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GLOBALLY HARMONIZED SYSTEM: THE NEW FORMAT OF HAZARD COMMUNICATION

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The Pennsylvania Worker and Community Right to Know Act (Act 159 of 1984) created a system for communicating information about hazardous materials used, produced, or stored at work sites within the commonwealth. The Department of Labor and Industry, through the Bureau of PENNSAFE, acts as the data collector between employers and the community.

Under this law, all employers have some compliance responsibilities. The law defines an employer as any individual, partnership, corporation, or association doing business in the commonwealth. Public sector employers, such as townships, boroughs, and cities, and any other non-OSHA covered employers must comply with the employee access to chemical information and training provisions applicable to their workplace environment. All employers must comply with the community provisions that provide hazardous chemical information to the public and emergency response agencies.

Public sector employers, such as townships, boroughs, and cities, must comply with the employee access to chemical information and training provisions applicable to their workplace environment.

According to the Pennsylvania Department of Labor and Industry's website, non-OSHA covered employers (including public sector employers) are required to:

- Post a workplace notice, which lists employee rights under the law.
- Complete and post a Hazardous Substance Survey Form (HSSF) by April 1 of each year and provide it to the Department of Labor and Industry, upon request.
- Collect and maintain a file of Material Safety Data Sheets (MSDSs). These sheets, which give detailed information on each hazardous substance in the workplace, must be made available to employees without intervention of a supervisor.
- Complete an Environmental Hazard Survey Form (EHSF), if requested by the department, and make it available to employees.
- Label all containers and ports of pipelines containing hazardous substances or hazardous mixtures in the workplace.
- Label workplace containers and ports of pipelines containing any chemical.
- Provide copies of the HSSF, EHSF, and MSDSs to local emergency response organizations, upon request.

The Globally Harmonized System

Chemicals pose a wide range of physical, health, and environmental hazards, and OSHA's Hazard Communication Standard (HCS) is designed to ensure that information about these hazards and associated protective measures is disseminated. This is generally accomplished by requiring chemical manufacturers and importers to evaluate the hazards of the chemicals they produce or import and provide information about them through labels on shipped containers and more detailed information sheets.

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In 2012, OSHA adopted a new format for hazard communication. The new format is based on a system developed by United Nations called the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), which emphasizes the use of pictures and images that symbolize specific hazards. In our country, the new system will be in full effect on June 1, 2016. In the interim, chemical manufacturers and businesses are phasing in the program, so local governments may see changes to Safety Data Sheets (SDSs), which were formerly known as MSDSs, as well as changes to hazardous project labels. Overall, under the GHS, the most significant changes to hazard communication are the specific guidelines for the following:

- Hazard classification
- Labels
- Safety Data Sheets

Hazard Classification

The GHS has introduced a multi-level system for hazard classification. The three main types of chemical hazards are physical hazards, health hazards, and environmental hazards. Each hazard type has a set of hazard classes. There are 16 physical hazard classes, 10 health hazard classes, and two environmental hazard classes. Examples of the hazard classes include flammable liquids, skin irritants, and aquatic toxicity.

Finally, each class has one or more hazard category, which is a set of criteria to rank the chemical hazard by its severity. For example, the flammable liquids class has four hazard categories, and the skin irritant class has only one hazard category.

It's important to understand that under GHS, a type of hazard may have varying levels of severity. Chemical manufacturers and suppliers will use the GHS hazard classification system to create new labels and new Safety Data Sheets. Several key elements will appear on the new labels and SDSs:

- Signal words
- Hazard statements
- Precautionary statements
- Pictograms

Signal words – GHS uses a word to indicate the relative level of severity of hazard and alert a person to a potential hazard discussed on the label or Safety Data Sheet. The two GHS signal words are "danger" and "warning." "Danger" is used for the more severe hazards, while "warning" is used for less severe hazards.

Hazard statements – These statements describe the nature of the hazard(s) associated with a chemical. These statements are based on the chemical's hazard class and hazard category. Examples of hazard statements are:

- Highly flammable liquid and vapor.
- Causes serious eye damage.
- May cause drowsiness.

Precautionary statements – These statements provide information to lessen or prevent negative effects from (i) exposure to a hazardous chemical or (ii) improper storage or handling of a hazardous chemical. Examples of precautionary statements include:

- Keep away from heat/sparks/open flames/hot surfaces.
- No smoking.
- Avoid breathing fumes/mists/vapors/sprays.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present.

Pictograms – GHS uses symbols to convey specific information about the hazards of a chemical. The eight mandatory pictograms and one non-mandatory pictogram are shown below. The information includes the pictogram's name, symbol, and the classes of hazards each symbol represents. Note that the hazards represented by these pictograms can have varying degrees of severity. To fully understand the seriousness of the hazard, look for additional information, such as a signal word and hazard statement.

