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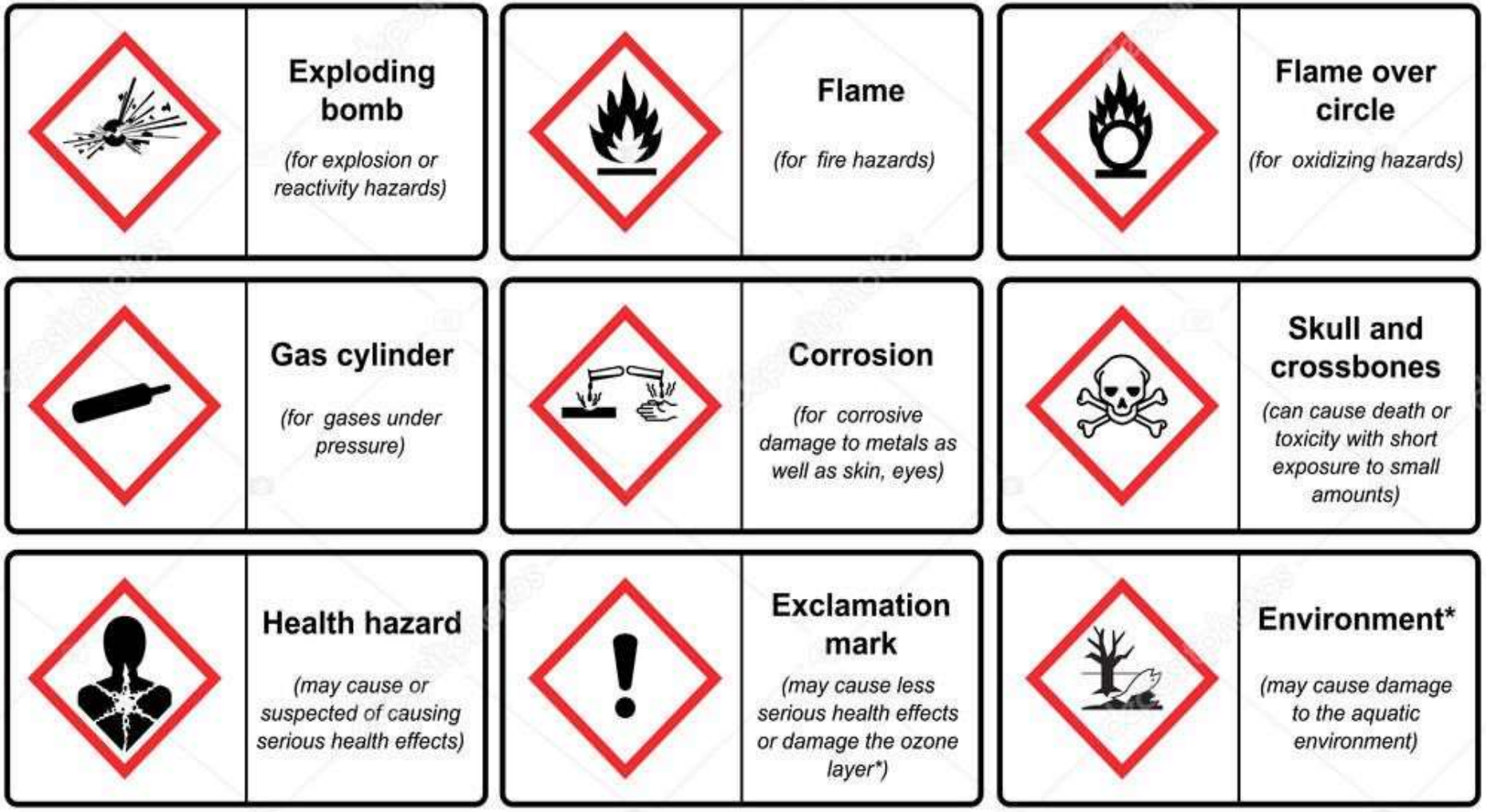
Important Pictograms for chemical hazards



GHS01 Explosive

GHS04 Compressed Gas

GHS07 Harmful

GHS02 Flammable

GHS05 Corrosive

GHS08 Health Hazard

GHS03 Oxidizing

GHS06 Toxic

GHS09 Environmental Hazard

Exploding Bomb

- Explosives
- Self-Reactives
- Organic Peroxides

Skull and Crossbones

- Acute Toxicity (fatal or toxic)

Gas Cylinder

- Gases Under Pressure

All compressed gases are hazardous because of the high pressures inside the cylinders. Gas can be released deliberately by opening the cylinder valve, or accidentally from a broken or leaking valve or from a safety device. Even at a relatively low pressure, gas can flow rapidly from an open or leaking cylinder. There have been many cases in which damaged cylinders have become uncontrolled rorockets or pinwheels and have caused severe injury and damage.

Liquefied Gases

Liquefied gases are gases which can become liquids at normal temperatures when they are inside cylinders under pressure. They exist inside the cylinder in a liquid-vapour balance or equilibrium. Initially the cylinder is almost full of liquid, and gas fills the space above the liquid. As gas is removed from the cylinder, enough liquid evaporates to replace it, keeping the pressure in the cylinder constant. Anhydrous ammonia, chlorine, propane, nitrous oxide and carbon dioxide (-56.6 °C), nitrogen (−195.79 °C) are examples of liquefied gases.

Non-Liquefied Gases

Non-liquefied gases are also known as compressed, pressurized or permanent gases. These gases do not become liquid when they are compressed at normal temperatures, even at very high pressures. Common examples of these are oxygen, hydrogen, nitrogen, helium and argon.

What are the fire and explosion hazards associated with compressed gases?

Flammable gases, such as acetylene, butane, ethylene, hydrogen, methylamine and vinyl chloride, can burn or explode under certain conditions:

Ignition Source: For a flammable gas within its flammable limits in air (or oxidizing gas) to ignite, an ignition source must be present. There are many possible ignition sources in most workplaces including open flames, sparks and hot surfaces.

What are the fire and explosion hazards associated with compressed gases?

The auto-ignition (or ignition) temperature of a gas is the minimum temperature at which the gas self-ignites without any obvious ignition sources. Some gases have very low auto-ignition temperatures. For example, phosphine's auto-ignition temperature of 100°C is low enough that it could be ignited by a steam pipe or a lit light bulb. Some compressed gases, such as silane and diborane, are pyrophoric - they can ignite spontaneously in air.

Many flammable compressed gases are heavier than air. If a cylinder leaks in a poorly ventilated area, these gases can settle and collect in sewers, pits, trenches, basements or other low areas. The gas trail can spread far from the cylinder. If the gas trail contacts an ignition source, the fire produced can flash back to the cylinder.

What are the fire and explosion hazards associated with compressed gases?

What is the danger of an inert gas?

Inert gases, such as argon, helium, neon and nitrogen, are not toxic and do not burn or explode. Yet they can cause injury or death if they are present in sufficiently high concentrations. They can displace enough air to reduce oxygen levels. If oxygen levels are low enough, people entering the area can lose consciousness or die from asphyxiation. Low oxygen levels can particularly be a problem in poorly ventilated, confined spaces.