Hazardous Communication

PATRIOT AMBULANCE INC

Your "Right To Know"

Hazard Communication involves the communication of hazards about chemicals to employees, also known as the "Right To Know".

Also known as "RTK"

Right To Know

5 Elements of Your RTK Program

Labeling and MSDS

Labeling

- The label on a container tells you its contents, the hazard associated with the chemical, and what part(s) of your body it affects.
- An unlabeled container could be water or it could be a strong acid. You do not know what it is so you do not know what precautions to take. Remember, you should never remove a label from a container!
- If you have any doubt about a label, contact your supervisor!

Basic Label Information

- The label must have the following:
  - The chemicals name
  - Hazards of the chemicals
  - The manufacture's name and address
    - If a label gets removed, destroyed or covered, you must not use that product.

Secondary Labels Protect Others

- What is a Secondary Container??
- Make sure others have the benefit of the same information that you had. If you put some chemical into a new container, label it with information from the original label.

Physical vs. Health Hazards

What is Hazardous?

Which substance would you consider most hazardous.

This container is acceptable, you know what it is!

Right! The less you know about a material, the more hazardous it is to you.

What is Considered A Hazard?

- Physical hazard:
  - Combustible liquid
  - Compressed gas
  - Explosive
  - Flammable
  - Organic Peroxide
  - Oxidizer
  - Pyrophoric
  - Unstable
  - Water-reactive

- Health hazard:
  - Carcinogens
  - Toxic or highly toxic
  - Reproductive toxins
  - Irritants
  - Corrosives
  - Sensitizers
  - Hepatotoxins
  - Nephrotoxins
  - Neurotoxins
  - Damage to lung, skin, eyes mucous membranes
  - Agents that act on ematopoietic system

Hazardous Materials are everywhere

The following are some of the hazardous materials found just about everywhere:

- Asbestos
- Chlorine
- Cleaners
- Freon
- Paint
- Solvents
- Sulfuric Acid
- Water treatment chemicals

Physical and Health Hazards

The physical state affects the hazards

- Physical state is one of the factors in determining how hazardous a material is and in deciding what precautions, such as personal protective equipment, are necessary.

Materials whose physical state can be hazardous include:

- Combustible liquids (Low flashpoints between 100°F-200°F)
- Compressed gas (Gases in containers under pressure)
- Explosives (Substance that react rapidly and violently)
- Flammable (Materials with flashpoint below 100°F)
- Oxidizers (Materials that give off oxygen and simulate combustion

Hazardous Chemicals Affect you:

Examples of the effects hazardous chemicals have on you.

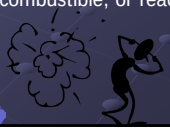
Make you sick (toxic/Irritant)

ie. Silica Gel, glycine

Catch fire or explode (flammable, combustible, or reactive chemicals)

ie. Pine oil, gasoline

BOOM!!



Chemicals affect the body

- Chemicals that enter your body affect it. Different kinds and doses of chemicals can have different effects. The effects can be acute or chronic and also systematic or localized.

Let's take a closer look at the differences!!

What is the difference?

Localized	*Site of contact* (*On body*)	This is like an organic coming in contact with your skin and burning it!
Systematic	*Widespread* (*Throughout body*)	This is like inhaling vapors and causing damage to your lungs
Acute	*Short-term* *Health problems*	This is like the effects alcohol has on the brain and kidneys.
Chronic	*Long-term* *Health problems*	This is like the effects of alcohol on the liver over time.

Chemicals build up in the body

Some chemicals travel in the body to a particular organ where they build up. You call this organ the chemical's ***target organ***.

- Carbon monoxide targets the blood
- Lead targets the blood, nervous, and reproductive system

While there, the chemical may prevent that organ or body system from working at its best.

What are the routes of entry?

How do chemicals enter the body?

Breathing is the only important way chemicals enter the body

Nope, There is a better answer, check the other choice.

Most commonly by breathing but also by passing through the skin (cuts or rashes), or by swallowing.

Yes! You can prevent chemicals from entering your body if you are careful, follow safe work practices, and wear PPE when necessary.

Beware of Oxygen in the Atmosphere

Asphyxiation can occur through inhalation if there is not enough oxygen (O_2) in the area or if something prevents your body from getting the oxygen it needs.

This happens when gas fills up a room or space and pushes all the air out, there will not be enough oxygen to breathe.

Asphyxiation decreases the amount of oxygen to your brain. This can damage the brain or cause death.

Example: Carbon Monoxide attaches to blood cells and prevents the cells from carrying O_2 to the rest of the body, this is a **chemical asphyxiant**

Exposure to Chemicals

An exposure is the amount of a chemical you come in contact with. This is usually measured by its concentration in the air.

