CHEMICAL HAZARD COMMUNICATION

HAZARD COMMUNICATION STANDARD

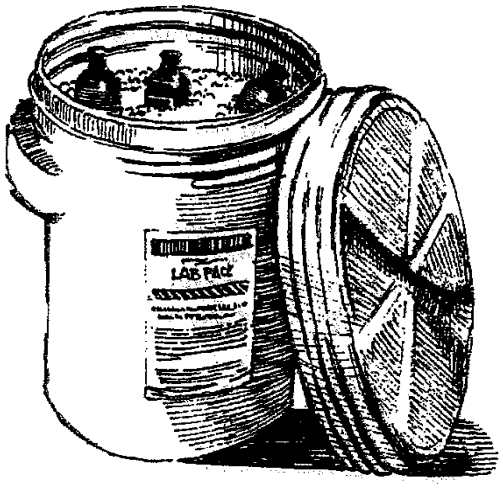
The OSHA Hazard Communication Standard for Construction (**1926.59**) requires employers to set up a hazard communication (HazCom) program for the products they bring on site. This standard points you to the General Industry (non-construction) standard **1910.1200. The HazCom standard applies to all hazardous materials that are not hazardous wastes.** Materials covered by the HazCom program include: drum solvents, vehicle maintenance products, and chemicals used to treat wastes or chemicals for portable toilets. **A copy of selected sections of this standard can be found beginning on page 63 of this chapter.**

Written Hazard Communication Program - 1910.1200 (e)

This program must:

- Be available to employees and their representatives;
- Include a complete and current list of the hazardous chemicals brought to each work area; and
- Describe the methods used to inform employees about the hazards of non-routine tasks and unlabeled pipes.

Labels and Other Forms of Warning - 1910.1200 (f)



Regulations for labels on incoming containers (not hazardous waste)...

- Hazardous chemicals must be labeled with chemical identity, hazard warnings, and name and address of manufacturer.
- Employers must ensure that all containers of hazardous chemicals are labeled (except for portable containers used by a single employee).

Material Safety Data Sheets (MSDS) - 1910.1200 (g)

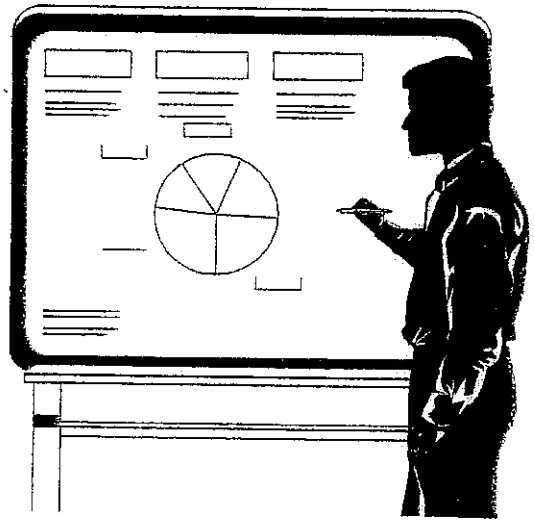
Employers must keep chemical fact sheets called Material Safety Data Sheets (MSDSs) at the work site so that everyone can find out the dangers of the chemicals and how to protect themselves --

- Manufacturers and distributors must forward MSDSs to an employer with the first shipment.
- Employers must get and keep MSDSs for each hazardous chemical in their workplace.
- MSDSs must be filled out completely and accurately.
- Copies of MSDSs must be accessible to employees during all shifts.
- MSDSs are not required for hazardous wastes found on site, since these are tested and measured before cleanup work starts.

Employee Information and Training - 1910.1200 (h)

Employers must train employees on the hazardous chemicals in their work areas:

- At initial assignment and when new hazards are introduced.
- Education must include the requirements of the OSHA HazCom Standard.
- Employees must be told the location of the employer's written hazard communication program, MSDSs, and hazardous chemical lists.
- Employees must be trained about the hazards of the materials used in their areas and how to recognize exposure.
- Employees must be taught **how to read information** on labels and MSDSs **and understand it**



Introduction

The purpose of the Hazard Communication Standard, also referred to as the Right-to-Know Standard, is to communicate the potential health and safety hazards and safe work practices required for the chemicals used in your facility.

Program Objective:

The videotape and this workbook are designed to train you on the four main components of the standard:

- ❑ Hazard Awareness
- ❑ Container Labeling
- ❑ Material Safety Data Sheets
- ❑ Safe Work Practices.

Knowledge is your most important tool for ensuring your safety. Understand and respect the potential hazards for the chemicals you work with or are exposed to. Understand the different forms of container labeling. Know where and how to obtain information concerning the chemicals you work with, and follow all recommended safe work practices. Be familiar with the components of your company's written plan.

Information on hazardous chemicals is generated for your safety and that of your co-workers. Use it.

It is your right to know.

Hazard Awareness

Chemicals are a part of every aspect of our lives. The chemicals you use in the work place only present potential health and physical hazards when they are mishandled, improperly used, improperly stored or labeled, or incompatible mixtures are combined.

