

Global Harmonization Standard (GHS) Overview



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In March of 2012, OSHA adopted the Hazard Communication Standard to conform with the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS). The goal of GHS is to assure a better worker understanding of the health hazards associated with the chemicals in their workplace. This is to be accomplished through redesigned labeling requirements, and standardized organization and information provided on Safety Data Sheets (SDS), formerly called Material Safety Data Sheets (MSDS).

Specific compliance requirements are being phased over the course of several years. Full implementation must be completed by **June 1, 2016**. Phase compliance dates are as follows:

December 1, 2013 ► employers are required to have completed the training of their employees on how to understand and use the new labeling system and Material Safety Sheet format; employees are expected to be able to understand the hazards associated with the use of the chemicals, potential health effects, and protective measures recommended; as with any training, documentation should be maintained in the employee files

June 1, 2015 ► all hazardous chemicals must be shipped with the new labeling containing the required pictograms, signal words, hazards and precautionary statements; manufacturers, shippers, and distributors may begin using the new labeling system before the **June 1, 2015** compliance date

December 1, 2015 ► distributors are not permitted to ship containers labeled by the chemical manufacturer or importer unless it has a GHS label

June 1, 2016 ► employers must have developed and affixed alternative workplace labels and updated their Hazard Communication Program as necessary; employees are to receive training for newly identified physical and health hazards by this date

Note: During the transition periods listed above, employers may comply with either the existing standards applicable in their State or with the final GHS standard, or both standards

Label Training – must be completed by December 1, 2013

Employees are to be familiarized with the following:

Product identifier information ► chemical name, code number or batch number; the same identifier should appear in Section 1 of the Safety Data Sheet

Appearance of a single Signal Word ► “Danger” or “Warning” indicating the severity of the hazard posed; “Danger” implies a severe hazard, whereas “Warning” indicates a lesser hazard

Pictogram ► there are only eight OSHA approved pictograms that can be used for labeling; pictograms must be displayed in the shape of a square and include a black hazard symbol against a white background and framed in red

Hazard statement ► must describe the nature and degree of the chemical hazard; all applicable hazard statements must be included; i.e. skin absorption damaging internal organs, lung irritation through respiration, etc.

Precautionary statement ▶ advises users on how to minimize or prevent harmful effects of exposure to the chemical

Contact information ▶ information on the address and phone number of the chemical manufacturer, distributor, or importer

Label information can aid employees with the following:

- ▶ organize proper storage arrangement of hazardous chemicals
- ▶ quickly locate first aid information following an exposure
- ▶ understand hazards as depicted by multiple pictograms associated with the use of a chemical
- ▶ the statement providing the greatest protection measure will appear on the label

Safety Data Sheets (SDS) Training – must be completed by December 1, 2013

Employees are to be familiarized with the following:

- ▶ the type of information that is available in all 16 sections of a SDS
- ▶ each SDS section will consistently provide the same information regardless of the chemical
- ▶ how to relate the information provided on a label to the information contained in the SDS

OSHA requires that training be provided in a manner that will be clearly communicated to all affected employees. If illiteracy or language barrier is a factor, the employer must take this into consideration in providing the needed training.

Employer Responsibilities

The employer is responsible to maintain legible labels on tanks, totes, drums, and other containers containing hazardous materials. Defaced labels are to be replaced with clean, legible labels.

When new hazards are identified with the use of a chemical, workplace labels communicating the new hazard must be developed and affixed to the container of the chemical. Employees are to be trained on this newly identified hazard. Relevant pictograms are to be included on workplace labels. Other instructional symbols can also be used on workplace labels.

Sources

For more detailed information about the Global Harmonization Program, use the links below to find the official OSHA website.

<https://www.osha.gov/dsg/hazcom/HCSFactsheet.html>

<https://www.osha.gov/dsg/hazcom/index.html>

<https://www.osha.gov/Publications/OSHA3636.pdf>

<https://www.osha.gov/Publications/OSHA3514.html> irritation through respiration, etc.

Safety Data Sheet Format

Product and company identification:

- ▶ GHS product identifier
- ▶ Other means of identification
- ▶ Recommended use of the chemical and restrictions on use
- ▶ Supplier's details (including name, address, phone number, etc.)
- ▶ Emergency phone number

Hazards identification:

- ▶ GHS classification of the substance/mixture and any regional information
- ▶ GHS label elements, including precautionary statements (hazard symbols may be provided as a graphical reproduction of the symbols in black and white or the name of the symbol, i.e. flame, skull and crossbones)
- ▶ Other hazards which do not result in classification (i.e. dust explosion hazard) or are not covered by the GHS

Composition information on ingredients:

Substance:

- ▶ Chemical identity
- ▶ Common name, synonyms, etc.
- ▶ CAS number, EC number, etc.
- ▶ Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance

Mixture:

