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Understanding hazardous materials warning labels

Scope

The purpose of this Technical Information Paper is to provide a basic understanding of a Hazardous Material Identification System (HMIS). The TI Paper will explain the importance of HMIS and how information is conveyed. The objective is to provide sufficient detail so one can read the HMIS warning labels and understand its meaning.

Safety precautions

No safety precautions apply.

Purpose

The HMIS is a visual system using colors, numbers, letters, and symbols to communicate risk information to the workplace. HMIS is designed to fill the need for an effective hazard communication to provide information for the safe use of materials. Information is usually conveyed via a warning label or via a Material Safety Data Sheet. The objective of HMIS is to inform employees of the hazards encountered in the performance of their jobs through a uniform communication method.

Introduction

The HMIS communicates information to employees on three inherent properties of a material:

1. Health
2. Flammability
3. Reactivity (instability)

For each category, the degree of a hazard is identified by a numerical rating. The numerical rating ranges from “0” to “4.” A “0” rating represents a very low degree of hazard potential, while a “4” rating indicates a very high degree of hazard potential.

The system also identifies the personal protective equipment to use when handling a material. Protective equipment to use when handling a material. Protective equipment is designated with a letter of the alphabet or a symbol that corresponds to a specific combination of equipment to use.

Communication criteria

The criteria for the assignment of ratings provided below are consistent with American National Standards Institute (ANSI), National Institute for Occupational Safety and Health (NIOSH), and National Fire Protection Association (NFPA).

Health hazard communication

Health is represented by the letter “H” the color designation when required is BLUE.

A health hazard is defined as any property of a material which can cause injury from exposure by contact, inhalation, or ingestion. Severity categories are:

- 4H- Severe hazard
- 3H- Serious hazard
- 2H- Moderate hazard
- 1H- Slight hazard
- 0H- Minimal hazard

Definition of health categories

- 4H- Life threatening. Major or permanent damage may result from single or repeated exposures.
- 3H- Major injury is likely unless prompt action is taken and medical treatment is given.
- 2H- Temporary or minor injury may occur.
- 1H- Irritation or minor reversible injury is possible.
- 0H- There is no significant risk to health.

Flammability hazard communication

Flammability is represented by the letter “F.” The color designation when required is RED.

Flammability hazard is defined as the degree of a material to burn (fire hazard). Severity categories are:

- 4F- Severe hazard
- 3F- Serious hazard
- 2F- Moderate hazard
- 1F- Slight hazard
- 0F- Minimal hazard.

Definition of flammability categories

4F- Materials which will rapidly or completely vaporize at atmospheric pressure and normal ambient temperatures. Materials that will burn readily or form explosive mixtures with air.

3F- Liquids and solids that can be ignited under almost all ambient temperature conditions. Produce hazardous atmospheres with air under almost all ambient temperatures.

2F- Materials that must be exposed to relatively high ambient temperatures before ignition can occur. Material, when moderately heated, release vapors to produce hazardous atmospheres with air. Solids and semisolids which readily give off flammable vapors.

1F- Materials that must be preheated before ignition can occur. Materials which will burn in air when exposed to a temperature of 815.5°C (1500°F) for a period of 5 minutes or less.

0F- Materials that will not burn unless heated. Any material which will not burn in air when exposed to a temperature of 815.5°C (1500°F) for a period of 5 minutes.

Reactivity (instability) hazard communication

Reactivity is represented by the letter “R.” The color designation when required is YELLOW.

Reactivity hazard is defined as the degree of a material to release energy. Severity categories are: