Chemical Hazards in the Workplace

Chemicals in the Workplace

- There are 750,000 hazardous chemicals used in the workplace around the world.
  - Hundreds more are added every year.
- Chemicals are used for a variety of purposes.
- Employees must know how to protect themselves from chemical hazards.

What is a Hazardous Chemical?

- A hazardous chemical is any substance that poses a physical or health hazard to you or others in the workplace.

Hazardous Chemicals

- Examples of Physical hazards:
  - Fires
  - Explosions

- Examples of Health hazards:
  - Cancer
  - Skin irritation
  - Respiratory ailments

Health Hazards

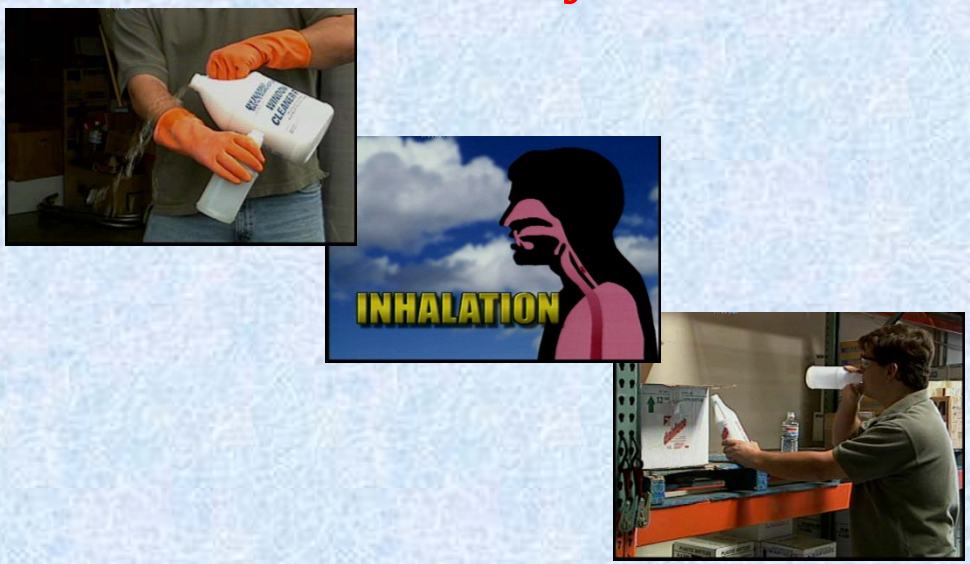
- Health Hazards can be Acute or Chronic

  - Acute health hazards occur rapidly after an exposure.

  - Chronic health hazards occur gradually after repeated exposures.

Chemical Hazards

- The methods in which chemicals enter the body are called “routes of entry.”
- Understanding these various routes of entry is necessary to prevent exposure to hazardous chemicals.
- There are three main “Routes of Entry”
  - ✓ Absorption
  - ✓ Inhalation
  - ✓ Ingestion



Routes of Entry

➢ Absorption

- Occurs when contact with exposed skin allows a chemical to be absorbed into the body.
- To prevent absorption, wear proper protective equipment:

