

CORROSIVE STORAGE CABINETS

Consult the *Ontario Occupational Health and Safety Act* and its regulations for additional information on the duties of workplace parties.

The storage and use of corrosive materials presents an elevated hazard for workplaces. Corrosive materials may be safely handled and stored provided that the proper hazard controls are implemented. The information contained within this document is derived from the *Ontario Occupational Health and Safety Act*, *NFPA 45 (Standard on Fire Protection for Laboratories Using Chemicals)* and *NFPA 400 (Hazardous Materials Code)*. Additional information is available from the [Health, Safety and Risk Manager](#) and/or the [Office of Risk Management](#).

A corrosive material chemically destroys exposed body tissues and can damage and destroy metal materials. A corrosive material begins to inflict damage upon contact with exposed skin (including mucous membranes). A corrosive material may also have other toxic properties, while taking many forms, including as a solid, liquid or gas; this document focuses primarily on liquids. Examples of corrosive liquids may include bromine, sulfuric acid, aqueous sodium hydroxide, hydrogen peroxide, etc. Corrosive liquids accelerate the speed at which health effects are observed and can produce burns at the point of contact.

Cabinet Construction and Identification

Corrosive storage cabinets are used to serve as a means of containment for corrosive liquids within a laboratory (or other) space and may be of varying size. Corrosive storage cabinets will:

- Be constructed of suitable material with the interior of the cabinet treated, coated or constructed of materials that are non-reactive with the hazardous material being stored therein.
- Be double-walled (including the door of the cabinet) with a 38.1 mm airspace between the walls.
- Have riveted or welded tightfitting joints.
- Have well-fitted door latch device.
- Have the bottom of the cabinet utilized for storage liquid-tight to a height of 50 mm (2 inches).
- Have conspicuous lettering on the exterior stating "Corrosive Materials", "Acid Cabinet" or similar hazard wording. A corrosive pictogram may also be included on the exterior of the cabinet.

All containers stored within the cabinet require appropriate labeling in accordance with WHMIS legislation and workplace practices (i.e. logged in the uOttawa chemical inventory and barcoded). Under no circumstances are corrosive materials to be stored under sinks or near sources of water as vapours of volatile corrosive materials may cause corrosion of plumbing fixtures. Additionally, some corrosive materials are water reactive and can therefore cause further hazards. It is the responsibility of each supervisor to ensure that corrosive materials are properly stored in accordance with their hazard class. Refer to the [Laboratory Safety Manual](#) for additional information. If assistance is required in determining requirements, please consult the Health, Safety and Risk Manager.

Place containers of corrosive materials in secondary containment large enough to contain spilled materials. Depending on the properties of the materials, it may be possible that they can be stored within the same cabinet; however if incompatibilities exist, separate cabinets may be required.

Ventilation

Corrosive storage cabinets are generally equipped with ventilation fittings. It is generally recommended not to vent freestanding cabinets unless required based on the material stored within (e.g., toxic materials).

Corrosive cabinets can be included as part of a new fume hood installation with the storage location located underneath the fume hood. The cabinet must be vented outdoors and be equipped with an intrinsically safe-rated fan, to guard against potentially flammable corrosive materials. As a result, the ducting for the cabinet must be of suitable design and be suitably exhausted (e.g. conforming to NFPA 91).

Storage Considerations

Not all corrosive materials are compatible. For example, sodium hypochlorite and ammonia are both corrosive materials; however, their mixture can result in the generation of chlorine gas. Common incompatibilities include

- Acids and bases.
- Flammables and oxidizers.
- Water reactive substances and aqueous solutions.
- Inorganic oxidizing (i.e. nitric) and organic acids.

When storing materials, attempt to segregate or separate incompatible materials. This will reduce the risk of their interaction in the event of accidental breakage, fire, a seismic event or other laboratory emergency. Even tightly-closed containers can permit fugitive vapours to escape, which can contribute to a reaction of incompatibly stored hazardous materials. This can create hazardous conditions or accelerate the degradation of labels, shelves, cabinets and the containers themselves. It is therefore critical that storage requirements be based on need and risk according to the particular circumstances.

Decanting is not a recommended practice as the original container was selected to contain the material; however, if decanting is necessary, use the same type of container as recommended by the manufacturer.

Storing Corrosive Materials

- Containers must be kept closed at all times other than when transferring the material to another container.
- Corrosive materials not in use are to be properly stored.
- Storage areas must be cool, dry and away from sources of ignition (heat, flame, welding operations, etc.).

- Materials must be properly segregated according to hazard class; non-compatible materials must not be stored together.
- If materials require refrigeration, they must be stored in an approved refrigerator.
- Cabinets must not obstruct egress routes or access to emergency equipment.
- Keep storage locations away from drains.
- Store corrosive materials as low to ground level as possible.
- Observe the condition of the container, particularly oxidizing acids, for signs of deposits, discolourations, and crystallization. If noted, contact the Health, Safety and Risk Manager immediately.

General Corrosive Material Use Requirements

- Always purchase and store the smallest quantity of material necessary for the work.
- Provide secondary containment for liquid containers. Anticipate and prepare for potential spills that may occur. Develop, implement and practice spill response procedures for corrosive materials.
- Ensure the area is equipped with suitable fire extinguishing media.
- Consult the product SDS for additional information on the product.
- Transport corrosive liquids within buildings (i.e. lab-to-lab) using approved containers and secondary containment.
- Special precautions apply to the use of hydrofluoric acid (HF). Additional training and emergency procedures are required. Consult the Health, Safety and Risk Manager prior to initial use.
- Wear appropriate personal protective equipment, including proper gloves, protective eyewear (i.e. chemical splash goggles) and protective clothing (i.e. lab coat).

Additional Resources

- NFPA 45 – Standard on Fire Protection for Laboratories Using Chemicals
- NFPA 91 – Standard for Exhaust Systems for Air Conveying of Vapours, Gases, Mists and Particulate Solids
- NFPA 400 – Hazardous Materials Code

For additional information on corrosive storage cabinets, please contact your [Health, Safety and Risk Manager](#), or the [Office of Risk Management](#).