SAFETY BULLETIN
CHEMICAL STORAGE

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INTRODUCTION

Proper chemical storage is as important to laboratory and personal safety as proper chemical handling. Often, seemingly logical storage ideas, such as placing chemicals in alphabetical order, may cause incompatible chemicals to be stored together.

GENERAL

Most of the chemical suppliers use a colour classification system as a way to help laboratory personnel to segregate chemicals for storage compatibility, simply match colour codes for each specific supplier for the appropriate storage compatibility.

Follow these guidelines for safe chemical storage:

- Read chemical labels and MSDSs for specific storage requirements.
- Store chemicals in a well-ventilated area; however, do not store chemicals in fumehood.
- Maintain an inventory of all chemicals in the laboratory.
- Label storage area with the appropriate warning label.
- Return chemical containers to their proper storage location after use.
- Store glass chemical containers such that they are unlikely to be broken.
- Store all hazardous chemicals below eye level.
- Compressed gas cylinders must be located a minimum of 1.5 m from the door.
- No flammable storage is permitted in an exit corridor or within 1.5 m of the door.
- Never store hazardous chemicals in a public area or corridor.

SEPARATING HAZARDOUS CHEMICALS

Some of the suppliers are now using common Risk and Safety Statements and Hazard symbols to help identify specific risks associated with certain chemicals. In addition to the guidelines above, there are storage requirements for separating hazardous classes of chemicals. An alphabetical storage system may place incompatible chemicals next to each other, group chemicals according to their hazard category (i.e., acids, bases, flammables, etc.).

Follow these guidelines to ensure that hazardous chemicals are stored safely:

- Separate acids from bases. Store these chemicals near floor level, but not on the floor.
- Isolate Perchloric acid from organic materials. Do not store Perchloric acid on a wooden shelf.
- Separate highly toxic chemicals and carcinogens from all other chemicals. LD 50 < 50 mg/kg. This storage location should have a warning label and should be locked.
- Separate acids from flammables.
- Do not keep peroxide forming chemicals longer than twelve months.
- Do not allow picric acid to dry out.
- If flammables need to be chilled, store them in a laboratory-safe refrigerator, not in a standard refrigerator.
- Flammables liquids should be stored in a flammable storage cabinet.

RECOMMENDED STORAGE METHOD

CLASS OF CHEMICALS	RECOMMENDED STORAGE METHOD	EXAMPLES	INCOMPATIBLES SEE MSDS IN ALL CASES
Compressed Gases - Flammable	Store in cool, dry area, away from oxidizing gases. Securely strap or chain cylinders to a wall or bench top.	Methane, acetylene, propane	Oxidizing and toxic compressed gases, oxidizing solids.
Compressed Gases - Oxidizing	Store in cool, dry area, away from flammable gases and liquids. Securely strap or chain cylinders to a wall or bench top.	Oxygen, chlorine, bromine	Flammable gases.
Compressed Gases - Poisonous	Store in cool, dry area, away from flammable gases and liquids. Securely strap or chain cylinders to a wall or bench top.	Carbon monoxide, hydrogen sulfide (H_2S)	Flammable and/or oxidizing gases.
Corrosives - Acids	Store in separate acid storage cabinet.	Mineral acids - Hydrochloric acid, sulfuric acid, nitric acid, perchloric acid, chromic acid, chromerge	Flammable liquids, flammable solids, bases, and oxidizers.
Corrosives - Bases	Store in separate storage cabinet.	Ammonium hydroxide, sodium hydroxide	Flammable liquids, oxidizers, poisons, and acids.
Explosives	Store in secure location away from all other chemicals.	Ammonium Nitrate, Nitro Urea, Picric Acid, Trinitroaniline, Trinitroanisole, Trinitrobenzene, Trinitrobenzenesulphonic acid, Trinitrobenzoic acid, Trinitrochlorobenzene, Trinitrophenol/Picric acid, Trinitrotoluene.	Flammable liquids, oxidizers, poisons, acids and bases.
Flammable Liquids	In grounded flammable storage cabinet.	Acetone, benzene, diethyl ether, methanol, ethanol, toluene, glacial acetic acid	Acids, bases, oxidizers, and poisons.
Flammable Solids	Store in a separate dry cool area away from oxidizers, corrosives, and flammable liquids.	Phosphorus	Acids, bases, oxidizers, and poisons.
General Chemicals - Non-reactive	Store on general laboratory benches or shelving preferably behind glass doors, or below eye level.	Agar, sodium chloride, sodium bicarbonate, and most non-reactive salts	See MSDS
Oxidizers	Store in a spill tray inside a non-combustible cabinet, separate from flammable and combustible materials.	Sodium hypochlorite, benzoyl peroxide, potassium permanganate, potassium chlorate, potassium dichromate. The following are generally considered oxidizing substances: peroxides, perchlorates, chlorates, nitrates, bromates, superoxides	Separate from reducing agents, flammables, and combustibles.
Poisons	Store separately in vented, cool, dry, area, in unbreakable chemically resistant secondary containers.	Cyanides, heavy metal compounds, i.e. cadmium, mercury, osmium	Flammable liquids, acids, bases, and oxidizers.
Water Reactive Chemicals	Store in dry, cool location, protect from water fire sprinkler system.	Sodium metal, potassium metal, lithium metal, lithium aluminium hydride	Separate from all aqueous solutions, and oxidizers.