✓ Chemical gloves

✓ Aprons

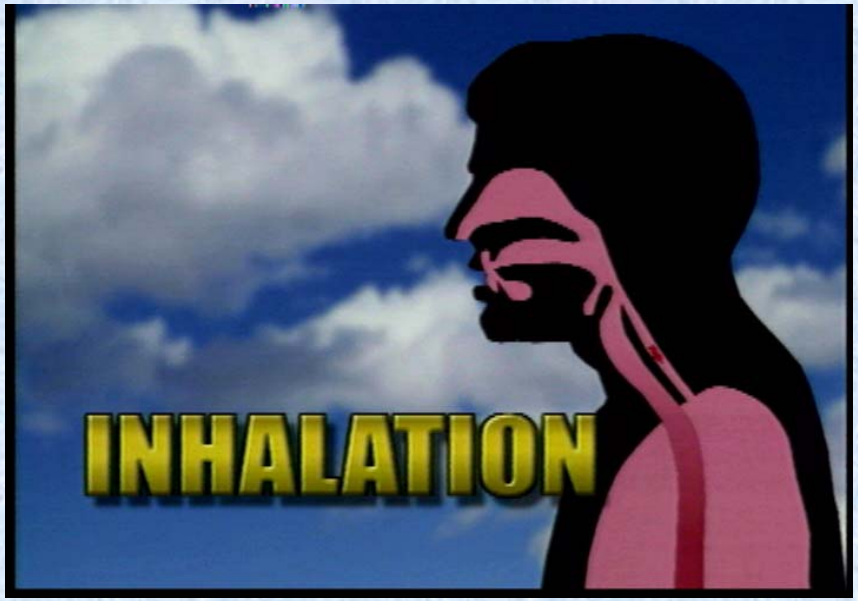
✓ Coveralls

Routes of Entry

➢ Inhalation

- Can occur when chemicals become airborne in the form of a vapor, mist or dust allowing them to be inhaled into the lungs.

- To prevent inhaling hazardous chemicals you must select and use proper respiratory protection.



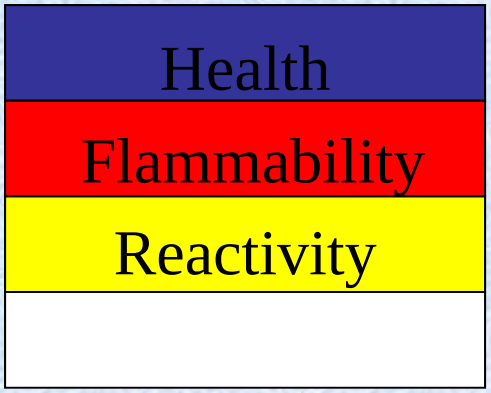
Routes of Entry

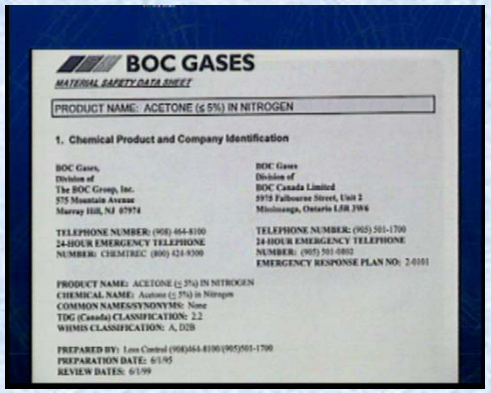
➢ Ingestion

- Can occur when hazardous chemicals are eaten or swallowed.
- To avoid ingesting hazardous chemicals never:
  - ☒eat
  - ☒drink
  - ☒apply make-up
- Always wash hands after handling chemicals .

Chemical Hazards

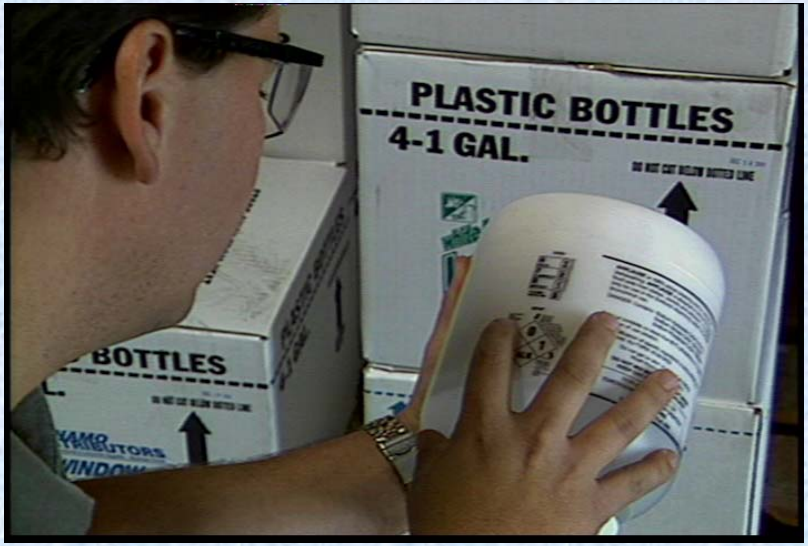
- There are three main sources of information used to convey a chemical's hazards
  - ✓ Chemical Manufacturer's Label
  - ✓ Supplemental Hazard Labels
  - ✓ Material Safety Data Sheets