Hazard Awareness is recognizing and understanding the potential injuries and illnesses or physical damage the chemicals can cause. The communication of this information is essential for your being aware of, understanding and respecting the potential hazards. This knowledge is important for the decisions you make concerning how you use the chemicals and the safe work practices you follow.

Hazards

Depending on the chemical and the level of exposure, health hazards can vary from minor skin irritations to serious chemical burns, nerve damage, different forms of cancer and even death. Physical damage may include fires, explosions, property and environmental damage.

There are seven main types of hazards:

CORROSIVE: A chemical that causes very bad burns to the skin. Examples include sulfuric acid, nitric oxide and ammonia.

EXPLOSIVE: A chemical that causes a sudden release of pressure, gas and heat when subjected to sudden shock, pressure or high temperature.

FLAMMABLE: A flammable liquid is a chemical with a flash point below 100°F. The flash point is the temperature at which liquid will give off enough flammable vapor to ignite. Some solid materials are also flammable.

IRRITANT: A chemical that causes swelling and skin rashes from chemical contact.

RADIOACTIVE: Any material or combination of materials that give off harmful radiation. Contact with radiation can be very dangerous and even deadly.

REACTIVE: A substance that will self-explode or react violently when mixed with another substance or under certain temperatures, pressure or shock.

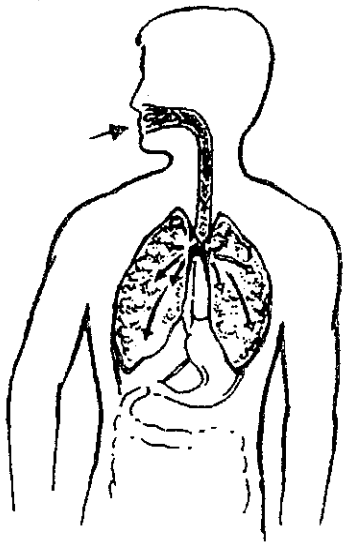
TOXIC: A toxic or poisonous chemical can cause illness and sometimes death. The amount of harm depends on what chemical you were exposed to, how long you were exposed to it, and how it reacts to the environment. A toxic material can harm the body through the skin, by breathing it in, by swallowing it, or by contact with body openings such as the eyes.

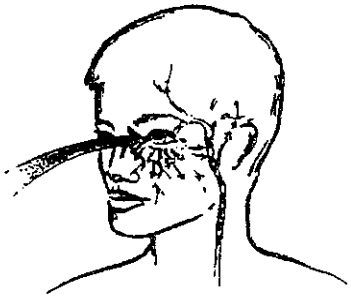
Routes of Entry

There are four primary routes of entry a chemical can take to enter your body. These include:

THROUGH THE SKIN -- Some chemicals, such as toxics, acids, allergens, sensitizers and others, can enter and contaminate the blood system by penetrating the skin. Hazardous chemicals can also cause skin irritation, rashes and burns when they come in contact with the skin.

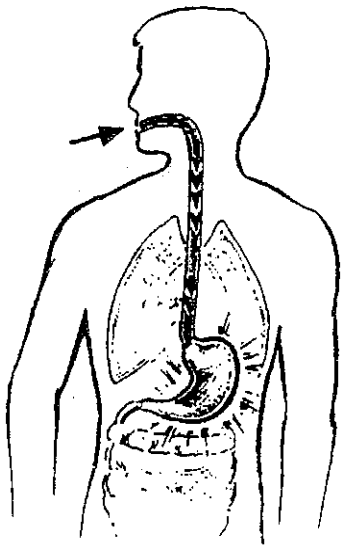
THROUGH THE LUNGS -- Chemicals that give off fumes and vapors can enter the lungs when you breathe in through the nose and throat. The substance passes through to the lungs where it enters the blood system via the alveoli. The lungs contain millions of tiny air sacs called alveoli, that exchange oxygen for carbon dioxide in the blood.





CONTACT WITH BODY OPENINGS -- Chemicals can enter the body if they come in contact with body openings such as the eyes or cuts on the hands. You can protect yourself by wearing proper personal protective equipment such as gloves and eye protection.

THROUGH THE DIGESTIVE SYSTEM -- You can accidentally swallow a chemical if it comes in contact with food or drinks in the work area. This can happen if the chemical is splashed or spilled onto your food or the work area, or if the chemical is on your hands when you touch your food. This is why food and drinks should never be stored or eaten in areas where chemicals are present.



Some chemicals require special storage requirements such as temperature restrictions or ventilation requirements. Some chemicals will react negatively when mixed with other chemicals. If a container leaks or a spill occurs, there may be special requirements for cleaning up and disposing of the chemical.

A complete awareness of the potential hazards requires communication and a thorough understanding of this information. The two primary sources of information for chemicals you use are container labels and Material Safety Data Sheets.