- ▶ The chemical identity and concentration or concentration ranges of all ingredients which are hazardous within the meaning of the GHS and are present above their cut-off levels
- ▶ Cut-off level for reproductive toxicity, carcinogenicity and category 1 mutagenicity is 0.1%
- ▶ Cut-off level for all other hazard classes is 1.0%
- ▶ Note: For information on ingredients, the competent authority rules for CBI take priority over the rules for product identification

First-aid measures:

- ▶ Description of necessary measures, subdivided according to the different routes of exposure, i.e. inhalation, skin and eye contact and ingestion
- ▶ Most important symptoms/effects, acute and delayed
- ▶ Indication of immediate medical attention and special treatment needed, if necessary

Firfighting measures:

- ▶ Suitable (and unsuitable) extinguishing media

- ▶ Specific hazards arising from the chemical (i.e. nature of any hazardous combustion products)
- ▶ Special protective equipment and precautions for fire-fighters

Accidental release measures:

- ▶ Personal precautions, protective equipment and emergency procedures
- ▶ Environmental precautions
- ▶ Methods and materials for containment and cleaning up

Handling and storage:

- ▶ Precautions for safe handling
- ▶ Conditions for safe storage, including any incompatibilities

Exposure controls and personal protection:

- ▶ Control parameters (i.e. occupational exposure limit values or biological limit values)
- ▶ Appropriate engineering controls
- ▶ Individual protection measures, such as personal protective equipment

Physical and chemical properties:

- ▶ Appearance (physical state, color, etc.)
- ▶ Odor
- ▶ Odor threshold
- ▶ pH
- ▶ Melting point/freezing point
- ▶ Initial boiling point and boiling range
- ▶ Flash point
- ▶ Evaporation rate
- ▶ Flammability (solid, gas)
- ▶ Upper/lower flammability or explosive limits
- ▶ Vapor pressure
- ▶ Vapor density
- ▶ Relative density
- ▶ Solubility(ies)
- ▶ Partition coefficient: n-octanol/water
- ▶ Auto-ignition temperature
- ▶ Decomposition temperature

Stability and reactivity:

- ▶ Chemical stability
- ▶ Possibility of hazardous reactions
- ▶ Conditions to avoid (i.e. static discharge, shock or vibration)
- ▶ Incompatible materials
- ▶ Hazardous decomposition products

Toxicological information:

Concise and comprehensible description of the various toxicological (health) effects and the available data used to identify those effects; includes the following:

- ▶ Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact)
- ▶ Symptoms related to the physical, chemical and toxicological characteristics
- ▶ Delayed and immediate effects and also chronic effects from short and long-term exposure
- ▶ Numerical measures of toxicity (such as acute toxicity estimates)

Ecological information:

- ▶ Eco-toxicity (aquatic and terrestrial, where available)
- ▶ Persistence and degradability
- ▶ Bio-accumulative potential
- ▶ Mobility in soil
- ▶ Other adverse effects

Disposal considerations:

- ▶ Description of waste residues and information on their safe handling and methods of disposal, including any contaminated packaging

Transport information:

- ▶ UN number
- ▶ UN Proper shipping name
- ▶ Transport Hazard class(es)
- ▶ Packing group, if applicable
- ▶ Marine pollutant (Y/N)
- ▶ Special precautions in connection with transport or conveyance either within or outside their premises

Regulatory information:

- ▶ Safety, health and environmental regulations specific for the product

Other information:

- ▶ Other information including information on preparation and revision of the SDS

Hazard Communication Standard Pictograms

As of June 1, 2015, the Hazard Communication Standard (HCS) will require pictograms on labels to alert users of the chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents a distinct hazard(s). The pictogram on the label is determined by the chemical hazard classification.

Health Hazard



- ▶ Carcinogen
- ▶ Mutagenicity
- ▶ Reproductive Toxicity
- ▶ Respiratory Sensitizer
- ▶ Target Organ Toxicity
- ▶ Aspiration Toxicity

Flame



- ▶ Flammables
- ▶ Pyrophorics
- ▶ Self-Heating
- ▶ Emits Flammable Gas
- ▶ Self-Reactives
- ▶ Organic Peroxides

Exclamation Mark



- ▶ Irritant (skin and eye)
- ▶ Skin Sensitizer
- ▶ Acute Toxicity
- ▶ Narcotic Effects
- ▶ Respiratory Tract Irritant
- ▶ Hazardous to Ozone Layer (non-mandatory)

Gas Cylinder



- ▶ Gases Under Pressure

Corrosion



- ▶ Skin Corrosion/Burns
- ▶ Eye Damage
- ▶ Corrosive to Metals

Exploding Bomb



- ▶ Explosives
- ▶ Self-Reactives
- ▶ Organic Peroxides

Flame Over Circle



- ▶ Oxidizers

Environment



- ▶ Aquatic Toxicity

Skull and Crossbones



- ▶ Acute Toxicity (fatal or toxic)

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