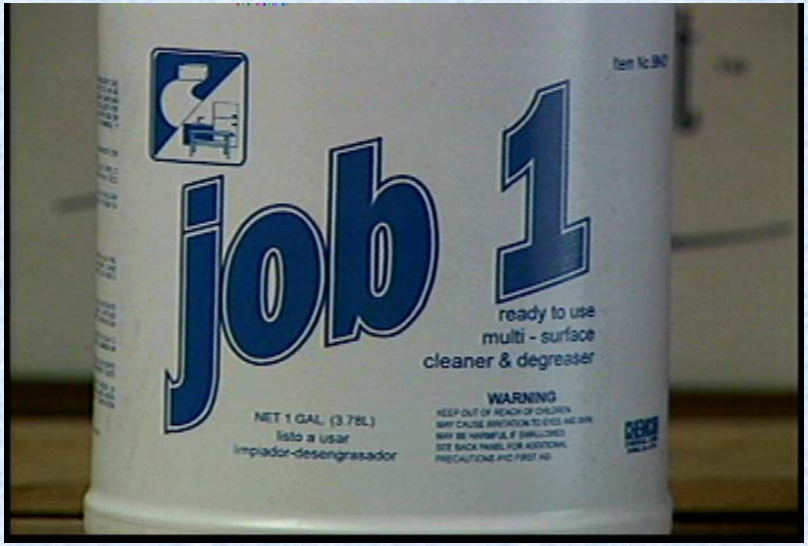
Manufacturer's Labels

- The chemical manufacturer's label is the first source of information about potential hazards, safe work practices and PPE required for a specific chemical.



Manufacturer's Labels

- Manufacturer's labels provide the following information
  - ✓ Commercial name of the chemical
  - ✓ Name and address of the manufacturer
  - ✓ Any physical or health hazards presented by the chemical



Manufacturer's Label

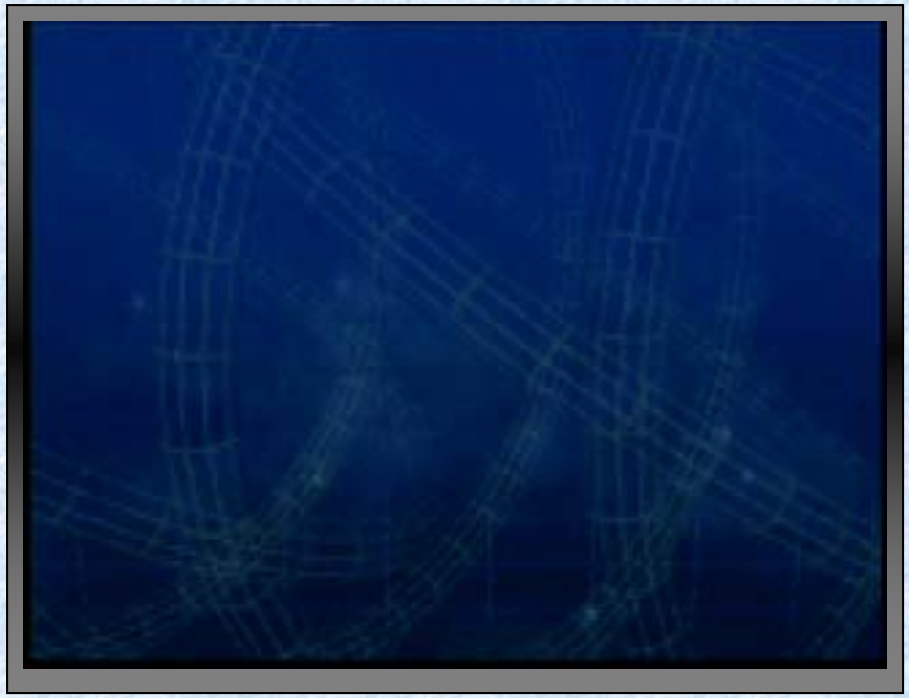
- Some manufacturer's labels include additional information such as:
  - Required PPE to be worn
  - Special handling
  - Storage requirements
  - First aid
  - Spill clean up