Container Labeling

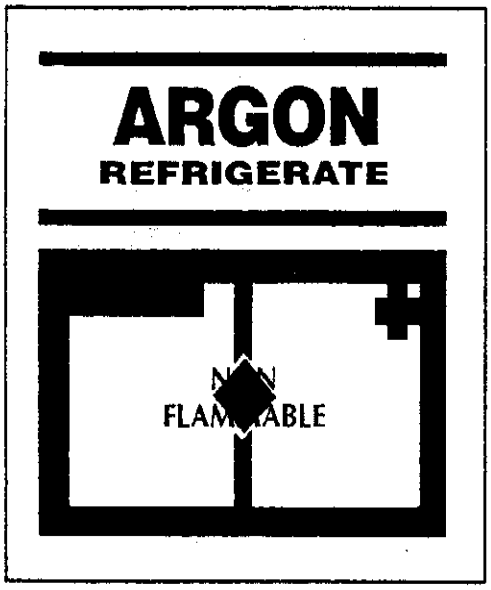
The Hazard Communication Standard requires the manufacturer or importer to label all containers of hazardous chemicals. The standard requires the label to carry three pieces of information:

- ❑ Identity or Name of the Chemical
- ❑ Warning of its Hazardous Contents
- ❑ Name and Address of Manufacturer or Importer.

When in-plant labeling systems are used for shipped containers, information on the target organ effects is required in addition to these three pieces of information. Phrases such as "caution" or "harmful if inhaled" are not adequate. If the chemical causes lung damage if inhaled, then the warning should specify that the chemical causes lung damage if inhaled.

Most container labels will carry additional information such as personal protective equipment required, emergency response and first aid procedures.

Although there is no standardized format required for container labels, the four most common ones used in the work place include:

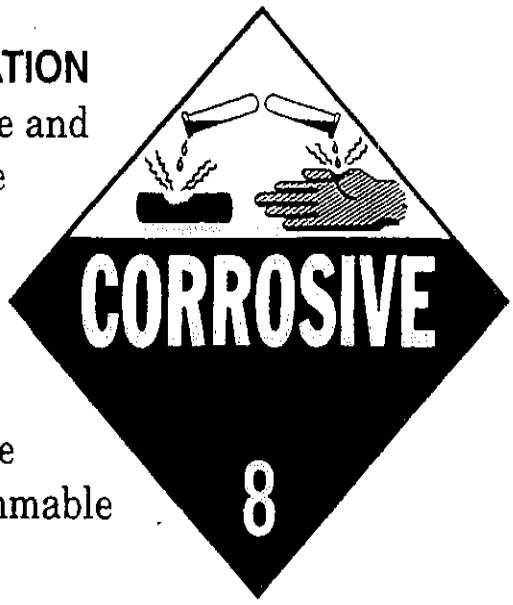


AMERICAN NATIONAL STANDARDS INSTITUTE

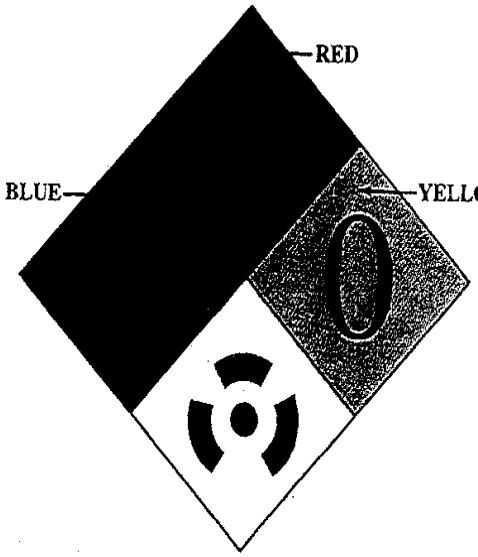
The ANSI label places the chemical into one of four categories: toxic, flammable, corrosive, and reactive. An extreme hazard is labeled **"DANGER,"** a moderate one is **"WARNING,"** and the least hazardous is **"CAUTION."**

DEPARTMENT OF TRANSPORTATION

The DOT label is a diamond shape and color-coded. The following are the respective colors and hazards:



Orange	-	Explosive
Red	-	Flammable
Red Striped	-	Solid Flammable
White	-	Toxic
Black & White	-	Corrosive
Yellow	-	Oxidizer
Yellow & White	-	Radioactive

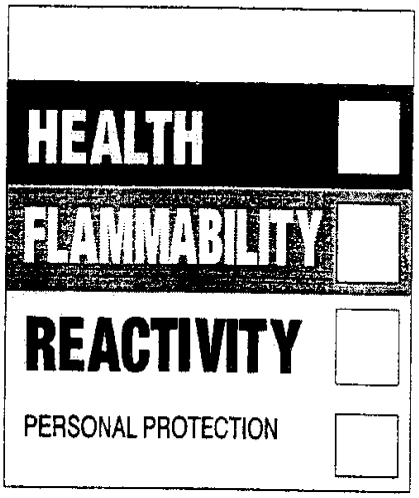


NATIONAL FIRE PROTECTION ASSOCIATION

The NFPA use four squares. **RED** represents flammability. **BLUE** is health. **YELLOW** is reactivity, and **WHITE** is used for special hazards. The hazards are rated on a scale of zero to four -- zero being a non-hazard and four being extremely hazardous.

NATIONAL PAINT AND COATING ASSOCIATION

The Hazardous Materials Identification System used by the NPCA lists in vertical order the chemical's name, health hazard, flammability, reactivity, and personal protective equipment. The same zero to four NFPA rating is used for the physical hazards. Letter values are used for the recommended personal protective equipment.



