eye Protection

ANSI Z87.1-compliant safety glasses or safety goggles, or face shield if a splash hazard is present.



Face Shield

Labeling & Storage

Store upright & tightly closed in a dry and well-ventilated place. Keep away from incompatible materials (e.g. segregate acids and bases). Consult the safety data sheet for additional storage compatibility information. Always store liquid acids and bases in chemically-resistant secondary containers (e.g. polypropylene trays or tubs). Containers holding corrosives must be stored below eye level. Under most circumstances, it is not recommended to store strong corrosives in metal cabinets, particularly if they are not ventilated (e.g. flammables cabinets). Over time such storage will corrode these cabinets due to vapor buildup and inadvertent leaks. The best location for these items is a dedicated corrosives cabinet, preferably under a fume hood, where the cabinet can be easily ventilated.

Additionally, organic acids must be segregated from inorganic acids and oxidizing acids must be segregated as well. Many organic acids are flammable and thus incompatible with oxidizing acids and other non-oxidizing mineral acids. Likewise, oxidizing acids (e.g., nitric and perchloric) are incompatible with any combustible materials including many organic acids. For more information on storage



requirements and guidance, it is always prudent to read sections 7 and 10 of the material's Safety Data Sheet.

Engineering Controls, Equipment, & Materials

Fume Hood

Use a fume hood to keep exposure to corrosives as low as possible. If the use of a fume hood is impossible or impractical, please contact the Office of Research Safety (ORS) to determine whether additional respiratory protection is required.

Cautions & Considerations

Hot Digestions

Hot acid digestions using perchloric acid must be done in a specialized fume hood with wash down capabilities. Performing these digestions in a general purpose fume hood can create shock sensitive metal perchlorates in the ductwork, creating an explosion hazard.

Housekeeping

Spills

Keep acid and/or base neutralizer (e.g. sodium bicarbonate and/or citric acid) in your spill kit. Notify others in the area of the spill, including your supervisor. For some oxidizing acids, it is recommended to avoid neutralization and to instead simply absorb the spill with an inert material. Laboratory personnel should refer to the Spill Control Guidelines document for additional information.

Decontamination

Absorb any corrosive chemicals with absorbent material from the lab's spill kit and dispose of contaminated absorbent material as hazardous waste.

Waste

Any waste from this chemical class should be disposed of through the UGA Hazardous Waste Program. For assistance with arranging a waste pickup, you may contact the Environmental Safety Division (ESD) at 706- 542-5801. Prior to pickup, any container used to hold hazardous waste should be labeled with the following:

- "Hazardous Waste"
- Chemical contents: Enough detail should be provided so that the full contents of the container are readily apparent. Labeling may include any of the following:
 - Percentages (Ex: 70% water, 30% hydrochloric acid)
 - Volumes (Ex: 1L of acetone, 500mL of water)



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- Chemical classes (Ex: halogenated solvents)
 - Method (Ex: EPA 515.1 Herbicide Extraction Solvent Waste)
 - Referenced Log (Ex: See Laboratory Waste Log, Volume 2)
 - Utilizing Chematix waste profiles
 - Any other labeling method providing enough detail to accomplish this requirement
- One or more of the following waste characteristics recognized by EPA: Ignitable, Corrosive, Reactive, or Toxic.
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First Aid & Emergencies

Fire	Use a dry chemical or CO2 extinguisher (ABC or BC) to put out a small fire.
Skin or Eye Contact	Remove contaminated clothing and accessories; flush affected area with a large volume of water. Get medical attention.
Inhalation	Move the affected person to an area with fresh air. Get medical attention.
Ingestion	Rinse mouth repeatedly with water. Get medical attention.

References

Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards, National Research Council, 2011

UC Center for Laboratory Safety

Contacts

Office of Research Safety: 706-542-5288
Environmental Safety Division: 706-542-5801