Supplemental labels

- Additional supplemental labels are often used to quickly convey hazard information in an easy to read format
  - NFPA
  - HMIS

NFPA labels

- NFPA labels rank hazards related to:
  - **Health**
  - **Flammability**
  - **Reactivity**
  - **Special Warnings**
- Each hazard is ranked on a scale from 0 to 4



HMIS labels

- HMIS labels use the same ranking and colors to display:
  - **Health**
  - **Flammability**
  - **Reactivity**
  - **PPE**
- Each hazard is ranked from 0 to 4

Other Labels

- Many companies have their own labeling system to identify chemical hazards.
- Be sure you know and understand how to read the labeling systems used in your facility.
- If you have any questions ask your supervisor.

Other Labels

- Chemicals are often transferred from large containers to smaller secondary containers.
- When this occurs the secondary container must also be labeled.
- **NEVER** use chemicals from an unlabeled container.

Material Safety Data Sheets

- Material Safety Data Sheets are another source of information about a chemical's hazards
- Every chemical in the workplace has a Material Safety Data Sheet or MSDS
- MSDS contain more detailed information than labels

Material Safety Data Sheets

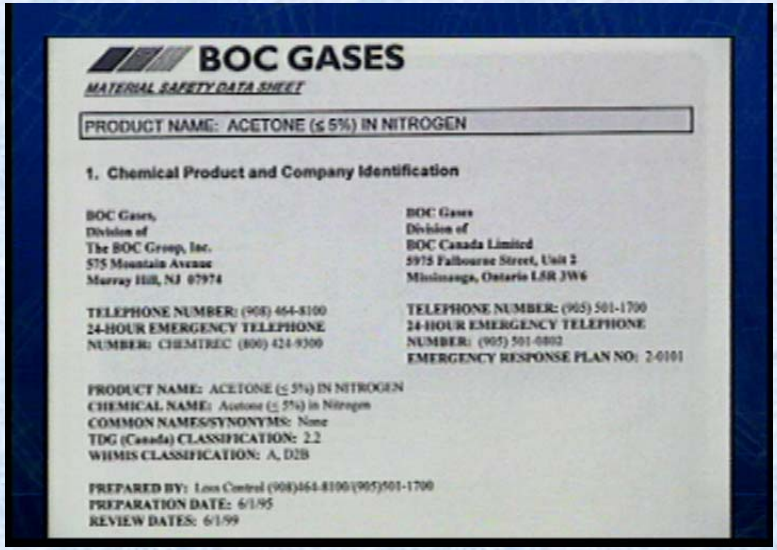
- Material Safety Data Sheets (MSDS) are readily available for employee review.
- Make sure you know how to access these important documents.
- Always consult MSDS before working with any chemical.

Material Safety Data Sheets

- MSDS sheets are divided and numbered into various sections, and while the arrangement of these sections may vary, most material safety data sheets contain the following valuable information……

Material Safety Data Sheets

- Product and Company Information:
  - This section will include the name of the chemical and the manufacturer.
  - An emergency contact number will also be listed.



BOC GASES

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: ACETONE (≤ 5%) IN NITROGEN

1. Chemical Product and Company Identification

BOC Gases,
Division of
The BOC Group, Inc.
575 Mountain Avenue
Murray Hill, NJ 07974

TELEPHONE NUMBER: (908) 464-8100
24-HOUR EMERGENCY TELEPHONE
NUMBER: CHEMTREC (800) 424-9300

BOC Gases
Division of
BOC Canada Limited
5975 Falbourne Street, Unit 2
Mississauga, Ontario L5R 3W6

