

HAZARD COMMUNICATION

OSHA'S ADOPTION OF THE GLOBALLY SYSTEM OF CLASSIFICATION AND LABELING OF CHEMICALS (GHS)

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Laws and regulations throughout the world are different enough to require multiple labels and safety data sheets for the same product both within the U.S. and international trade. It is estimated that about 42 to 45 million workers are exposed to one or more chemical hazards in the workplace. Furthermore, an estimated 650,000 existing chemical materials exist and hundreds of new chemicals are introduced to the workplace annually. The worldwide use of chemicals has resulted in regulations specific to each country and sectors within that country (e.g., workplace, agriculture, transportation, production, consumer products). Thus, efforts began over 20 years ago to standardize labeling and safety data sheets throughout the world.

The United Nations, at its 'Earth Summit' in 1992, issued a mandate for a globally harmonized classification and compatible labeling system be available, if feasible, by the year 2000. The United Nations recognized that an internationally harmonized approach would provide foundations for all countries to develop national programs to ensure safe use of chemicals. The United Nations published what is now called the "Purple Book" that describes the Globally Harmonized System (GHS) of Classification and Labeling of Chemicals (**Figure 1**).

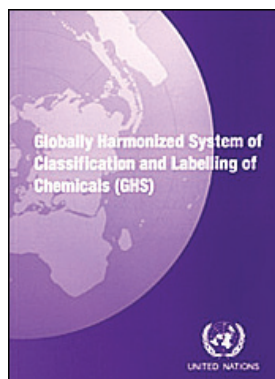


FIGURE 1
GHS ("PURPLE BOOK")

HAZCOM 2012

OSHA's hazard communication standard (HCS), 29 CFR 1910.1200, was first promulgated in 1983, covering only the chemical manufacturing industry (48 FR 53280). The purpose of the standard was to provide a standardized approach for communicating workplace hazards associated with exposure to hazardous chemicals.

This standard was designed to ensure that employers provide information to employees about hazardous chemicals and provide protective measures to potential users of the product (e.g., personal protective equipment, storage information, emergency response, etc.) through a comprehensive hazard communication program. The standard was a performance-oriented standard, which did not specify the format for material safety data sheets (MSDS) and labels.

OSHA updated the HCS in 1987 to expand coverage to all industries where workers are exposed to hazardous chemicals (52 FR 31852). In 1994, OSHA promulgated an additional update

to the HCS with technical changes and amendments designed in an effort for better comprehension and greater compliance with the standard (59 FR 6126). In adopting the original HCS in 1983, OSHA noted benefits of an internationally harmonized chemical hazard communication standard (48 FR 53287).

Since 2000, OSHA has been attempting to modify its existing hazard communication standards (29 CFR 1910.1200) by adopting certain annexes of the United Nations' Globally Harmonized System of Classification and Labelling of Chemicals (GHS) (UN GHS, Rev. 3, 2009). In 2012, OSHA's hazard communication standard was revised and is commonly known as HazCom 2012 (77 FR 17574). The revised standard adopted annexes of the GHS, which established new requirements for:

- Safety Data Sheets (SDS), formerly known as material safety data sheets (MSDS)
- Classifying chemicals
- Labeling
- Symbols for hazards

Some aspects of the existing HCS standard were not changed. Employee training, preparation of a chemical inventory, and development of a written program are still required. However, training programs required to be updated to include GHS hazard categories and label elements. Chemical inventories also needed to be updated as hazard classifications may have changed. Furthermore, employers had to update their written hazard communication programs in order to outline compliance with HazCom 2012.

SAFETY DATA SHEETS (SDS)

The HCS requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs), formerly known as Material Safety Data Sheets or MSDS, to communicate the hazards of hazardous chemical products. Employers must ensure that SDSs are readily accessible to employees. As of June 1, 2015, the HCS required new SDSs to be in a uniform format. The SDS must include the section numbers, headings, and associated information under the respective headings. This uniform format is summarized in **Figure 2**.

FIGURE 2

SAFETY DATA SHEET FORMAT

Section 1:	Identification includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.
Section 2:	Hazard(s) Identification includes the hazards regarding the chemical and the appropriate warning information associated with those hazards.
Section 3:	Composition/Information on Ingredients includes information on chemical ingredient(s) contained in the product, including impurities and stabilizing additives. This section includes information on substances, mixtures, and all chemicals where a trade secret is claimed.
Section 4:	First-Aid Measures includes necessary first-aid instructions by relevant routes of exposure, important systems or effects (and any acute or delayed symptoms), and recommendations for immediate medical care and special treatment.
Section 5:	Fire-Fighting Measures provide recommendations for suitable extinguishing techniques and equipment, information about extinguishing equipment that is not appropriate for a particular situation, advice on specific hazards that develop from the chemical during the fire and any hazardous combustion products when the chemical burns, and recommendations for special protective equipment or precautions for firefighters.
Section 6:	Accidental Release Measures provide recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices to prevent or minimize exposure to people, properties, or the environment.
Section 7:	Handling and Storage provide guidance on the safe handling practices and conditions for safe storage of chemicals.
Section 8:	Exposure Controls/Personal Protection indicate the exposure limits, engineering controls, and personal protective equipment (PPE) that can be used to minimize worker exposure.
Section 9:	Physical and Chemical Properties identify the chemical's characteristics (e.g., appearance, upper/lower flammability limit, odor, vapor pressure, odor threshold, vapor density, pH, flashpoint, relative density, melting point/freezing point, evaporation rate, solubility, boiling point, auto-ignition temperature, etc.).
Section 10:	Stability and Reactivity describe the reactivity hazards and chemical stability information. The section is broken into three parts: reactivity, chemical stability, and other.
Section 11:	Toxicological Information provides information about the health effects such as acute and chronic effects, related symptoms, routes of exposure, and numerical measures of toxicity.
Section 12:	Ecological Information (non-mandatory)*
Section 13:	Disposal Considerations (non-mandatory)*
Section 14:	Transport Information (non-mandatory)*
Section 15:	Regulatory Information (non-mandatory)*
Section 16:	Other Information includes when the SDS was prepared or the date of last revision.

