Right to Know/Hazard Communication Training

University @ Albany SUNY
Office of Environmental Health & Safety
Chemistry Room B-73  442-3495
Hazard Communication

Haz-Com training is also known as the “Right to Know” and is required by both NYS Public Employee Safety & Health Act and OSHA covers the groups of hazardous chemicals used in UAlbany worksites and potential health effects.

Trains you on how to recognize symptoms of overexposure and how to protect yourself.
What is a “hazardous chemical”?  

A chemical that has been proven to cause immediate or long-term health hazards in exposed employees. ex:

- Carcinogens
- Flammables
- Corrosives
- Irritants
- Sensitizers
- Reproductive hazards, etc.
The effects chemicals have on the body hinge on several factors:

- The physical form of the chemical (liquid? dust? vapor?) determines how the chemical enters the body.
- The amount of time a worker is exposed (daily? weekly? years?).
- The amount of chemical that actually enters the body - the dose.
- How toxic (poisonous) the chemical is.
How Do Chemicals Enter the Body?

**Routes of Entry:**

- **Inhalation** – breathing in the chemical - (can affect one organ or go through bloodstream)

- **Absorption** – the chemical soaks through the skin

- **Ingestion** – swallowing the chemical (least common route)
Inhalation (Breathing)

- Airborne chemicals are breathed in -- the size of particles or droplets affects where the chemical settles in the respiratory tract.
- Chemicals can deposit in lungs or spread through bloodstream to other organs.
How Chemicals Enter the Body

Absorption (through the skin)

- Detergents and Cleaning Products
- Solvents
- Pesticides
- Oils/Fuel Products
- Paints/Epoxies

Skin disease (dermatitis) is the #1 cause of (occupational health) Workers Compensation claims
How Chemicals Enter the Body

Ingestion (Swallowing)

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

- Chemicals & Dusts in the air can settle on food or drink and be swallowed & absorbed in the digestive tract.
Types of Chemicals

**Liquids**

- Liquids can come into direct contact with the skin and be absorbed into the body via bloodstream.

- Liquids can be sprayed and form mists or evaporate and form vapors which can be inhaled.

(ex: machine cutting oils & water-based coolants can cause “hypersensitivity pneumonitis”)

Types of Chemicals

**Solids - Dusts**

Dust or powder can be released into the air by cutting, drilling, grinding, sawing, sanding, jack hammering or sledge hammering.

*Ex: silica, lead, asbestos*

Dust can also be inhaled when stirred up during dry sweeping*

(*Any dry sweeping of lead and asbestos is prohibited)

**Use Wet Methods!!!**
Types of Chemicals

Solids – Fumes and Fibers

• Fumes are extremely small droplets of metal formed when the metal has been vaporized by high temperatures (usually welding)

• Some compounds are fibers which can be similar to dusts but they have an elongated shape (like asbestos or fiberglass)
Types of Chemicals

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 by inhalation.
Chronic Toxicity vs. Acute Toxicity

Some chemicals will make you sick if you get a high dose all at once (\textit{acute/immediate}). Example – ammonia; bleach

Some chemicals are mainly known for their \textit{chronic} or long-term effects. Example - asbestos

Most chemicals have both acute and chronic effects. Example – solvents; carbon monoxide
Corrosive Chemicals

• Acids and bases are common corrosive chemicals.

• Corrosive chemicals are capable of damaging skin, eyes and the respiratory system.
Corrosive Chemicals

Corrosive Chemicals - Skin

• Corrosives can cause visible eye & skin burns or damage. (ex: battery acid, bowl cleaners, water treatment chemicals)

• Damage depends on how much skin contact and how concentrated the corrosive is. **pH scale:**

  < 2 and > 12 are the most corrosive
Corrosive Chemicals

Inhalation and Eyes

- Inhalation of corrosive mists or vapors can cause severe bronchial irritation.

- Corrosives are especially damaging to the eyes.
Corrosive Chemicals

Protection from Corrosives

Protective gloves & clothing

Goggles

Eyewashes

Water (for splashes on the skin)
Flammable Liquids

Properties of Flammable Liquids

• The vapor of a flammable liquid ignites and causes fire or explosion – not the liquid itself.