TELEPHONE NUMBER: (905) 501-1700
24-HOUR EMERGENCY TELEPHONE
NUMBER: (905) 501-0802
EMERGENCY RESPONSE PLAN NO: 2-0101

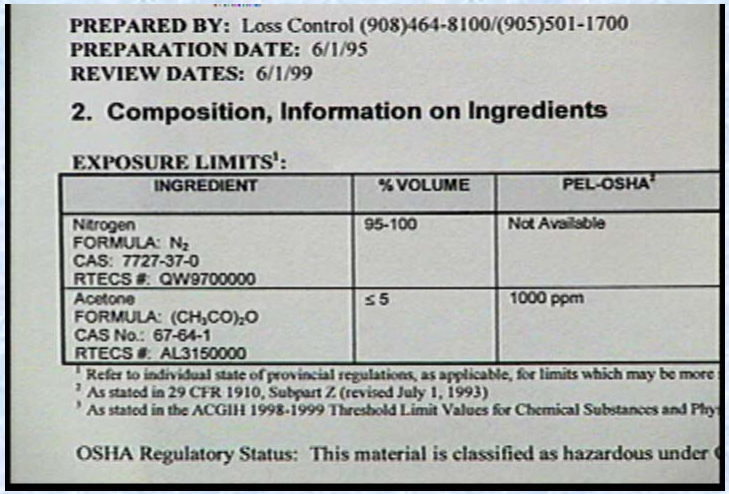
PRODUCT NAME: ACETONE (≤ 5%) IN NITROGEN
CHEMICAL NAME: Acetone (≤ 5%) in Nitrogen
COMMON NAMES/SYNONYMS: None
TDG (Canada) CLASSIFICATION: 2.2
WHMIS CLASSIFICATION: A, D2B

PREPARED BY: Loss Control (908)464-8100/(905)501-1700
PREPARATION DATE: 6/1/95
REVIEW DATES: 6/1/99

Material Safety Data Sheets

➢ Hazardous Ingredients:

- This section will list the hazardous ingredients contained in the chemical, specifically naming any known carcinogens.
- Carcinogens are substances known to cause cancer.



PREPARED BY: Loss Control (908)464-8100/(905)501-1700
PREPARATION DATE: 6/1/95
REVIEW DATES: 6/1/99

2. Composition, Information on Ingredients

EXPOSURE LIMITS[1]:

INGREDIENT	% VOLUME	PEL-OSHA[2]
Nitrogen FORMULA: N_2 CAS: 7727-37-0 RTECS #: QW9700000	95-100	Not Available
Acetone FORMULA: $(CH_3CO)_2O$ CAS No.: 67-64-1 RTECS #: AL3150000	≤ 5	1000 ppm

[1] Refer to individual state of provincial regulations, as applicable, for limits which may be more
[2] As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)
[3] As stated in the ACGIH 1998-1999 Threshold Limit Values for Chemical Substances and Phy

OSHA Regulatory Status: This material is classified as hazardous under

Material Safety Data Sheets

- Hazard Identification:
  - This section will describe the hazards posed by the chemical.
  - This will include physical hazards, health hazards and environmental hazards.

Material Safety Data Sheets

- First Aid:
  - When exposed to a chemical, it's important to know what actions to take.
  - This section will list what actions to take for specific exposure situations, such as contact with eyes, inhalation or ingestion.

Material Safety Data Sheets

➢ Exposure Controls and Personal Protection:

- This section will list occupational exposure limits for the chemical as well as required protective equipment to be used.
- Refer to this section to determine if chemical gloves, goggles or a respirator may be required.
- Also listed in this section will be any recommended engineering controls that may be required.

