



# CHEMICAL STORAGE

## GUIDELINES



The following hazard class hierarchy (based on DOT) is provided as a guide for prioritizing which hazard classes pose the greatest risks, (e.g., flammability is usually a more important consideration than toxicity).






Inhalation Hazards - Explosives - Pyrophorics & Water Reactives - Flammable or Combustible Liquids, Solids, Gases - Corrosive Acids & Bases - Oxidizers - Toxics

- ✦ Inhalation Hazards – e.g. Bromine, Phosgene etc.  
Should be stored in a ventilated cabinet or a fume hood with only other compatible materials.
- ✦ Unstable Explosives – e.g. Dry Picric Acid, Mercury Fulminate, Trinitrobenzene (<30% water by mass) etc.  
Should not be stored in the lab. Contact EH&S ([www.ehs.wustl.edu](http://www.ehs.wustl.edu) or 314-362-6816) to dispose of. Stabilized materials such as Wetted Picric Acid should be stored appropriately (see MSDS or container label).
- ✦ (Reactive) Pyrophoric or Water-Reactive – e.g. Phosphorus (white), Activated Zinc, Iron Pentacarbonyl, Aluminum Powder / Aluminum Carbide, Aluminum Hydride, Sodium Borohydride etc.  
Should be stored together sealed against moisture or air, away from aqueous solutions, water, and alcohols.
- ✦ Flammable & Combustible Liquids, Solids, and Gases – e.g. Ethyl Acetate, Acetone, Ethyl Alcohol, Toluene / Paraformaldehyde, Naphthalene / Acetylene, Aerosols etc. (CAUTION, Be careful many Flammable Solids are also Reactives)  
All should be stored in the flammable cabinet when not in use.
- ✦ Peroxide-Forming Materials – e.g. Ethers (e.g., Ethyl, Methyl, Isopropyl), Dioxane, Tetrahydrofuran etc.  
Peroxide-Forming Materials should be dated when opened and disposed of through EH&S within one year from the date of opening or by the manufacturer's expiration date whichever occurs first.  
They can be stored in the flammable cabinet with the other flammables & combustibles.
- ✦ Corrosive / Inorganic Acids – Hydrochloric, Perchloric, Sulfuric, Phosphoric, Nitric, Hydrofluoric.  
Inorganic Acids should be stored in a designated corrosives cabinet, Perchloric, Sulfuric, & Nitric should be stored each in its own secondary containment.
- ✦ Corrosive / Organic Acids – e.g. Acetic, Formic, Propionic etc.  
Should be stored in the corrosives cabinet segregated from oxidizing (Perchloric, Sulfuric, Nitric) acids by secondary containment.
- ✦ Corrosive / Bases (Liquids & Solids) – e.g. Sodium Hydroxide, Potassium Hydroxide, Ammonium Hydroxide etc.  
Bases should be stored in a designated corrosives cabinet, Bases may be stored with the Acids, however they must be separated from the Acids by utilizing secondary containment.
- ✦ Oxidizers – e.g. Permanganates, Perchlorates, Chlorates, Chlorites, Nitrates, Nitrites etc.  
Should be stored separate from all Flammable, Combustible, and Organic Compounds.
- ✦ Organic Peroxides – e.g. Benzoyl Peroxide etc.  
Should be stored away from flammables and combustibles. (Be aware that some Organic Peroxides are temperature sensitive)
- ✦ Highly Toxic / Toxic (Solids) – e.g. Teratogens, Carcinogens, Reproductive Hazards etc.  
Can be stored in general chemical storage, segregated from incompatibles. Ideally they would be stored separately from other chemicals and easily identifiable within the lab.
- ✦ Highly Toxic / Toxic (Liquids) – e.g. Formaldehyde, Chloroform, Cyanide & other Inorganic Solutions & Compounds etc.  
The organic solvents and solutions (Formaldehyde, Chloroform) should be stored in a flammable cabinet. Inorganic solutions & compounds should be stored in general storage in secondary containment.
- ✦ Low Toxicity Materials / Irritants – e.g. Agars, Sodium Chloride, Amino Acids etc.  
Should be stored in general chemical storage.

TO DETERMINE A CHEMICAL'S HAZARD(S) CONSULT THE CONTAINER LABEL OR THE MATERIAL SAFETY DATA SHEET OF THE CHEMICAL

# Common Vendor Hazard Labeling System:

## Fisher Hazard Labeling System:

-  RED: Flammable. Store in area segregated for flammable reagents.
-  BLUE: Health Hazard. Toxic if inhaled, ingested or absorbed through skin.
-  YELLOW: Reactive and oxidizing reagent. May react violently with air, water or other substances. Store away from flammable and combustible materials.
-  WHITE: Corrosive. May harm skin, eyes, mucous membranes. Store away from red, yellow, and blue-coded reagents.
-  GRAY: Presents no more than moderate hazard. For general chemical storage.

## Sigma-Aldrich Hazard Labeling System:



Explosive



Oxidizing



Highly Flammable or  
Extremely Flammable



Toxic or Very Toxic



Harmful or Irritant



Corrosive



Biohazard



Dangerous for the  
environment

<b>B</b>	Biohazard
<b>C</b>	Corrosive
<b>E</b>	Explosive
<b>F+</b>	Extremely Flammable
<b>F</b>	Highly Flammable
<b>Xn</b>	Harmful
<b>Xi</b>	Irritant
<b>N</b>	Dangerous for the environment
<b>O</b>	Oxidizing
<b>R</b>	Radioactive
<b>T</b>	Toxic
<b>T+</b>	Very Toxic