Chemical Storage Guidelines

Proper chemical storage is essential in assuring a safe work environment.

Segregate Chemicals - Store by Hazard Class

*Do Not Store Chemicals Alphabetically,* except within a hazard class. Hazard classes that should be stored separately include:

- radioactive materials
- pyrophoric materials
- flammable materials
- oxidizing materials
- water reactive substances
- oxidizing acids
- inorganic acids
- organic acids
- caustics (bases)
- poisons (general laboratory reagents separated into organic and inorganic groups)

*Provide physical segregation* (sills, curbs, trays) or separation between hazard classes.

*Keep flammable materials by themselves* in approved storage cans, cabinets, or rooms. Store oxidizers well away from flammable materials.

Store Chemicals To Minimize The Risk From Damaged Containers

- *Store large bottles and containers* close to but not on the floor
- Store acids and caustics below eye level
- *Shelves should be securely fastened* to the wall and have lips or restraining cord to prevent bottles from falling
• **Secondary containment** such as polyethylene or stainless steel trays as appropriate should be provided for spill protection
Label Chemical Containers and Storage Areas Properly

- **Chemical containers** should have the chemical name, a warning label identifying the major hazards, and information about handling precautions
- **Storage areas** should be labeled with hazard class

**Chemical Hazard Classes - Examples**

<table>
<thead>
<tr>
<th>Pyrophoric- (many are also water reactive)</th>
<th>Inorganic Acids</th>
</tr>
</thead>
<tbody>
<tr>
<td>• phosphorous (red, white)</td>
<td>• hydrochloric acid</td>
</tr>
<tr>
<td>• methylmagnesium bromide (and other grignard reagents)</td>
<td>• hydroiodic acid</td>
</tr>
<tr>
<td>• diethylzinc</td>
<td>• phosphoric acid</td>
</tr>
<tr>
<td>• triethylaluminum</td>
<td>• hydrobromic acid</td>
</tr>
</tbody>
</table>

**Oxidizing Materials**

- nitrates
- perchlorates
- permanganates
- iodates
- chromium (VI) compounds
- bromine
- nitrates
- iodine

**Water Reactive**

- alkaline earth metals (sodium, potassium, lithium, calcium)
- calcium carbide
- hydrides
- titanium tetrachloride
- acetic anhydride

**Flammable solvents**

- sulfur
- sodium metal
- sodium sulfide

<table>
<thead>
<tr>
<th>Inorganic Acids - Oxidizing</th>
</tr>
</thead>
<tbody>
<tr>
<td>• sulfuric acid</td>
</tr>
<tr>
<td>• nitric acid</td>
</tr>
<tr>
<td>• perchloric acid</td>
</tr>
</tbody>
</table>

**Organic Acids**

- formic acid
- acetic acid
- propionic acid
- butyric acid

**Caustics**

- hydroxides of sodium, potassium, calcium, lithium