



OSHA HAZARDOUS COMMUNICATIONS TUTORIAL

HAZARD COMMUNICATIONS In 1983, OSHA (Occupational Safety and Health Administration) adopted the “Hazard Communication Standard” (HSC) for the manufacturing industry. Today, the HSC covers 7 million businesses and 945,000 chemicals that you may come into contact with in our office. Information on these chemicals is provided on material safety data sheets (MSDS located in the administrator’s office.

These products are primarily isolated to cleaning products, ink, copier toner, and hand sanitizer. The following “HAzard Communication” information is provided for your education on this topic. If you have any questions please feel free to ask your supervisor.

An excellent source for product information can be found on the government website: www.hhs.gov. Look for “Household Products Database.” Remember that all manufactured products must have an accompanying **MSDS**.

HAZARD COMMUNICATION TRAINING

- What are hazardous chemicals?
- How do hazardous chemicals affect the body?
- What are the different types of hazardous chemicals?
- What is on product labels?
- What are the material safety data sheets? (MSDS)
- How do you protect yourself from hazardous chemicals?

WHAT IS HAZARDOUS COMMUNICATION?

Hazard communication or “hazcom” is our program where we tell you about the hazardous chemicals used in our workplace.

We will also train you on how to protect yourself from the effects of these hazardous chemicals.

WHAT IS A “HAZARDOUS CHEMICAL”?

- A hazardous chemical is any chemical that can do harm to your body.
- Most industrial chemicals can harm you at some level.
- It depends on how much gets into your body.

HOW DO HAZARDOUS CHEMICALS AFFECT THE BODY?

It depends on several factors:

- How the chemicals enter the body
- The form of the chemical
- The amount of chemical that actually enters the body
- How toxic (poisonous) the chemical is

HOW CHEMICALS ENTER THE BODY

There are three routes of entry:

- Ingestion- swallowing the chemical
- Inhalation- breathing the chemical

- Absorption- the chemical soaks through the skin

INHALATION (BREATHING)

Chemicals in the air are breathed in through the mouth or nose

Gases and vapors are absorbed through the lungs directly into the bloodstream

The size of the dust particles or mist droplets can affect where the chemical settles in the respiratory tract.

SKIN ABSORPTION

Some chemicals pass through the skin into the body

These chemicals can then cause various health effects

INGESTION (SWALLOWING)

Chemicals that are swallowed are absorbed in the digestive tract

Chemicals can rub off dirty hands and contaminate food, drinks, or tobacco products.

Chemicals in the air can settle on food or drink and be swallowed

THE THREE FORMS OF CHEMICALS

ALL CHEMICALS EXIST IN ONE OF THREE FORMS

SOLID *** LIQUID ***** GAS**

HAZARDOUS CHEMICALS- DUSTS

- Some chemicals are solids in the form of powders or dust.

- Dust can be released into the air by cutting, drilling, grinding, or sanding
- Dusts can also be stirred up by dry sweeping and inhaled.
- Dust in the air can settle out on work surfaces, cups, plates, utensils, and food.
- The settled dust can be swallowed with food or drinks
- If the dust is hazardous, it can cause health problems.

SOLIDS- FUMES AND FIBERS

- Fumes are extremely small droplets of metal formed when the metal has been vaporized by high temperatures (usually welding)
- Some solids are fibers which can be similar to dusts but they have an elongated shape (like asbestos or fiberglass)

HAZARDOUS CHEMICALS-LIQUIDS

- Liquid chemicals in direct contact with the skin can cause skin problems
- Some liquids can be absorbed into the body through the skin
- Liquids can be sprayed and form into a mist or evaporate and form vapors which can be inhaled
- Mists can also be inhaled
- Mists can settle on the skin and be absorbed into the body
- Airborne mists can also settle out and contaminate food or drink

GASES AND VAPORS

- Gases are chemicals that are in the gas phase at room temperature
- Vapors evaporate from substances that are liquids or solids at room temperature
- Gases and vapors enter the body through inhalation

TOXICITY: HOW POISONOUS ARE CHEMICALS?

Dose- the effects of any toxic chemical depends on the amount of chemical that actually enters the body

Acute Toxicity- The measure of how toxic a chemical is in a single dose over a short period of time.

Chronic Toxicity- the measure of the toxicity of exposure to a chemical over a long period of time.

CHRONIC TOXICITY AND ACUTE TOXICITY

- Some chemicals will only make you sick if you get an “acute” or high dose all at once. Ex. -ammonia
- Some chemicals are mainly known for their chronic or long term effects. Ex- asbestos
- Most chemicals have both acute and chronic effects. Ex- carbon monoxide.

CHEMICALS EXPOSURE LIMITS

- Many chemicals have exposure limits, or allowable amounts of chemicals in the air.
- These limits are often called “Permissible Exposure Limits” or “Threshold Limit Values.”

- They are based on 8-hour average exposure or ceiling or peak levels.
- Levels must be kept below these limits for safety.

CARCINOGENS

- Carcinogens are cancer- causing compounds
- Some chemicals are known for human carcinogens, others are only suspected as carcinogens.

OTHER GROUPS OF TOXIC CHEMICALS

- Teratogens - are compounds that can harm the developing fetus, causing birth defects or death.
- Mutagens- cause genetic mutations or changes. These mutations can cause birth defects or other problems in future generations or lead to cancer in the exposed person
- Sensitizers - can “switch on: a reaction in an individual worker.
- Once a worker becomes sensitized to a compound, smaller and smaller exposures can cause a reaction, and the reactions can become more severe.

CORROSIVE CHEMICALS

- Acids and bases (caustics) are common corrosive chemicals
- Corrosive chemicals are capable of damaging the eyes, skin and the respiratory system.
- Corrosives can cause visible skin burns or damage

- The extent of skin damage depends on how long the corrosive is on the skin and how concentrated the corrosive is
- Inhalation of corrosive mists or vapors can cause severe bronchial irritation
- Corrosives are especially damaging to the eyes.

EXAMPLES OF CORROSIVE CHEMICALS

- Sulfuric Acid, Ammonia, Chromic Acid, Lye, Acetic Acid, Chlorine

Batteries contain sulfuric acid

PROTECTION FROM CORROSIVES

- Protective gloves & clothing
- Goggles
- Eyewashes
- Water (for splashes on the skin)

PROPERTIES OF FLAMMABLE LIQUIDS

- The vapor of a flammable liquid ignites and causes fire or explosion- not the liquid itself.
- The flammability of a liquid depends on its physical properties:

❖ **Vapor pressure**

❖ **Flashpoint**

❖ **Limits of Flammability**

❖ **Vapor Density**

FLAMMABLE LIQUIDS VAPOR PRESSURE

- Vapor pressure is a measure of how fast a liquid evaporates
- The higher the vapor pressure the more rapidly the liquid will evaporate
- Vapor pressure goes up and down with the temperature of the liquid

FLAMMABLE LIQUIDS- FLASHPOINT

The flashpoint is the lowest temperature that a flammable liquid can generate enough vapor to form a mixture with air that will ignite.

LIMITS OF FLAMMABILITY

- The limit of flammability is the range that a mixture of air and vapor is flammable.
- Mixtures can be too lean (not enough vapor) or too rich (too much vapor) to ignite and burn.

FLAMMABLE LIQUIDS: LOWER FLAMMABLE LIMIT (LFL)

- In most work situations, the “lower flammable limit” (LFL) is the main concern.
- Vapors from flammable liquids can be found in the workplace, but are often too diluted to catch fire or explode.
- However, these vapors can quickly go above the LFL in a small room or confined space like a tank.

HOW DO YOU GET INFORMATION ABOUT HAZARDOUS CHEMICALS?

You can get information two ways:

- From the product label,
- From the material safety data sheet,

WHAT IS ON THE PRODUCT LABEL?

- The manufacturer
- The name of the product
- A hazard warning
- A list of hazardous ingredients

WHAT IS A MATERIAL SAFETY DATA SHEET?

Material safety data sheets or “MSDS’s” are information sheets on products that:

- Tells what chemicals are in the product
- What the hazards of the chemicals are
- How to protect yourself from the hazards

MSDSs- WHAT INFORMATION DO THEY HAVE?

Names of hazardous chemicals in a product,

ACETONE

Physical and chemical properties of the product,

FLAMMABLE & HIGHLY VOLATILE

Physical hazards of working with the product,

BURNS

Health hazards of working with the product (including signs and symptoms of overexposure),

HEADACHES, EYE IRRITATION

The main way the chemical enters the body,

INHALATION

The main way the chemical enters the body,

INHALATION

MSDS INFORMATION (continued)

The legal limit allowed in the air,

750 ppm

If the chemical is a carcinogen,

YES OR NO

Precautions for safe use of hazardous chemical,

USE WITH ADEQUATE VENTILATION, KEEP AWAY FROM OPEN FLAME

Exposure control methods, including personal protective equipment,

WEAR RESPIRATOR, RUBBER GLOVES

Emergency and first aid procedures,

EYES: FLUSH WITH WATER FOR 15 MINUTES

The date the MSDS was prepared or revised,

1996

Name, address and phone number of the person responsible for the information in the MSDS,

JOHN DOE
1234 MAPLE STREET
ANYWHERE, US

YOU CAN PROTECT YOURSELF FROM HAZARDOUS CHEMICALS BY:

- Knowing what is in the product you work with
- Using the smallest amount of chemical to do the job
- Maintaining machinery and equipment to prevent leaks or releases
- Using available ventilation to reduce amounts of chemicals in the air

- Keeping lids, doors, or covers closed to chemical processes
- Wearing necessary personal protective equipment, also known as PPE

IN CASE OF A LEAK OR SPILL, PROTECT YOURSELF BY:

- Informing your supervisor of unusual odors, spills, or releases
- Evacuating an area of a large spill or chemical release

IF YOU HAVE BEEN EXPOSED TO A CHEMICAL AND FEEL SICK:

- Let your supervisor know,
- Find out what the chemical was,
- Follow the first aid directions in the MSDS,
- Get medical attention as needed,
- Check your PPE before going back to the area.

FLAMMABLE LIQUIDSVAPOR DENSITY

- “Vapor density” is a measure of how heavy a vapor is compared to air.
- Vapors with a density greater than air can flow like a liquid collecting near the floor.
- This may create a fire or explosion hazard if the vapor flows to an ignition source.

HAZARDS OF METALS



- Metals can be both physical hazards and health hazards.
- Some metals can ignite and explode- magnesium, or dust/filings of other metals such as aluminum
- Some metals are almost non-toxic- iron, aluminum
- Others are very toxic- mercury, lead, cadmium, beryllium