

# BGSU's Guide to Chemical Storage

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Environmental Health & Safety  
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## Chemical Storage Guidelines

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### General Guidelines

- Store dry chemicals on shelves.
- Store flammables together. Use approved flammable storage cabinets. If possible, they should be ventilated.
- Flammable storage cabinets are only to be used to store only flammable materials or only combustible materials; NOT both.
- Store acids and bases in separate chemical resistant cabinets.

Exception: Nitric acid, when combined with acetic acid on a tile/concrete floor, will sometimes create a fire. Therefore Nitric acid must not be stored with acetic acid.

- Oxidizers and toxic substances should be stored near a hood.
- Store general cleaning materials under the sink.
- Non-hazardous materials should never be stored in any flammable or chemical resistant cabinets.



Figure 1: An example of a flammable storage cabinet

## Flinn Scientific Suggested Chemical Storage Pattern

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Storage of laboratory chemicals presents an ongoing safety hazard. There are many chemicals that are incompatible with each other. The common method of storing these products in alphabetical order sometimes results in incompatible neighbors. For example, storing strong oxidizing materials next to organic chemicals can present a hazard.

A possible solution is to separate chemicals into their organic and inorganic families and then to further divide the materials into related and compatible families. Below is a list of compatible families.

Inorganic	Organic
1. Metals, Hydrides	1. Acids, Amino Acids, Anhydrides, Peracides
2. Acetates, Halides, Iodides, Sulfates, Sulfites, Thiosulfates, Phosphates, Halogens	2. Alcohols, Glycols, Sugars, Amines, Amides, Imines, Imides
3. Amides, Nitrates (except Ammonium Nitrate) Nitrites, Azides	3. Hydrocarbons, Esters, Aldehydes, Oils
4. Hydroxides, Oxides, Silicates, Carbonates, Carbon	4. Ethers, Ketones, Ketenes, Halogenated Hydrocarbons, Ethylene Oxide
5. Sulfides, Selenides, Phosphides	5. Epoxy Compounds, Isocyanates
6. Chlorates, Bromates, Iodates, Chlorites, Hypochlorites, Perchlorates, Perchloric Acid, Peroxides, Hydrogen Peroxide	6. Peroxides, Hydroperoxides, Azides
7. Arsenates, Cyanides, Cyanates	7. Sulfides, Polysulfides, Sulfoxides, Nitriles
8. Borates, Chromates, Manganates, Permanganates	8. Phenols, Cresols
9. Acids (except Nitric Acid. Store Nitric Acid on an isolated shelf by itself)	9. Dyes, Stains, Indicators
10. Sulfur, Phosphorus, Arsenic, Phosphorus Pentoxide	

**Note:** Volatile materials (ether, hydrocarbons, etc.) must be stored in an explosion-proof refrigerator. The thermostat switch or light switch in a standard refrigerator may spark and set off the volatile fume inside and thus cause an explosion.

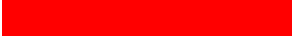




This list is not a complete list and is intended only to cover the materials possibly found in an average laboratory setting. This is not the only method of arranging these materials and is purely offered as a suggestion.

## Fisher Scientific Suggested Storage Pattern

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A color-coded bar on the label of every Fisher chemical provides an instant guide to storage. The storage code color is also denoted by its initial, and spelled out for additional clarification. The five storage colors and their descriptions are as follows:

	<b>Flammable.</b> Store in area segregated for flammable reagents. RED (R)
	<b>Health Hazard.</b> Toxic if inhaled, ingested, or absorbed through Skin. Store in secure area. BLUE (B)
	<b>Reactive and Oxidizing Reagents.</b> May react violently with air, water, or other substances. Store away from flammable and combustible materials YELLOW (Y)
	<b>Corrosive.</b> May harm skin, eyes, mucous membranes. Store away from red-, yellow-, and blue-colored reagents above. WHITE (W)
	Presents no more than moderate hazard in any of categories above. For general chemical storage.  <b>Exception.</b> Denoted by the word “STOP.” Reagents Incompatible with other reagents of the same color bar. Store separately.

## Other Visual Indicators

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If a chemical does not have the visual indicators like the Fisher Scientific ChemAlert Storage Codes, you may be able to classify the hazard by identifying the Globally Harmonized System (GHS) pictograms on the label.



Figure 2: GHS Pictograms that should be found on primary container label