Skin exposure is more difficult to measure than exposure through breathing.

Be Aware of your Surroundings!!

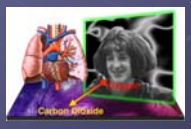
Use primarily sight and monitoring devices to detect for hazard. Smell is an unreliable indicator of chemicals. You may get used to the smell and no longer be able to detect it. Also, some chemicals do not have a smell!

Example: The presence of Radon & Asbestos can only be determined by actual tests. Carbon Monoxide cannot be detected by smell either.

Chemicals Affect you!

Chemicals can enter your body in 3 different ways. So be aware!

- Inhalation
- Ingestion
- Absorption



Dusts, Mists, and Gases can be hazardous

Dusts, mists, vapors, gases, droplets, and fumes all float in the air you breathe. They can settle on your skin, or get into your eyes, nose, lungs, mouth. They can irritate, damage, or build up in your body.

A common dust like flour or even fluorescent bulb dust can irritate your nose, throat, and lungs if you inhale a lot of it.

Liquids Can Irritate or Burn

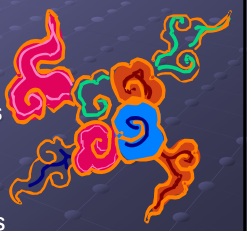
Liquids can spill, run, splatter, and splash. Chemical burns or irritation can occur if certain liquids splash in your eyes or if they came into contact with it.

Skin contact with some chemicals can produce rashes or your skin can absorb them making you ill.

Gases/Vapors Float and Move in Air

Gases float in the air at normal temperatures and pressures. Because gases float, they are hard to contain if released.

Also, they move in air, you can inhale them. This is dangerous if they are poisonous. Gases can also irritate or burn tissue they contact. Chlorine is not only a poison by inhalation, it is also very irritating to the skin.



Vapors can fuel a fire

Some organic substance such as alcohol and gasoline, are good fuel for fires. You call the temperature at which enough liquid evaporates to fuel a fire the vapor's **flash point**.

The warmer the room, the more a liquid will evaporate. When there is enough vapor, a spark or other source can ignite it. A fire in an enclosed space can cause an explosion

What burns when liquid fuel ignites?

The vapors that have evaporated from the liquid

Yes! The vapors are what burn when a liquid ignites.

The liquid itself burns

Not quite!

Flammables can ignite at normal Temperatures

Most flammable liquids have flash points below 100°F.

Combustible liquids have a flash point above 100°F.

Such liquids are dangerous because their flash points may be near room temperature.

Remember! the lower the flash point, the more hazardous it is.

Compressed Gases are Under Pressure

When you put gas into a container, you push it into a smaller and smaller space. This increases the pressure in the container. If the container leaks, released gas can cause the container to travel at great speeds that can cause injuries.

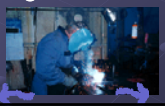
Solids have Form

Unlike gases, solids take on a definite form at normal temperatures and pressures. If a solid breaks or if you grind it, you produce a dust or a powder. Dusts mix in the air and you can inhale them.

This can be hazardous. For example, if you inhale dust from a powdered drain cleaner that is corrosive, it could burn your throat, nose, and lungs.

Solids have Form Continued

If you heat a solid to a high enough temperature fumes form. Fumes mix in the air as dust do and you can inhale them. This can be hazardous. When you heat welding flux or other metals, you produce fumes. Flux cord arc welding produces the highest amount of fumes, and shielding metal arc welding the next highest.



Dusts can be Explosive!!

At very high concentrations and under the right conditions, some dusts can be explosive.

The smaller the particle, the more reactive the dust. As the materials become smaller, they disperse and remain suspended more easily, increasing the potential for ignition and propagation of the reaction.

An example is excess organic material created from dumping corn into a silo or small fibers.

By-Products can also be produced:

By-products of work can release hazardous chemicals

Hazardous by-products can be the result of mixing different chemicals

An example of a hazardous by-product

- Bleach and ammonia (chlorine gas is formed)
- Sodium hydroxide and nitric acid (Caustics and acids)

Always use Safe Work Practices

Use these safe work practices when handling chemicals:

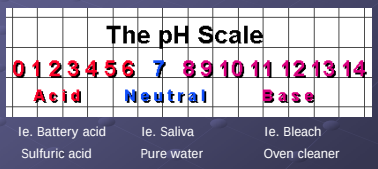
- Do not spill, splash, or drop them
- Use flammable and combustibles away from open flames, sparks, and other sources of heat
- Do not eat or smoke on the job
- Wash your hands before going on break or eating

Protect yourself from Solvents

Solvents can produce skin irritation or be inhaled as a vapor, which causes adverse health effects. To protect yourself from solvent vapors, first use adequate ventilation. You can absorb solvents through the skin, which also causes adverse health effects. Proper Personal Protective Equipment must be used.

