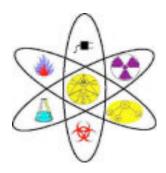


CHEMICAL STORAGE GUIDELINES



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 (<u>www.ehs.wustl.edu</u> or 314-362-6816) to dispose of. Stabilized materials such as Wetted Picric Acid should be stored appropriately (see MSDS or container label).
- (Reactives) 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. Permangenates, Perchlorates, Chlorates, Chlorites, Nitrates, Nitrates 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.

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



Biohazard



Toxic or Very Toxic



Harmful or Irritant



Corrosive



Dangerous for the environment

- В Biohazard Corrosive Explosive Ε
- F+ Extremely Flammable Highly Flammable
- Xn Harmful Irritant Χi
- Dangerous for the environment Ν
- Oxidizing 0 R Radioactive Т Toxic
- T+ Very Toxic