# CHEMICAL SAFETY

## Chemical Hazards

There are many different categories of chemicals that may cause physical damage to the body; these chemicals can have chronic or acute effects. Listed below are the different types of chemical hazards.

- Toxic – chemicals that can have a poisonous effect on a person
- Carcinogen – chemicals believed to cause cancer after overexposure
- Corrosive – chemicals causing visible destruction or alteration
- Irritant – chemicals causing an inflammatory effect
- Sensitizer – chemicals causing an allergic reaction in tissues
- Flammable liquid – a liquid that emits vapors that may catch fire
- Combustible liquids – a liquid that combusts after being exposed to high temperatures

A few of the most common compounds and a brief description of each are listed below.

- Carbon monoxide – a colorless, odorless and tasteless gas, which is nonirritating and less dense than air
- Hydrogen sulfide – a colorless, flammable gas with an intense odor similar to the smell of rotten eggs
- Benzene – a toxic substance, which is colorless with a sweet odor
- Hexavalent chromium compounds – usually formed during 'hot work' welding of chromium- containing metals
- Other chemicals that may be carried as a cargo: refer to the current edition of the IMO International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (IBC Code)

### Methods of chemical exposure

There are a variety of manners in which chemicals can be exposed to the body; the methods of entry are listed below.

- Ingestion – eating or drinking of a chemical
- Absorption – skin contact with a chemical
- Inhalation – a chemical entering the body through breathing
- Injection – a chemical forced into the body by a syringe or a high-pressure device

## Hazard Labels

Chemical hazard labels may have slightly different appearances based on the country that produced them. An example of the format used in the US for chemical hazard labels as presented by the National Fire Protection Agency (NFPA) along with information on how to read the label is provided below. The label is broken down into four sections representing the following hazards and severities.

- Red section: fire hazard
- Yellow section: reactivity hazard
- Blue section: health hazard
- White section: specific hazards such as corrosive or it may list PPE that is needed
- The severity of these sections range from 0 (minimal) – 4 (severe) hazard


Also refer to the IMO IBC Code which makes reference to the MSDS

## MSDS

The MSDS is another helpful item in identifying chemical hazards. These sheets contain the following information about hazardous chemicals and may be helpful in preventing injury and illness.

- Identity of chemical
- Chemical characteristics
- Safe handling information

## SAFETY PRECAUTIONS

- Hazardous ingredients
- Health hazards
- PPE necessary

Some safety precautions that may be helpful in dealing with chemicals in the work environment are given in the list below.

- Be sure to use all the proper PPE, including a gas meter when appropriate
- Always read labels when dealing with chemicals
- Chemicals should always be kept in their original container
- Flammable and combustible chemicals should not be near heat sources
- Always be on the lookout for chemical warning signs
- Spills should be reported immediately
- If chemicals are splashed onto clothing, the clothing should be removed immediately
- If chemical exposure has occurred, the individual should seek the necessary medical assistance
- Any individual that has worked with chemicals should wash thoroughly before eating, drinking or smoking

In addition, office personnel may also be exposed to chemicals in the workplace and should not become complacent to hazards that may accompany these chemicals. It is important to remember chemical exposure may happen both on and off the job for all personnel.

**TOOLBOX TALKS**
**CHEMICAL SAFETY**

Meeting Conducted By: _____ Date: _____

Comments: _____

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Attendees:

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