Health Hazard  • Carcinogen • Mutagen • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity	**Flame**  • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides
Gas Cylinder  • Gases Under Pressure	**Corrosion**  • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals
Flame Over Circle  • Oxidizers	**Environment(Non-Mandatory)**  • Aquatic Toxicity

HCS pictograms and hazards

OSHA (800) 321-OSHA (6742)

SAMPLE LABEL

PRODUCT IDENTIFIER

CODE _____
Product Name _____

SUPPLIER IDENTIFICATION

Company Name_____
Street Address _____
City _____ State _____
Postal Code _____ Country _____
Emergency Phone Number _____

PRECAUTIONARY STATEMENTS

Keep container tightly closed. Store in cool, well ventilated place that is locked.
Keep away from heat/sparks/open flame. No smoking.
Only use non-sparking tools.
Use explosion-proof electrical equipment.
Take precautionary measure against static discharge.
Ground and bond container and receiving equipment.
Do not breathe vapors.
Wear Protective gloves.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
Dispose of in accordance with local, regional, national, international regulations as specified.

In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO_2) fire extinguisher to extinguish.

First Aid
If exposed call Poison Center.
If on skin (on hair): Take off immediately any contaminated clothing. Rinse skin with water.

HAZARD PICTOGRAMS

SIGNAL WORD
Danger

HAZARD STATEMENT

Highly flammable liquid and vapor.
May cause liver and kidney damage.

SUPPLEMENTAL INFORMATION

Directions for use

_____
_____
_____

Fill weight: _____ Lot Number

Gross weight: _____ Fill Date: _____
Expiration Date: _____

Sample GHS label from OSHA

Labels

Under the 1994 OSHA standard, labels came in a wide variety of formats, not all of which provided a clear idea about the hazards of a material or the precautions to take. The new GHS system requires that labels have more information and clear statements about the material hazards, including the use of pictograms.

The GHS label has six required components, which are useful in understanding the material's hazard(s). The required components are as follows:

- **Product identifier**, which identifies the name of the chemical.
- **Supplier identification**, which identifies where the material came from.
- **Pictograms**, which provide a quick clue about the types of hazards the chemical presents.
- **Signal word**, which provides the severity of the hazards.
- **Hazard statements**, which provide further clarification on the nature of the hazard.
- **Precautionary statements**, which inform on how to properly handle the material, protect yourself, and apply critical first aid measures.

Supplemental information can also be provided on the label as needed.

An example label provided by OSHA is shown at upper left.

For the most part, manufacturers must make sure their products comply with the new GHS label requirements by June 1, 2015. However, the GHS will be in full effect June 1, 2016. Note that because GHS is currently being phased-in, you will likely encounter labels and Safety Data Sheets in both the older and the GHS formats.

Municipal employees should follow all precautionary statements provided on the GHS labels. If you have any questions about how to properly handle a material or where to get the proper protective equipment, reach out to your supervisor prior to use. Additionally, if a label is unclear, missing, or damaged in some way, you can contact the supplier to obtain information or to replace the label using the Supplier Identification information.

Exclamation Mark

- Irritant (skin and eye)
- Skin Sensitizer
- Acute Toxicity
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer (Non-Mandatory)

Exploding Bomb

- Explosives
- Self-Reactives
- Organic Peroxides

Skull and Crossbones

- Acute Toxicity (fatal or toxic)

Because GHS is currently being phased-in, you will likely encounter labels and Safety Data Sheets in both the older and the GHS formats.

Safety Data Sheets

Safety Data Sheets (SDSs), formerly known as Material Safety Data Sheets (MSDSs), are provided by the chemical manufacturer, distributor, or importer. These sheets provide detailed information on each hazardous chemical, including its potential hazardous effects, its physical and chemical characteristics, and recommendations for appropriate protective measures.

Under the 1994 system, MSDSs had eight sections and no explicitly required format. The information contained in the SDS is largely the same as the MSDS, except SDSs are required to be in a consistent, user-friendly, 16-section format with specific content:

- **Sections 1 through 8** of the SDS contain general information about the chemical, identification, hazards, composition, safe handling practices, and emergency control measures (e.g., firefighting). This information should be helpful to those that need to get the information quickly.
  1. Identification (product identifier, emergency number)
  2. Hazard(s) identification, including:
     - Class/category
     - Signal word
     - Hazards not otherwise classified (HNOC)
     - Mixture comment
  3. Composition/information on ingredients
  4. First-aid measures
     - Necessary measures, symptoms, and health effects
  5. Firefighting measures
  6. Accidental release measures
     - Precautions, protective equipment, emergency procedures
  7. Handling and storage, including precautions and special handling
  8. Exposure control/personal protection
- **Sections 9 through 11 and 16** contain other technical and scientific information, such as physical and chemical properties, stability and reactivity information, toxicological information, exposure control information, and other information, including the date of preparation or last revision. The SDS must also state that no applicable information was found if the preparer does not find relevant information for any required element.
  9. Physical and chemical properties
  10. Stability and reactivity
      - Possible hazardous reactions, incompatible materials
  11. Toxicological information
      - Routes of exposure, symptoms, acute/chronic
  16. Exceptions
- **Sections 12 through 15** must be consistent with GHS, but OSHA will not enforce the content of these sections because they concern matters handled by other agencies.
  12. Ecological information
  13. Disposal considerations
  14. Transportation information
  15. Regulatory information

Improving Communication

The adoption of GHS was meant to improve communication of information regarding hazardous materials in the workplace. Manufacturers in the United States have begun to implement the GHS requirements and should meet the new GHS labels and Safety Data Sheet requirements by June 1, 2015. On June 1, 2016, the GHS will be in full effect.

OSHA has a wide range of training materials and additional information on this topic available at www.osha.gov/dsg/hazcom/index.html.