

Chemical Storage and Compatibility

Introduction

One of the most important aspects of chemical safety is proper storage of hazardous chemicals, especially properly segregating incompatible chemicals to ensure that dangerous chemical reactions do not occur. These reactions may include ignition, explosion, pressure buildup, or creation of hazardous byproducts. This document is intended to summarize a few of the most important regulations and guidelines that apply to proper chemical storage.

Please note that this Fact Sheet **ONLY** covers storage and compatibility. For guidance for safe use and handling, please refer to the material's Safety Data Sheet (SDS) and the hazard-specific SOP templates.

General chemical storage rules

- Read and comply with all storage rules found on the chemical's label and SDS.
- Chemicals must be segregated by hazard class before any other organization method (i.e. store by hazard class then alphabetically).
- Avoid storing chemicals where they are likely to be bumped into, spilled, or tipped over.
- In general, chemical containers must always be closed to prevent accidental spillage.
- Make sure all chemicals are properly labeled with the **name AND hazards**. See the [Container Labeling Guidance Document](#) for acceptable labeling methods.
- Do not store chemicals where they may be exposed to open flame, spark-producing work, or intense heat.
- Do not store hazardous liquids above eye level. Storing glass containers and heavy materials on lower shelves is also recommended.
- Avoid keeping excessive quantities of chemicals on hand, especially flammables. [Discard unused chemicals](#) by contacting the [UHS Regulated Waste Division](#). Contact UHS for more information about chemical load limits.



Figure 1: Storage bins used to segregate different hazard classes

Special considerations for corrosives

- Corrosive liquids should be stored in corrosion-resistant cabinets, ideally with ventilation (e.g. under a fume hood).
- Dilute solutions of corrosives may be stored on the benchtop but must be in a properly sealed container and must be moved to a ventilated area if corrosion on shelves/surrounding building structures is observed.
- Acids must be in separate secondary containment trays from bases and inorganic acids must further separated from organic acids (e.g. nitric acid and acetic acid).

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Special considerations for flammables

- Use only approved containers for flammable liquids (e.g. solvent kegs, flame arresting cans, original glass bottles, etc.).
- Flammable solvents **MUST** be stored in an approved flammables cabinet unless they are stored in a flame arresting can or are in quantities under one liter (e.g. squirt bottle).

Special considerations for oxidizers

- Oxidizers must be isolated from all flammable or combustible material and cannot be stored in a flammables storage cabinet if flammables are also stored there.

Special considerations for pesticides

- Pesticides in their original containers must have an available product label.
- Triple rinse tanks and sprayers before storage and tag them with your name and the date they were rinsed.



Figure 2: Rinsed pesticide tanks in storage

Special considerations for compressed gases

- Compressed gas cylinders must be secured in an upright position at all times. Note that lecture bottles and round-bottom cylinders are not required to be stored upright, but they must be stored in a secure location (i.e., where they won't fall off a shelf or roll off a table).
- A valve protection cap must be in place when the cylinder is not in use or connected for use.
- Gas cylinder storage must be segregated from the storage of other chemicals and incompatible classes of gases should be further segregated (e.g. oxidizing and flammable gasses).
- Never store gas cylinders in the same cabinet as corrosive materials, even if the gas is corrosive itself.
- A "highly ventilated enclosure" is required for storing gases which are highly toxic or pyrophoric. See UMN Chemical Hygiene Plan [Chapter 7.6 Compressed Gas Safety](#) for additional details about gas cabinets.

Resources

If you have questions on this topic, please contact your [Lab and Research Safety](#) or [Workplace Safety Professional](#).

[UMN Chemical Hygiene Plan Chapter 7: Chemical Management](#)

[Hazard Class SOP Templates](#)

[CAMEO Chemicals—Determine hazards if chemicals are mixed \(Reactivity\)](#)