

Health & Safety: Hazard Information

Chemical Hazard

Each chemical is different from the next one and therefore each chemical has different characteristics that help define the hazards that may be present.

Hazard(s) for each chemical can be identified using a variety of different types of information, including:

- the label on the container of the chemical (different chemical label standards include the US NFPA, European, and International),
- the material safety data sheet (MSDS) that may be included in the package that holds the container, or
- the buyer's product specifications.
- During an initial review of the chemical's hazard identification, determine if the chemical is in the form of a solid, liquid or gas. Also identify and make an effort to become aware if any of the information indicates that the chemical is flammable, corrosive or has an indicated health warning or hazard.

Examples of Chemical Hazards

Flammable Liquids and Gases

If flammable liquids vapors (e.g. solvents acetone) and flammable gases (e.g. hydrogen) are mixed with air, a flammable atmosphere may be formed. This flammable atmosphere is easily ignited and may result in a fire and/or explosion. Flammable liquids are generally maintained under an inert atmosphere. All ignition sources (e.g. hot work, non rated electrical equipment) in the vicinity of flammable liquids and gases must be eliminated / controlled. This is generally carried out by hazardous area classification and the selection of suitable equipment. All hot work should be controlled by a permit system.

Powders and Dusts

Powders can be ignited to produce a fire, while dust clouds, if ignited, will result in an explosion. Dust explosions can escalate due to internal propagation or due to secondary explosions caused by dust layers on floors, ledges, pipes, that may be disturbed during the initial explosion and subsequently ignited.

Reactive / unstable materials (e.g. organic peroxides, oxidizers) can decompose violently if not correctly stored and handled.

Toxic materials

Toxic materials (e.g. chlorine, bromine) can cause irreversible effects to humans above certain thresholds. If released, both on site and off site personnel may be affected. A combination of risk assessment, containment, mitigation and emergency response is generally required when handling such materials.

Nitrogen / Carbon Dioxide

Nitrogen and carbon dioxide are inert colorless, odorless gases often used to exclude oxygen. By this very nature they present a high asphyxiation hazard. Carbon dioxide is also toxic and may result in irreversible effects even when an oxygen deficient atmosphere may not be present.

Chemical Reaction Hazards

Chemical reaction hazards, if not controlled, can lead to over-pressurization and/or rupture of a vessel. The released material may be toxic and/or flammable which can lead to further escalation as per above.