

Corrosive Chemicals Standard Operating Procedure

Revision: August 4, 2026

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This standard operating procedure (SOP) outlines the handling and use of corrosive chemicals. Review this document and supply the information required in order to make it specific to your laboratory. In accordance with this document, laboratories should use appropriate controls, personal protective equipment, and disposal techniques when handling corrosive chemicals. All laboratory workers must read and understand the [Laboratory Emergencies SOP](#) prior to commencing any work in a laboratory.

Description [Provide additional information as it pertains to your research protocol]

Corrosive chemicals will damage substances that they make contact with, and they are immediately dangerous to living tissue.

Most corrosive chemicals are acids and bases; however, other chemicals can be corrosive as well. Always check chemical product information. Some common corrosive acids include hydrochloric acid, sulfuric acid, and nitric acid. Examples of corrosive bases are ammonium hydroxide, potassium hydroxide, and sodium hydroxide.

Process [Write the steps for using the chemical in your research protocol]

Potential Hazards [Provide additional information as it pertains to your research protocol]

Corrosive chemicals can cause destruction of living tissue by chemical action at the site of contact and can be solids, liquids, or gases. Corrosive effects not only can occur on the skin and eyes, but also in the respiratory tract and, in the case of ingestion, in the gastrointestinal tract as well. While acids and bases are familiar corrosives, many other materials are corrosive to the body as well (including [bleach](#) and [phenol](#)).

Review the Safety Data Sheet (SDS) of the material to determine if it is corrosive and to identify other hazards. If the material also has other physical hazards or health hazards, follow the appropriate SOP as well.

Refer to SOP templates for [hydrofluoric acid](#), [perchloric acid](#), [phenol](#), and [bleach](#).

Acutely toxic and reactive acids meeting the MIOSHA definition of a Particularly Hazardous Substance (see below) require [customized SOPs](#) with laboratory director approval that incorporate their toxic and/or reactive hazards.

Notes

The University of Michigan's [Chemical Hygiene Plan](#) requires specific measures to take in order to ensure

laboratory employee protection, including provisions for additional employee protection for work with Particularly Hazardous Substances. These include "select carcinogens," reproductive toxins, and substances which have a [high degree of acute toxicity](#), e.g., hydrogen cyanide, hydrogen sulfide, and nitrogen dioxide.

Specific consideration shall be given to the following provisions which shall be included where appropriate for each **Particularly Hazardous Substance**:

- A. Establishment of a designated area;
- B. Use of containment devices such as fume hoods or glove boxes;
- C. Procedures for safe removal of contaminated waste; and
- D. Decontamination procedures.

Environment, Health & Safety (EHS) can assist researchers by providing additional information on working with Particularly Hazardous Substances. General guidelines and recommendations for the safe handling, use and control of hazardous chemicals and particularly hazardous substances can be found in a chemical's [SDS](#) and in other [chemical hazard references](#).

Contact EHS for assistance in performing an exposure assessment.

Engineering Controls [Provide additional information as it pertains to your research protocol]

Where the eyes or body of any person may be exposed to corrosive chemicals, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use. *Bottle type eyewash stations are not acceptable.*

A safety or drench shower should be available in a nearby location where the corrosive material is used.

Depending on the material's pH or based on its ability to cause severe tissue damage, e.g., formaldehyde, methylene chloride, methyl ethyl ketone peroxide (MEKP), phenol, etc., the location of the emergency shower and/or emergency eyewash shall be within 10 seconds (approximately 55 feet) of the hazard.

Manipulation of some corrosive materials outside of a fume hood may require special ventilation controls in order to minimize exposure to the material. Fume hoods provide the best protection against exposure to corrosive materials in the laboratory and are the preferred ventilation control device.

Safety shielding is required any time there is a risk of explosion, large splash hazard, or a highly exothermic reaction. All manipulations of corrosive materials which pose this risk should occur in a fume hood with the sash in the lowest feasible position. Portable shields, which provide protection to all laboratory occupants, are acceptable.

Work Practice Controls [Provide additional information as it pertains to your research protocol]

Segregate the various types of corrosives—separate acids and bases. Liquids and solids should also be separated. Specially designed corrosion-resistant cabinets should be used for the storage of large quantities of corrosive materials. Store corrosives on plastic trays. Do not store corrosive materials on high cabinets or shelves.

Nitric acid should be stored in secondary containment in a well-ventilated area that is separated from organics and other combustible materials and incompatibles. Also refer to the SOP for hydrofluoric acid, nitric acid, picric acid, and sulfuric acid.