Acids and Bases will burn skin and eyes

A scale, called the pH scale, measures how acidic or basic a chemical is. Basic (caustic) chemicals have a pH between 8 and 14. Very caustic chemicals can burn your skin and eyes.



Acids and Bases will burn skin and eyes Con't

Acids have pH readings between 1 and 6. Very acidic chemicals can also burn the skin and eyes and eat quickly through materials. Inhaled acid or caustic dusts can irritate or burn your respiratory track.

Strong Acids and Bases are Corrosive

You call the ability of a chemical to eat into a material **corrosivity**. The farther the pH of a material is from 7, the more corrosive it is.

Corrosive materials are hazardous. You must handle them with caution and wear the proper PPE.

Which is most corrosive!

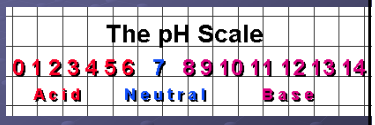
An acid, pH 3

Not exactly

An acid, pH 5

Not exactly

A base, pH 13



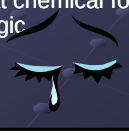
Yes! The most corrosive substance has a pH farthest from 7. A pH of 13 is farther from a pH of 7 than either 3 or 5.

Sensitization to a Chemical

Have you ever walked into an area where paints or various chemicals have been used and find yourself becoming itchy, swollen, teary, or even tight in the chest?

Some individuals may have worked around these same chemicals for years and then find out that the reaction was suddenly caused by these same chemicals. This is becoming **sensitized**.

Once sensitized, you may react to that chemical for the rest of your life! You may be allergic



Personal Protective Equipment (PPE)

Personal Protective Equipment

Personal Protective Equipment (PPE) is the barrier between you and the hazardous material you are working with. There are many factors to consider when choosing the proper PPE.

For example:

- Type of PPE
- Material PPE should consist of
- Durability
- Care of PPE
- Availability of the PPE
- Expense

Check the MSDS

The Material Safety Data Sheet (MSDS) is where you can find out which PPE is right for the particular chemical. This is why it is important to know the location of the MSDS. If questions still arise about the PPE, ask your supervisor.

Choose the Proper Material

PPE is used to protect you from injury to the eyes, hands, feet, face, skin, and head.

To prevent skin absorption you must wear personal protective equipment made of the proper material. Choosing the right gloves is especially important to protect the hands.

Look on to see the importance of glove use

Why you should wear Gloves!

If you try to use regular rubber or latex gloves, many chemicals can pass right through these. Gasoline and other solvents can eat away the material. Only certain gloves can offer the proper protection of certain chemicals

Wear the right PPE

Face protection is necessary when splashing or flying pieces may be encountered and even when working around dust.

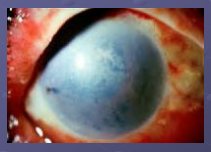
Equipment that can be used includes:

- Face shield
- Safety eye glasses
- Eye goggles

Look on to see the importance of eye protection

Why you should wear Eye Protection

Your eyes are very sensitive & delicate and therefore are easy to injure. You do not want to get chemicals in your eyes!



Respirators Protect you from hazards in the Air

You can inhale many substances in many work operations. You can inhale substances in various forms, including:

- Vapors
- Gases
- Dusts
- Mists
- Metallic Fumes
- Fibers

- Respiratory Protection is necessary when hazardous chemicals reach unacceptable levels in the workplace.

Respiratory Protection

Respirators protect:

The highly absorbent tissues in your nose from being damaged

Your lungs if chemicals enter through inhalation. If chemicals enter your lungs it can cause damage or be transported to the rest of your body

Storage, Waste & Disposal

Storage of Chemicals

Store all chemicals and waste in a safe and secure area. The chemicals should be stored in a structurally sound, good condition container with a tight fitting cap. The container should be compatible with the material. Milk jugs or soda bottles are not acceptable.

Leave 10-20% headspace in the container to prevent pressure build up.

Chemical Storage

Certain chemicals should not be stored together. For example:

- Un used separated from Waste
- Solids separated from liquids

Solvents and low boiling point chemicals generate vapors and should be stored in a well ventilated area.

Chemical Waste

Remember!

Always try to minimize the waste generated by using alternatives when possible.

Never dump hazardous or other chemical waste down the drain. For example:

Toxic, Flammable, Gasoline, Acids, or Caustics

Never leave waste in an area that is subject to public contact.

Ask for Help!!

If you are unsure about the use and handling of a chemical, ask your supervisor.