• Depends upon: vapor pressure; flashpoint (<100 degrees is flammable); LEL, etc.

• All flammable solvents, aerosols, etc. must be stored in cabinets

• Examples: spray solvents such as acetone, toluene, some oils & fuel products
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 give off vapors and be inhaled.
In most work situations, the "lower explosive limit" (LEL) 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 LEL in small room or confined space like a tank.
Flammable Liquids

Vapor Density

• “Vapor density” is a measure of how heavy a vapor is compared to air.

• Vapors with a density greater than 1.0 are heavier than air and can collect near the floor, and “flow” like a liquid.

• This may create a fire/explosion hazard if the vapor flows to an ignition source.
Toxic Chemicals--Carcinogens

OSHA has specific regulations on some:

- Asbestos
- Methylene Chloride
- Chromium (hexavalent)
- Cadmium
- 1,2,-Dibromo-3-chloropropane (DBCP)
- Benzene
- Arsenic
- Butadiene
- Acrylonitrile
- Ethylene Oxide
A bit about Asbestos…

• All potentially asbestos-containing materials, (ACM) ceiling tiles, pipe insulation, mudded joints, etc., on campus have been identified OR can be tested.

• Vinyl Floor Tiles 9” x 9”(and Mastic) are ALWAYS suspected ACM. (Note: some 12” x 12” may be)

• Always ask your supervisor if unsure what you may be working near, it’s your Right to Know

• Remember: Only trained, authorized employees may remove or encapsulate ACM following NYS Code Rule 56 & OSHA guidelines.

• Asbestos Awareness Training has arrived.
Other Groups of Toxic Chemicals---Sensitizers

- Sensitizers can cause an allergic-like reactions in some workers.

- The reaction to a sensitizer depends upon the individual worker.

- Once a worker becomes sensitized smaller and smaller exposures can cause a reaction, and the reactions can become more severe. i.e.,: *isocyanates, nickel compounds, formaldehyde, perfumes, epoxies*
Pesticides

• Must be registered and approved in the state of New York to be used (per DEC). Ask before ordering.

• Certain types of pesticides can only be applied by a licensed certified applicator or technician. Significant penalties for non-compliance $$$$$$$
Other Groups of Toxic Chemicals—Reproductive Hazards

Substances that affect the ability (of women and men) to have healthy children.

**Examples:** lead; carbon monoxide; radiation; mercury; 2,4-D (Agent Orange); bromine; some pesticides; formaldehyde

**Some** solvents such as ethylene glycol monoethyl ether, carbon disulfide; perchloroethylene; toluene; xylene; methylene chloride
Exposure Limits

“PEL” “TLV”

Some chemicals have legal exposure limits, (or so-called safe levels) called Permissible Exposure Limits (“PELs”) or Threshold Limit Values (“TLVs”). They are set by OSHA and based upon an 8-hour average work day exposure. Levels must be kept below these limits for safety.

The lower the PEL/TLV number the greater the health hazard (toxicity)
Getting Information

How do you get information about hazardous chemicals?

• Labels
• Material Safety Data Sheet
• Your supervisor
• EHS Office (2-3495)
Getting Information

What is on the product label?

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

What is a material safety data sheet?

Material safety data sheets or “MSDSs” 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.
Protecting Yourself

You can protect yourself from hazardous chemicals by:

Knowing what is in the products you work with, *Read labels & the MSDS!*

Using the smallest amount of a chemical to do the job,

Use a safer chemical if you can

Maintaining machinery and equipment to prevent leaks or spills
In the case of a leak or spill, protect yourself by:

Informing your supervisor of unusual odors, spills, or releases,

Leaving an area of a large spill or chemical release.
Protecting Yourself

If you have been exposed to a chemical and feel sick:

Let your supervisor know,
Get medical attention ASAP
Follow the first aid directions in the MSDS,
Bring MSDS to hospital

Fill out accident report form w/ supervisor for any chemical exposure incident
Other things to know...

ALL chemicals must be labeled, **including** spray bottles and transfer containers.

An MSDS is required for every chemical product.

Ventilation, Engineering Controls and Safer Product Substitution is preferable to respirator use.

ALL employees are **required** to wear personal protective equipment.
Questions???

• Thank you for attending.
• Be safe. Be well.