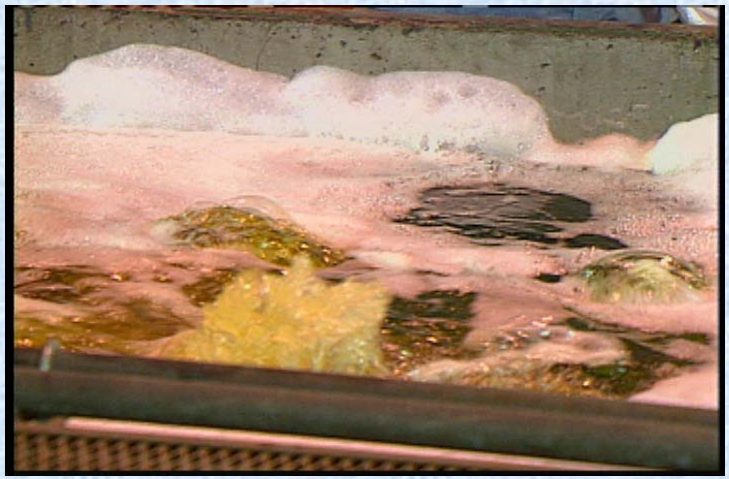
Material Safety Data Sheets

➢ Physical and Chemical Properties:

- This section will list properties such as boiling point, flashpoint, specific gravity, color and odor.
- This information can be used to predict how the chemical will react under certain conditions and can also be used to help detect leaks and spills.

Material Safety Data Sheets

- Stability and Reactivity:
  - This section describes how the chemical will react when exposed to other chemicals, water, air, sunlight or other factors
  - Some chemicals will react violently under certain conditions, if so it will be listed in this section



Material Safety Data Sheets

- Handling and Storage:
  - This section gives safe handling and storage instructions
  - Following proper handling and storage instructions can prevent needless exposures and also prevent leaks, spills, fires or explosions.

Material Safety Data Sheets

- Toxicological Information:
  - Describes the various routes of entry for the chemical and any acute or chronic health effects of exposure

Written Hazard Communication Plan

- Chemical labels and MSDS are just part of a larger written program maintained by the company to control exposure to hazardous chemicals.

- OSHA requires chemical hazards be communicated to employees through information and training.

- This training is commonly called "Hazard Communication Training" or "Right To Know Training."

Written Hazard Communication Plan

- The written plan is designed to be a comprehensive plan to control exposures to hazardous chemicals.
- This plan is available to management and employees for review.

Summary

- Hazardous chemicals are substances that pose a physical or health hazard.

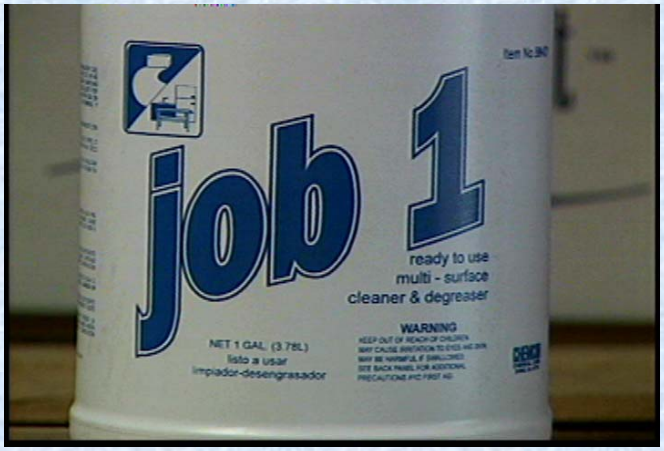
Summary

- Hazardous chemicals enter our bodies through “Routes of Entry.”
- There are three main routes of entry:

- Absorption
- Inhalation
- Ingestion

Summary

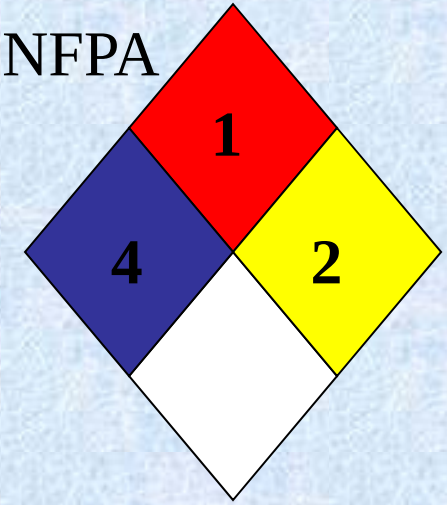
- Chemical manufacturer's labels are the first source of information about a chemical.
- These labels contain:
  - Commercial name
  - Name and address of manufacturer
  - Physical and health hazards



