Chemical Storage

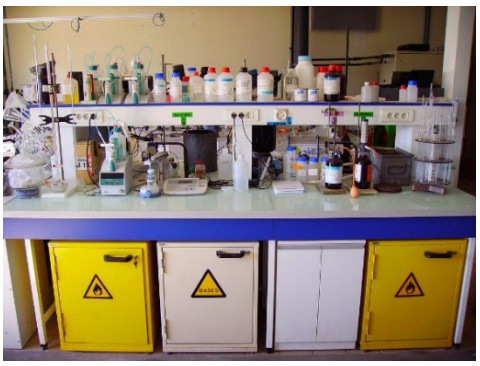
Mindfulness Minute: Incorporate safety into your workflow by considering how you store your hazardous chemicals in the laboratory.

The primary objective when storing chemicals is to minimize the physical and chemical hazards associated with certain stock chemicals and with the accidental mixing of chemicals due to fire, earthquake, accidental breakage, or other laboratory accidents. Assessment of these hazards must also consider the mixing of fugitive vapors from volatile compounds which can lead to destruction of containment vessels or potentially explosive conditions.

Follow these tips for proper chemical storage:

Label clearly with chemical name and hazard warnings.

- Label chemicals with the identity of the chemical(s) and appropriate hazard warnings.
- Segregate all incompatible chemicals for proper storage by hazard class.
- Chemicals should not be stored alphabetically unless compatible.
- Perform routine inspections of chemical storage areas and maintain good inventory practices.
- Flammables should be stored in a flammable materials storage cabinet or storage room if the volume exceeds ten gallons.


Know your cabinets! From left to right: flammable cabinet, corrosive cabinet, regular storage cabinet, flammable cabinet. None of the chemicals on the top shelf should be corrosive as the shelf is above eye level.

- Keep cabinet doors closed when not in use. Avoid storing materials on top of flammable cabinets.
- Corrosive chemicals should be stored below eye level.
- Store acids in a dedicated acid cabinet. Nitric acid should be isolated from other acids due to its reactive properties.
- Do not overcrowd shelves. Chemicals should be able to be moved without knocking into/over surrounding chemicals.
- Store highly toxic or controlled materials in a locked, dedicated poison or controlled material cabinet.
- Volatile or highly odorous chemicals should be stored in a ventilated cabinet.
- Chemical fume hoods shall not be used for storage.
- Avoid storing chemicals on the floor.

Storage Considerations:

Ensure the storage cabinet is appropriate for the chemicals being stored. Storing corrosives in a flammable cabinet can lead to rusting of the cabinet. Corrosive cabinets are usually made with corrosion-resistant or plastic parts which may not be present in flammable cabinets. Secondary containment should be used to keep chemicals from mixing if incompatible chemicals are stored in the same area or cabinet. The secondary containment should be compatible with the chemicals being stored (cardboard boxes are not appropriate secondary storage containers). Secondary storage for liquids should be able to contain a volume at least equal to the amount of chemicals being stored. When storing flammables in a refrigerator, use an approved explosion-proof or flammable storage refrigerator only.

Reference:

https://ors.od.nih.gov/sr/dohs/Documents/chemical-segregation-table.pdf

https://www.vumc.org/safety/sites/vumc.org.safety/files/public_files/chem-compatibility-chart.pdf