Which labeling systems are used in your facility?

Material Safety Data Sheets

The Material Safety Data Sheet, MSDS, provides the most detailed information on the chemicals you use. An MSDS is required for every chemical used or stored in your facility. Though Material Safety Data Sheets may vary in length and format, they are required to contain the same basic sections. That information is explained below. Use the MSDS on pages 11 and 12 for reference.

I. Identification

The first section gives the name of the manufacturer, their address, emergency telephone numbers and date prepared.

II. Hazardous Ingredients or Components

This section lists any hazardous ingredients that make up at least one percent of the total mixture. It also lists the Threshold Limit Value (TLV), which measures the health effect. The Permissible Exposure Limit (PEL) is a similar level set by OSHA. The CAS number is also given.

III. Physical and Chemical Characteristics

This section will help you identify the substance by observing its physical properties. It will describe the chemical's appearance, odor, boiling point and other technical data.

IV. Fire and Explosion Hazard

It contains the flash point and flammable limits of the material. Procedures are also provided for fighting a fire.

V. Reactivity Data

The reactivity section alerts you to conditions and materials to avoid. Some materials will create a dangerous reaction when combined with other materials.

VI. Health Hazard Data

This section provides the hazards associated with the chemical, routes of entry, as well as effects of overexposure. Emergency and first aid information will provide methods of treating overexposure.

VII. Spill or Leak Procedures

Outlines steps that should be taken to clean up the material if it is spilled. It will also give methods of waste disposal.

VIII. Special Protection

This section includes recommendations for respiratory protection or use of other protective equipment while working with the material.

IX. Special Precautions

It explains required handling and storing precautions. This section does not appear on all MSDS forms.

Where are the Material Safety Data Sheets located in your facility?

Safe Work Practices

Safe work practices begin with a knowledge and understanding of the chemicals you use, and a respect for the potential hazards. The chemicals in your facility will cause personal harm and physical damage only when they are mishandled, used incorrectly, improperly stored or involved in other unsafe procedures.

Always read the container labels of the substances you handle so you are aware of their potential hazards. Use the Material Safety Data Sheets for more detailed information.

Make sure you understand the procedures established in your company's written Hazard Communication Plan.

Follow the established work procedures at your facility at all times.

Use the proper personal protective equipment when handling hazardous substances.

And if you are unsure about anything, ask questions. Remember, information is your most valuable tool when working with hazardous substances. Use it.

What procedures are required in your facility for cleanup and disposal of a spill or leak of hazardous chemicals? _____

Glossary of Common MSDS Terms

Absolute: A chemical substance that is not mixed; pure. A single dose of or exposure to a substance.

"C" or Ceiling: The maximum allowable human exposure limit for an airborne substance; not to be exceeded even momentarily.

Carcinogen: A substance or agent capable of causing or producing cancer in mammals.

CHEMTREC: Chemical Transportation Emergency Center; a national center established to relay pertinent information concerning specific chemicals on request. Toll free 24-hour telephone number is 1-800-424-9300.

Combustible: A term used to classify certain liquids that will burn on the basis of flash points.

Dermal Toxicity: Adverse effects resulting from skin exposure to a substance.

Evaporation Rate: The rate at which a particular material will vaporize (evaporate) when compared to the rate of vaporization of a known material. The evaporation rate can be useful in evaluating the health and fire hazards of a material.

Explosive Limits: The range of concentrations over which a flammable vapor mixed with proper portions of air will flash or explode if an ignition source is present.

Flammable: A flammable liquid is defined by NFPA and DOT as a liquid with a flash point below 100°F (37.8°C).

Flash Point: The temperature at which a liquid will give off enough flammable vapor to ignite. There are several flash point test methods, and flash points may vary for the same material depending on the method used, so the test method is indicated when the flash point is given.

Incompatible: Materials which could cause dangerous reactions from direct contact with one another are described as incompatible.

Irritant: A substance which, by contact in sufficient concentration for a sufficient period of time, will cause an inflammatory response or reaction of the eye, skin, or respiratory system.

LEL or LFL: Lower Explosive Limit or Lower Flammable Limit of a vapor or gas; the lowest concentration that will produce a fire or flash when an ignition source is present.

Melting Point: The temperature at which a solid substance changes to a liquid state. For mixtures, the melting range may be given.

PEL: Permissible Exposure Limit. An exposure limit established by OSHA regulatory authority. May be time-weighted average (TWA) limit or a maximum concentration exposure limit.

ppm: Parts per million. A unit for measuring the concentration of a gas or vapor in air. Also used to indicate the concentration of a particular substance in a liquid or solid.

ppb: Parts per billion. A unit for measuring the concentration of a gas or vapor in air -- parts of the gas or vapor in a billion parts of air.

psi: Pounds per square inch. For MSDS purposes, a unit for measuring the pressure a material exerts on the walls of a confining vessel or enclosure.

Pyrophoric: A chemical that will ignite spontaneously in air at a temperature of 130°F (54.4°C) or below.

Reactivity: A description of the tendency of a substance to undergo chemical reaction with the release of energy. Undesirable effects -- such as pressure buildup, temperature increase, formation of noxious, toxic, or corrosive by-product -- may occur because of the reactivity of a substance to heating, burning, direct contact with other material or other conditions in use or in storage.