Containers: All corrosive chemicals must be clearly labeled with the correct chemical name. Handwritten labels are acceptable; chemical formulas and structural formulas are not acceptable.

Notes

Employers may choose to label secondary, portable, or in-house workplace containers with label alternatives that meet the requirements for the new Hazard Communication Standard (HCS). Alternative labeling systems such as the National Fire Protection Association (NFPA) and the Hazardous Material Information System (HMIS) are permitted for workplace containers. However, the information supplied on these labels must be consistent with the revised HCS, e.g., ***no hazard warnings or pictograms that conflict with GHS.***

Personal Protective Equipment [Provide additional information as it pertains to your research protocol]

Eye protection in the form of safety goggles must be worn at all times when handling corrosive materials. Ordinary (street) prescription glasses do not provide adequate protection. (Contrary to popular opinion, these glasses cannot pass the rigorous test for industrial safety glasses.) Safety glasses with side shields do not provide adequate protection from splashes. It is recommended that face shields be worn along with eye protection when a splash potential exists with corrosive materials.

Gloves must be worn when handling corrosive chemicals. Below are some glove material recommendations for some common acids.

Acids and their Recommended Glove Materials¹

- Acetic Acid
 - Butyl (Unsupported)
 - Latex (Unsupported Natural Rubber)
 - Neoprene
 - Nitrile (Unsupported)
 - Polyvinyl Chloride (PVC)
- Hydrochloric Acid
 - Butyl
 - Neoprene
 - Nitrile
 - Polyvinyl Chloride (PVC)
- Nitric Acid
 - Butyl
 - Natural Rubber
 - Neoprene
- Phosphoric Acid
 - Natural Rubber
 - Neoprene
 - Nitrile
 - Polyvinyl Chloride (PVC)
- Sulfuric Acid
 - Butyl
 - Neoprene
 - Polyethylene
 - Polyvinyl Chloride (PVC)

¹The recommendations above are based on typical laboratory concentrations and uses. Refer to the SDS for the specific chemical(s) as well as [Glove Compatibility Charts](#) for each particular concentration of acid for additional recommendations, especially for unusual concentrations or use of a particular acid.

Lab workers should contact EHS for advice on chemical-resistant glove selection when direct or prolonged contact with hazardous chemicals is anticipated. The EHS [Glove Compatibility](#) webpage can also be used to

determine the recommended gloves.

Lab coats, long pants, closed-toed shoes, and long-sleeved clothing must be worn when handling corrosive materials. Additional protective clothing should be worn if the possibility of skin contact is likely.

Transportation and Storage [Provide additional information as it pertains to your research protocol]

- Transport corrosives in secondary containment, preferably a polyethylene or other non-reactive acid/solvent bottle carrier.
- Store in well-ventilated areas with secondary containment, such as a non-reactive plastic bin.
- Store below eye level.
- Store away from metal (unless the metal has a corrosion-proof coating), and do not store under the sink.
- Store away from incompatibles – many corrosive materials are incompatible with each other – oxidizing acids are incompatible with organic acids, and acids are incompatible with bases. Review the chemical's Safety Data Sheet (SDS) for additional incompatibility information.
- Avoid storing on the floor. If storing on the floor is necessary, use secondary containment.

Waste Disposal [Provide additional information as it pertains to your research protocol]

Most spent, unused, and expired corrosive materials are considered hazardous wastes and **must be collected and disposed of within 90-days** by EHS's Hazardous Materials Management (EHS-HMM) Group. Contact EHS-HMM at (734) 763-4568 for waste containers, labels, manifests, waste collection, and for any questions regarding proper waste disposal. Also, refer to the EHS [Hazardous Waste](#) Web page for more information.

Training of Personnel

All personnel shall read and fully adhere to this SOP when handling corrosive chemicals.

References

- ["Evaluating Hazards and Assessing Risks in the Laboratory." National Research Council. 1995. Prudent Practices in the Laboratory: Handling and Disposal of Chemicals. Washington, DC: The National Academies Press. doi: 10.17226/4911.](#)

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Revision History (Do not print as part of SOP)

08/04/2026	Annual Revision	Reviewed and updated. (RSH)
5/11/2022	Partial Revision	Updated safety shower and eyewash placement requirements consistent with current MIOSHA Agency Instruction. Reviewed and updated links. Removed emergency response section. (LGS)
03/04/2019	Annual Revision	Reviewed and updated.
09/14/2018	Partial Revision	EHS name and logo were added, updated the formatting, and revised the content under Exposure/Unintended Content (AKJ).