Safety Talk - Chemical Safety

During this training session you will learn about

- The hazards of chemicals
- General Chemical safety Rules
- And
- Chemical container labeling requirements

Today there are very few jobs that do not involve the use of some chemicals. Office workers handle printer and copier inks and toners, production workers are exposed to processing chemicals and maintenance workers have a host of chemicals that they may work with day to day. As an employee, your job is to ensure these chemicals are used, stored, transported and labeled properly.

Chemicals present several types of hazards. Improper use or lack of understanding of personal protective measures can result in injury, illness or property damage. To safely use chemicals, you need to understand the Physical Properties and Health Hazards of each chemical.

There are two basic types of hazards associated with chemicals
   - Physical Hazards
   - Health Hazards

Proper use includes knowing and using personal protective equipment commonly called PPE. This equipment may be gloves, respirators, goggles, face shields, aprons or other chemical specific PPE.

Many chemicals can react violently when exposed to
   - Other substances
   - Heat
   - Shock
   - or Moisture

Effects can include explosion, fire or rapid chemical reactions that give off poison vapors. Ensure that any other chemical or substance with which the working chemical may react have been removed from the work area.

Never mix chemicals unless you follow an approved procedure.

Harmful effects to your health can be caused by a single over-exposure to a chemical or from uncontrolled long term exposures.

The harmful effects can be either immediate such as skin burns or develop over a long period of time such as cancer.

Chemicals can enter your body by
   - Absorption through the skin
   - Swallowing
   - or by breathing vapors, dust or mist

After a chemical enters the body the harm it causes depends on the nature of the chemical the amount of the chemical absorbed

A target organ is the body part that is most sensitive to a particular chemical. These may include the liver, kidneys, lungs or other vital organs. Your eyes are particularly sensitive to chemical exposure. Always use the proper protective eye wear when using chemicals.
Protection from chemical hazards includes

- Employee Training
- Labeling system
- Written Safety Procedures
- Personal Protective Equipment
- And Engineered safety systems

Some of the most basic chemical safety rules include

- Knowing the hazards of the chemical
- Keeping the work area clean and orderly.
- Using the necessary safety equipment.
- Ensuring each container is properly labeled
- And limiting the amount volatile or flammable material to the minimum needed.

Hazardous chemicals must be properly stored when not in use. All containers should be checked to ensure vapors cannot escape.

To prevent vapor build up, no open containers are allowed in storage areas.

Chemicals that are reactive with each other, such as acids and bases, must never be stored together.

The separation of chemicals (solids or liquids) during storage is necessary to reduce the possibility of unwanted chemical reactions caused by accidental mixing.

Use either distance or barriers to isolate chemicals into the following groups:

- Flammable liquids
  - Acids
  - Bases
  - and other liquids

Flammable liquids may only be stored in approved flammable storage lockers.

Bulk storage of flammable liquids may be in large drums. These dispensing points must have grounding straps for the drum units to ensure there is no static spark generated when filling smaller containers.

When transporting or dispensing chemicals, remember these simple rules

Only the smallest amount needed should be used in your work area.

Sometimes this means transferring chemicals from large to smaller containers.

These smaller containers should have liquid tight lids and be approved for the specific chemicals.

Although it is not required to label smaller containers if the contents will be under the control of the worker at all times and not stored at the work area, it is best to always provide some identification of the contents.

NEVER transfer chemicals into food or beverage containers such as soda bottles.

Flammable liquid containers must be shatter proof... not glass.

Non-routine tasks involving chemicals are defined as working on, near, or with:

- unlabeled piping
- unlabeled containers of an unknown substance
- confined space entry where a hazardous substance may be present, or
• a one-time task using a hazardous substance differently than intended.
  A full hazard evaluation must be conducted before carrying out a Non-Routine Tasks that
  include chemical use or possible exposure.
  If an emergency involving chemicals occurs
  Tell others in the area and notify the closest supervisor
  Evacuate people from the area.
  Isolate the area.
  Be sure to turn off ignition and heat sources if the material is flammable

Never attempt to control a chemical emergency unless you have been specifically trained to
respond.
Every person who works with or around chemicals must understand the Labeling System. It
is extremely important that all containers of chemicals are properly labeled. This includes
every type of container from a 5000 gallon storage tank to a spray bottle of degreaser.
All containers must have a label, tag or marking that indicates any safety or health hazards
Portable containers do not need to be labeled if they are used immediately, but must be
under the strict control of the Employee using the chemical. Be sure that all warning labels
and tags can be easily read.
There are two basic types of hazard labels for chemical containers
One type is called NFPA... a system developed by the National Fire Protection Association
The NFPA systems uses a diamond shape with four colors and number codes to tell you
what hazards exist and the degree of each hazard.
• The Red diamond provides information on the flammability of the chemical
• The number 4 in the red diamond means that the chemical is extremely flammable
• 3 means that the chemical will Ignite at normal temperatures
• 2 warns that the chemical will ignite when heated
• the number 1 tells you that it must be pre-heated to burn
• and a Zero in the red diamond tells you that the chemical has a low fire hazard

The blue diamond provides information concerning the health hazards of the chemicals
• 4 means Hazardous to Life
• 3 means Extremely Dangerous
• 2 means Hazardous
• 1 means slightly Hazardous
• and a zero in the blue area lets you know that the chemical has a very low health hazard
  The yellow portion of the NFPA label tells you about the chemical reactivity – or how
  unstable the chemical may be
• The number 4 means that the product may detonate under heat
• 3 means that a strong shock may cause detonation
• the number 2 indicates that violent chemical changes are possible
• 1 means that the chemical is unstable if heated
• a Zero in the yellow area tells you that the product is normally stable
  The white area provides information on any special hazards and tells you if it is an Acid,
  Oxidizer, corrosive, or Alkaline.
  Other symbols in this area may indicate that it is radioactive or should not be mixed with
  water
Another chemical hazard labeling system is called HMIS... this stands for Hazardous Material Information System. HMIS uses a similar color and number system as the NFPA. It also provides information about Protective Equipment needed and other additional safety information.

Knowledge is safety... you should know the following information about any chemical you work with or around:

- Is it Flammable?
- Can it Explode?
- Will it react with other material?
- Is it hazardous to my health?
- What do I do in case of a spill?
- And what Personal Protective Equipment do you need to protect yourself?