Solubility in Water: A term expressing the percentage of a material (by weight) that will dissolve in water at ambient temperature. Solubility information can be useful in determining spill cleanup methods and fire-extinguishing agents and methods for a material.

Stability: An expression of the ability of a material to remain unchanged. For MSDS purposes, a material is stable if it remains in the same form under expected and reasonable conditions of storage or use.

TLV: Threshold Limit Value, a term used to express the airborne concentration of a material to which nearly all persons can be exposed day after day without adverse effects.

UEL: Upper Explosive Limit. Vapor in air concentration above which the concentration is too rich to burn.

Unstable: A chemical which, in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.

Vapor Density: The weight of a vapor or gas compared to the weight of an equal volume of air; an expression of the density of the vapor or gas. Materials lighter than air have vapor densities less than 1.0 (Examples: acetylene, methane, hydrogen). Materials heavier than air (Examples: propane, hydrogen sulfide, ethane, butane, chlorine, sulfur dioxide) have vapor densities greater than 1.0. All vapors and gases will mix with air, but the lighter materials will tend to rise and dissipate (unless confined). Heavier vapors and gases are likely to concentrate in low places -- along or under floors, in sumps, sewers and manholes, in trenches and ditches -- where they may create fire or health hazards.

Vapor Pressure: The pressure exerted by a saturated vapor above its own liquid in a closed container. When quality control tests are performed on products, the test temperature is usually 100°F and the vapor pressure is expressed as pounds per square inch. But vapor pressures reported on MSDSs are in millimeters of mercury (mmHg) at 68°F (20°C), unless stated otherwise. Three facts are important to remember:

1. Vapor pressure of a substance at 100°F will always be higher than the vapor pressure of the substance at 68°F.

2. Vapor pressures reported on MSDSs in mmHg are usually very low pressures; 760 mmHg is equivalent to 14.7 pounds per square inch.

3. The lower the boiling point of a substance, the higher its vapor pressure.

Water-Reactive: A chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

Hazardous Materials Information System® (HMIS)[30]

The Hazardous Material Information System (HMIS®) is a communication system for hazardous materials. Use of this system is *voluntary*- OSHA does not require the use of the HMIS label. This system provides labels on chemical containers that warn of the hazards the chemical may present. Figure 1 shows a blank, generic HMIS® label. The HMIS® system combines colors, numbers, and words to identify the nature of the hazardous material.

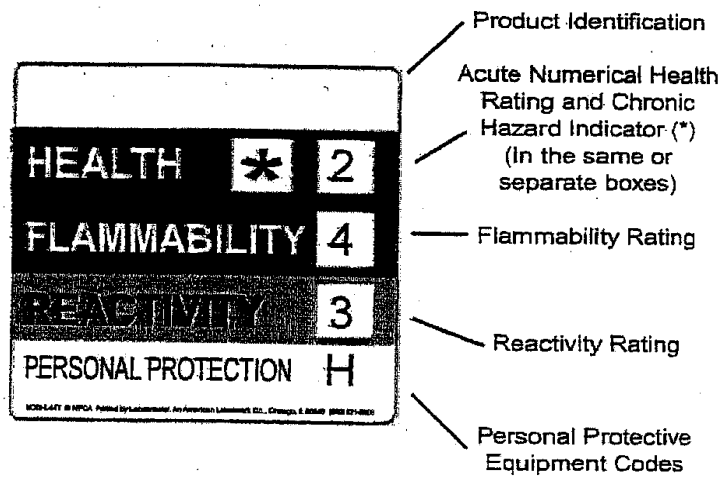


Figure 3 Hazardous Materials Identification System®.

There are five sections on the HMIS® label:

1. A blank space at the top for the name of the chemical.
2. A **blue** bar that indicates health hazards.
3. A **red** bar that indicates ***flammability***.
4. A bar that indicates ***reactivity/instability***..
5. A white bar that indicates ***personal protective equipment*** (PPE) required for handling the material safely.

The box on the left side of each bar contains a numerical rating from 0-4, which indicates the level of hazard. A rating of 0 indicates minimal or no hazard; a rating of 4 indicates extreme hazard or danger.

The HMIS® may contain other information as well, such as the Chemical Abstracts Service (CAS) number, manufacturer identification, etc. The Chemical

[30] Source: www.paint.org National Paint & Coatings Association.

Abstracts Service is a registry for chemicals: it assigns a unique number to every chemical and that number that allows you to easily search for information about that specific chemical in reference books and on computers.

The white section defines the personal protective equipment (PPE) that should be used in order. PPE is indicated by a multi-letter code, A – K and X combined with icons or pictograms showing the kinds of protective equipment (such as gloves, respirators, eye glasses, etc.) to be used. Table 1 provides more detailed information on the severity of hazards indicated by the numbers on the HMIS® label.

