# Two Types of Chemical Hazards

## Physical Hazards

<table>
<thead>
<tr>
<th><strong>Flammable Liquids and Combustible Liquids</strong></th>
<th><strong>Examples:</strong> Ethanol, Acetone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any liquid having a flashpoint below 100 deg. F (37.8 deg. C˚), except any mixture having components with flashpoints of 100 deg. F˚ (37.8 deg. C˚) or higher, the total of which make up 99 percent or more of the total volume of the mixture.</td>
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**Compressed Gases**

There are three major groups of compressed gases stored in cylinders:

- **Liquefied:** gases which can become liquids at normal temperatures when they are inside cylinders under pressure.
- **Non-liquefied gas:** do not become liquid when they are compressed at normal temperatures, even at very high pressures.
- **Dissolved gases:** A nonliquefied compressed gas that is dissolved in a solvent.

**Examples:**
- Liquefied gas (e.g. Chlorine, propane, anhydrous ammonia)
- Non-liquefied gas (e.g. oxygen, nitrogen, helium, argon)
- Dissolved gas (e.g., acetylene)

**Explosives**

A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

**Examples:** Nitroglycerin, dry picric acid

**Organic peroxides**

An organic peroxide is any organic compound having two oxygen atoms joined (-O-O-). Organic peroxides can be severe fire and explosion hazard.

**Example:** Benzoyl peroxide

**Reactives**

A chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.

**Examples:** Alkali metals, some hydrides, phosphorus, sodium

**Oxidizers**

A chemical that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

**Examples:** Potassium permanganate, sodium nitrate, nitrites, chlorates

**Pyrophorics**

Pyrophoric materials are substances that ignite instantly upon exposure to oxygen.

**Examples:** Finely divided metal powders, alkylithiums, white phosphorus
# Two Types of Chemical Hazards

## Health Hazards

### Carcinogens

A chemical is considered to be a carcinogen if:
- it has been evaluated by the International Agency for Research on Cancer (IARC), and found to be a carcinogen or potential carcinogen; or
- it is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or,
- it is regulated by OSHA as a carcinogen.

**Examples:** Benzene, Carbon tetrachloride

### Reproductive Toxins

Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis)

**Examples:** Ethylene oxide, lead

### Irritants

A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact

**Examples:** Sodium hydroxide, Potassium hydroxide, Hydrochloric acid

### Corrosives

A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. Corrosives can also damage or even destroy metal.

**Examples:** sulfuric acid, bromine, Acetyl bromide, ammonia, Sulfur chlorides

### Sensitizers

A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical

**Example:** Formaldehyde (CH₂O), latex, toluene

### Hepatotoxin

Hepatotoxin is a chemical that damages the liver

**Examples:** carbon tetrachloride, arsenic, acetylene tetrachloride, Ethylene bromide

### Nephrotoxins

A chemical that damages or destroys the cells and/or tissues of the kidneys

**Example:** Naproxen Sodium (Ibuprofen), sulphonamides, lithium salts, Uranium