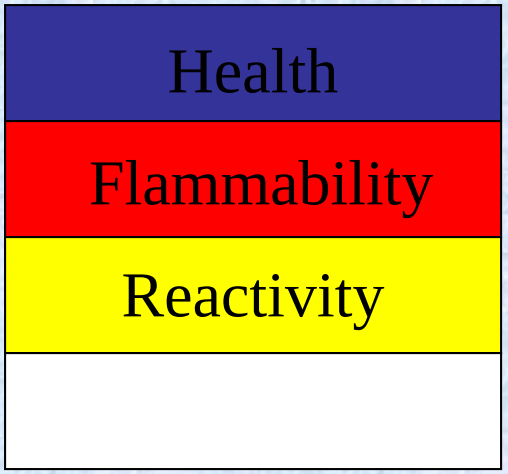
Summary

- Supplemental hazard labels provide quick and easy information about a chemical's hazards
- NFPA and HMIS labels rank health, flammability, and reactivity hazards on a scale from 0 to 4

NFPA



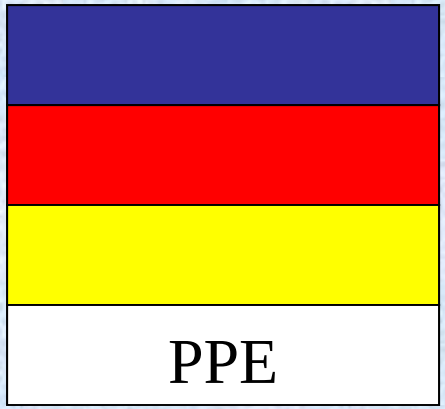
HMIS



Summary

- NFPA labels reserve the lower section for special warnings.

- While HMIS labels reserve the lower section for required protective equipment.



Summary

- If you have any questions about the chemical labels used in your facility ask your supervisor.

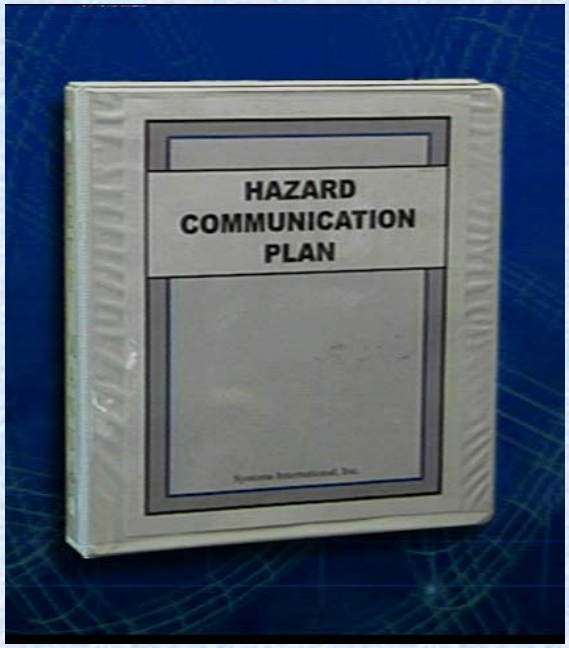
Summary

- Material Safety Data Sheets are another source of chemical information
- MSDS provide more detailed information than chemical labels and are always available for employee review

Summary

- The company's written hazard communication plan is a comprehensive plan to control exposures to hazardous chemicals

- The company's plan requires all employees to receive "hazard communication training" before working with hazardous chemicals



Summary

- Secondary containers must be labeled also
  - You may use a permanent marker or other label that will not easily be removed
  - Write the name of the chemical in bold easy to read letters for others to see
  - Serious injury could result if this is not followed

Summary

- The written Hazard Communication Program is available online at http://www.usi.edu/Riskmgt/. A hard copy can be obtained from my office located in the Support Services Building.
- A master list of hazardous chemicals and MSDS is located in the Security building

Summary

- Employees have the responsibility to put their training into action through the proper use of Protective Equipment and by always following Safe Work Practices while working with hazardous chemicals