In recent years this label has been updated in order to make the identification of hazards easier. Newer labels will have show the following changes:

1. The blue bar was modified to include a second white box next to the existing one. An asterisk (*) in the first box is a warning that the chemical poses long-term (chronic) health risks.
2. The designations for PPE, seen in the white bar at the bottom, have changed and use the lower case letters m-z, except x. Each of these letters is assigned to an individual piece of PPE or a set of PPE (see Figure 4 below).
3. The red flammability and yellow reactivity ratings were updated to match those in the NFPA® labeling system. The term "***reactivity***" was replaced by "instability," although it is still possible to purchase labels that use the word "reactivity." These two terms can be used interchangeably on the HMIS® and NFPA® labeling systems.

You will still find the older type of label in many places, and you should be able to read and understand both label formats.

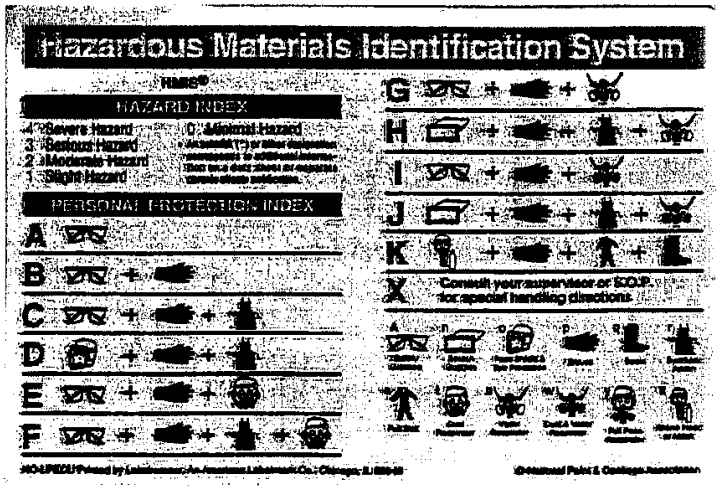


Figure 4 HMIS® and Personal Protective Equipment.

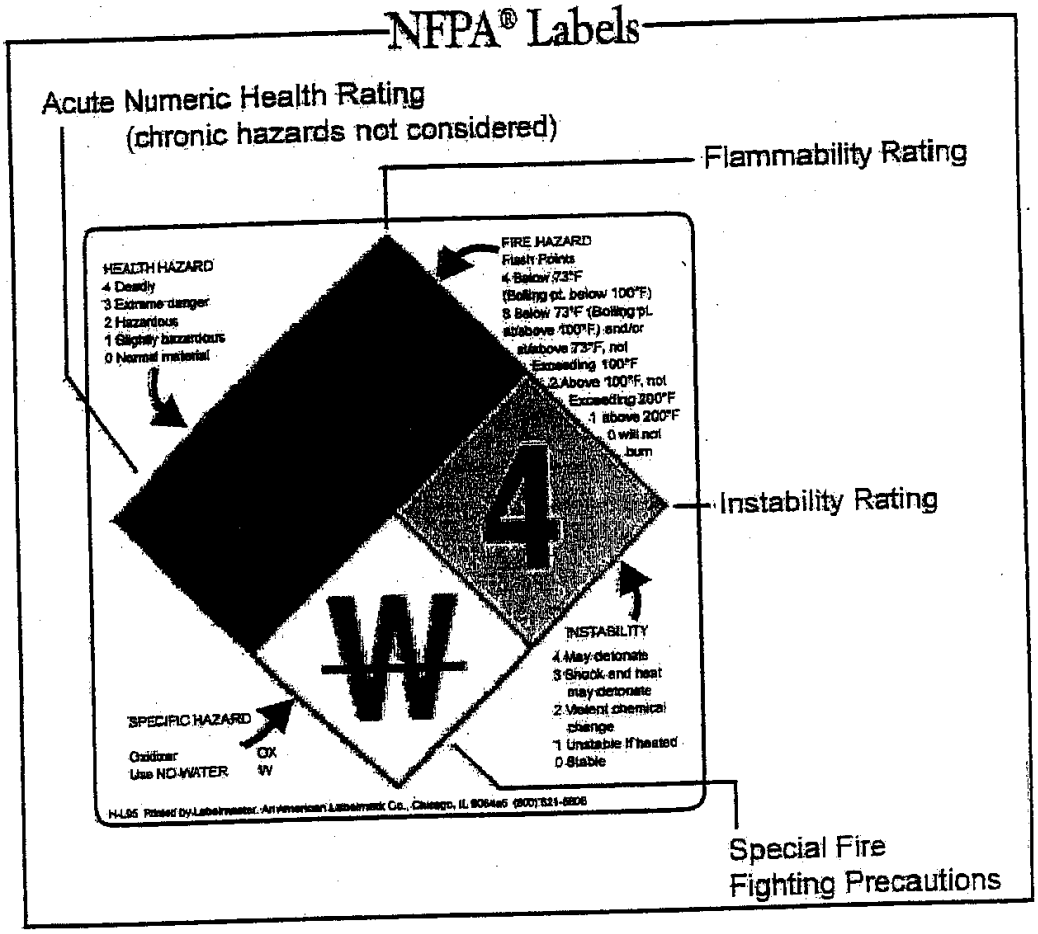


Figure 6 National Fire Protection Association® 704 Label.

As in the HMIS® system, the blue section of the NFPA® diamond indicates health, the red section indicates flammability, and the yellow section indicates reactivity/instability. The white section of the NFPA® diamond however, is used to indicate the presence of a specific hazard with either a symbol or word. If any information appears in the white section of the NFPA® diamond at your worksite, read the MSDS because the material identified by the diamond requires *extra precautions*. Table 1 provides several examples of what could be found in the white section of the NFPA® diamond.

NFPA® Symbol:	What this means:
OXY	The material is an ***oxidizer***. An oxidizer is a chemical other than a blasting agent or explosive[32] that begins or causes combustion in other materials, thereby causing the fire either of itself or through the release of oxygen or other gases.
ACID	The material is an ***acid***. Acids are inorganic or organic compounds that: are usually damaging to human tissue and must be handled with extreme care.
ALK	The material is an ***alkali***. Alkalis are inorganic or organic chemicals that are usually damaging to human tissue and must be handled with extreme care. Common examples of alkalis are sodium carbonate (soda ash), caustic potash, lime, lye, regular mortar, Portland cement, and bicarbonate of soda.
COR	The material is ***corrosive***. The term "corrosive" can refer to chemical reactions with both human tissues and with workplace objects, such as drums and other containers. Corrosive chemicals cause visible destruction of or irreversible damage in living tissue where the tissue and chemical come into contact. Corrosive can also be used to describe the physical breakdown of a material such as metal (such as steel or aluminum) that results when the corrosive chemical comes into contact with the metal.
	Use No Water. This material reacts dangerously with water to release a gas that is either flammable or presents a health hazard.
	This material is radioactive.

Table 1 Hazard Indicators on the NFPA® Diamond.

[32] Blasting agents and explosives are defined in the Occupational Safety and Health Standards for General Industry 29 CFR 1910.109(a).

Numerical Rating System for HMIS® and NFPA®: 0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Extreme.

HEALTH HAZARD (Blue)

0 – Material that if exposed under fire conditions would present no hazard beyond that of ordinary combustible material. Example: Peanut oil.

1 – Material that on exposure would cause irritation, but only minor injury. Example: Turpentine.

2 – Material that on intense or repetitive exposure (but not chronic exposure) could cause temporary damage to health or possible long-term injury. Example: Ammonia gas.

3 - Material that on short exposure could cause serious temporary or permanent injury. Example: Chlorine gas.

4 - Material that on very short exposure could cause death or major permanent injury. Example: Hydrogen cyanide.

FLAMMABILITY (Red)

0 – Material will not burn. Example: Water.

1- Material must be pre-heated before it can begin to burn. Example: Corn oil.

2 - Material must be moderately heated or exposed to relatively high ambient temperature before ignition can occur. Example: Diesel fuel oil.

3 - Liquids and solids that can be ignited under almost all ambient temperature conditions. Example: Gasoline.

4- Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature, or that are readily dispersed in air and that will burn readily. Example: Propane gas.

REACTIVITY/ INSTABILITY (Yellow)

0- Material that by itself is normally stable, even under fire exposure conditions, and is not reactive with water. Example: Liquid nitrogen.

1- Material that by itself is normally stable, but which can become unstable at elevated temperatures and pressures. Example: Phosphorus (red or white).

2- Material that readily undergoes violent chemical change at elevated temperatures and pressures or which reacts violently with water or which may form explosive mixtures with water. Example: Calcium metal.

3- Material that in itself is capable of detonation or explosive decomposition or reaction but requires a strong initiating source or which must be heated under confinement before initiation or which reacts explosively with water. Example: Fluorine gas.

4 – Material that in itself is readily capable of detonation or of explosive decomposition or reaction at normal temperatures and pressures. Example: Trinitrotoluene (TNT).

NFPA SPECIAL PRECAUTIONS (White) *Symbols specified in National Fire Codes, Section 704:*

W Material shows unusual reactivity with water. Do not put water on these materials! Example: Magnesium metal.

OX Material possesses oxidizing properties. Example: Ammonium nitrate.

ACID This material is an acid.

ALK This material is alkaline (a base).

COR This material is corrosive.

This material is radioactive.

HMIS PPE REQUIREMENTS (White)

Figure 7 NFPA Hazard Identification System.[34]

[34] Sources: http://chemlabs.uoregon.edu; www.Labelmaster.com; www.nfpa.org.

Precautions for Safe Handling

Safe handling information includes steps to be taken in case the material is released into the atmosphere, spilled on the ground, or spilled into water. Waste disposal methods and precautions to be taken in handling and storing are also part of the information that you will find in part of a material safety data sheet. In many cases, employers train or high specific individuals to manage the storage, handling, and disposal of hazardous materials. State and Federal regulations are very strict about how waste materials may be disposed of. Whenever a hazardous material is released into the environment, make sure that you contact your employer and find out how to safely and properly handle cleanup and reporting.

Flammability and reactivity are both important considerations in the handling of hazardous materials while you are working with them. Your have already read about when these dangers may be present (for example, when materials are subject to extreme temperatures, or pressures). The information on safe handling will tell you how to avoid exposing hazardous materials to extremes of temperature, pressure, ignition sources, and other factors that could result in fire, explosion, or other critical accidents.

Read the section of the MSDS below carefully, and make sure you know the following terms:

Grounding of Containers

Containers are "grounded" in order to prevent them from exploding when exposed to sparks. Grounding allows for the continuous elimination of static electric charges that tend to build up. This charge could create a spark that ignites a flammable or combustible atmosphere or material. These charges are moved from the container to the ground/earth by means of a conductor, such as a wire, or grounding strip connecting the container to the ground/earth.

Grounding All Equipment

Equipment is "grounded" in order to prevent explosions from sparks. For example, a static electric charge can build up in spray equipment as it is being used. This charge could create a spark that ignites a flammable or combustible atmosphere or material. Static electric charges are moved from the equipment to the ground/earth by means of a conductor, such as a wire or grounding strip that connects the container to the ground/earth.

Inert Material/Chemical

Inert materials or chemicals do not react easily with other materials or chemicals. For example, Xorb[41] sorbent pillows contain inert materials that will not react with most

[41] Xorb Sorbent Pillows are a product of Labelmaster® . For more information visit the Labelmaster® web site at www.labelmaster.com.

hazardous materials. The pillows containing this material can be laid down on a spill and will absorb the hazardous material. Other similar products are targeted toward cleaning up spills of specific types of chemicals, such as oils, acids, bases, solvents, etc.

Non-Sparking Tools

Non-sparking tools are tools that will not create sparks when used properly.

Figure 14 shows you how this information appears on the MSDS for the Ennis traffic paint.

Section VII
PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled

- Absorb with inert material.
- Sweep or scoop up and place in waste container.
- Flush the area immediately with plenty of water.
- Prevent washings from entering ground.

Waste Disposal Method

- Waste material must be disposed of in accordance with federal, state and local environmental regulatory controls.

Precautions to be Taken in Handling and Storing

- Avoid gross contamination of skin.
- Do not apply to hot surfaces or use in areas exposed to electric sparks.
- Keep away from heat and open flames.
- Ground containers when transferring from one to the other.

Other Precautions

- Protect containers against physical damage.
- Ground all equipment to reduce static electricity hazard.
- Use non-sparking tools.

Figure 15 Precautions for Safe Use and Handling.

Control Measures

OSHA requires the MSDS to contain information about a material's control measures. Control measures include appropriate engineering controls, work practices, or personal protective equipment (PPE). Module 3 of the Apprenticeship Training Program covers PPE for stripers in depth. If you have completed Module 3 you should be familiar with the terminology below. If you have not completed Module 3, then check the Glossary of this Module for help with vocabulary related to personal protective equipment.

More specifically, OSHA requires the following information:

- ***Respiratory Protection*** (Specify type).
- ***Ventilation*** (Local Exhaust, Special, Mechanical, and Other).
- Protective Gloves.
- Eye Protection.
- Other Protective Clothing or Equipment.
- Work/Hygienic Practices.

Figure 15 presents an example of the information on control measures.

Section VIII CONTROL MEASURES
Respiratory Protection
• Use with adequate ventilation.
• NIOSH approved organic vapor or airline respirators should be used where ventilation is inadequate.
• NIOSH approved airline respirators with auxiliary escape air tanks or self-contained breathing apparatus should be used in confined spaces.
Ventilation
• Local exhaust must be sufficient to keep airborne vapor concentrations below the TLV limit.
Protection Gloves
• Chemical resistant gloves.
Eye protection
• Safety glasses with side shields.
Other Protective Equipment
• Wear impervious clothing.
• Have access to eye bath and safety shower.
Work/Hygienic Practices

Figure 16 Control Measures.

Additional (Optional) Information

As stated before, the format for each MSDS will vary, but the basic information will be the same. OSHA requires specific information to be included, but the preparer of the MSDS may elect to include additional information. Each hazardous material presents different challenges; therefore, some materials require additional information in order for the MSDS to be most helpful to those exposed to the hazardous material. Generally each MSDS will contain disclaimer information. This information is for any additional special precautions needed or notes regarding the handling of a chemical. A disclaimer is a statement that will renounce responsibility for the correctness of the information. A typical disclaimer reads as follows:

"The information provided in this MSDS was obtained from sources believed to be reliable. There is no expressed or implied warranty in regard to its accuracy or completeness."

The sample MSDS for the Ennis traffic paint that we have been using in this Unit contains this very same disclaimer. You can read the complete material safety data sheet for this traffic paint in Appendix A.

The following is a listing of other types of information that may be included on an MSDS:

- **Toxicological information**- *Toxicological information may include scientific information about the nature, degree, and the means of determining these factors for the hazardous chemicals identified with the Health Hazard information on the MSDS. The data presented here may include levels of toxicity, target organs, reproductive hazards, etc.*
- **Ecological information**- *Ecological information includes data about the hazards to the environment (air, water, ground) that would result from contamination with the hazardous material.*
- **Transportation information** – *Transportation information can include any special instructions needed for the safe transportation of the material, state and federal transportation regulations, placarding requirements, etc.*
- **Disposal considerations** – *Disposal considerations include any special instructions and regulations for the proper disposal (including recycling and reclamation) of hazardous materials.*
- **Regulatory information** – *Regulatory information may include notification of any additional regulatory requirements (by OSHA or SARA for example) for the hazardous material.*