*Note: Since other agencies regulate this information, OSHA will not be enforcing Sections 12 through 15 (29 CFR 1910.1200[g][2]). Source: OSHA

FIGURE 3
SAMPLE LABEL

PRODUCT IDENTIFIER

CODE
Product Name

SUPPLIER IDENTIFICATION

Company Name
Street Address
City, State
Postal Code
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 measures 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 Fires use dry chemical (BC) or carbon dioxide (CO₂) fire extinguisher to extinguish.

FIRST AID

If exposed, call Poison Control Center. If on skin (on hair), remove 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: _____

Gross weight: _____

Fill date: _____

Expiration date: _____

LABELING SYSTEM

The labeling system provides more specific information on the hazards of the chemicals as well as providing a pictogram of the hazard. The sample label in **Figure 3** shows the type of information that is required by the current labeling system. The HCS now requires the following elements on labels of hazardous chemicals.

- **Name, Address, and Telephone Number** of the chemical manufacturer, importer, or other responsible party.
- **Product Identifier** is how the hazardous chemical is identified. This may include, but is not limited to, the chemical name, code number, or batch number. The same product identifier must be on both the label and in Section 1 of the SDS.
- **Signal Words** are used to indicate the relative level of severity of the hazard and alert the reader to a potential hazard on the label. There are only two words used as signal words, “Danger” and “Warning.” Within a specific hazard class, “Danger” is used for the more severe hazards and “Warning” is used for the less severe hazards. There should only be one signal word on the label regardless of how many hazards

a chemical may have. If one of the hazards warrants a “Danger” signal word and another warrants the signal word “Warning,” then only “Danger” should appear on the label.

- **Hazard Statements** describe recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to the hazardous chemical or improper storage or handling. All of the applicable hazard statements must appear on the label.
- **Precautionary Statements** describe recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to the hazardous chemical or improper storage or handling. There are four types of precautionary statements: 1) prevention, 2) response, 3) storage, and 4) disposal.
- **Pictogram(s)** are graphic symbols used to communicate specific information about the hazards of a chemical. On hazardous chemicals being shipped or transported from a manufacturer, importer, or distributor, the required pictograms consist of a red square frame set at a point with a black hazard symbol on a white background, sufficiently wide to be clearly visible. The GHS uses a total of nine pictograms (**Figure 4**); however, OSHA will only enforce the use of eight. The environmental pictogram is not mandatory but may be used to provide additional information.

FIGURE 4
PICTOGRAMS

<p>Health Hazard</p>  <ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	<p>Flame</p>  <ul style="list-style-type: none"> • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxide 	<p>Exclamation Mark</p>  <ul style="list-style-type: none"> • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
<p>Gas Cylinder</p>  <ul style="list-style-type: none"> • Gases Under Pressure 	<p>Corrosion</p>  <ul style="list-style-type: none"> • Skin Corrosion/Burns • Eye Damage • Corrosive to Metals 	<p>Exploding Bomb</p>  <ul style="list-style-type: none"> • Explosives • Self-Reactives • Organic Peroxides
<p>Flame Over Circle</p>  <ul style="list-style-type: none"> • Oxidizers 	<p>Environment (Non-Mandatory)</p>  <ul style="list-style-type: none"> • Aquatic Toxicity 	<p>Skull and Crossbones</p>  <ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic)

PERIODIC REVISIONS TO GHS

OSHA's Hazard Communication Standard (HCS) will likely require periodic rulemaking to maintain consistency with the United Nations' Globally Harmonized System of Classification and Labeling of Chemicals (GHS). On February 16, 2021, OSHA issued a notice of proposed rulemaking (NPRM) to modify the HCS. The GHS is revised every two years; thus, the GHS has been revised five times since OSHA's

HazCom 2012 has been promulgated. The deadline to submit comments to OSHA's proposed rule to modify the HCS (including requests for hearing) was April 19, 2021. OSHA will schedule an informal public hearing on the proposed rule if requested during the comment period.



REFERENCES

OSHA. (1983). Hazard Communication, Final Rule. 48 Federal Register 53287.

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OSHA. (2012, March 26). Hazard Communication, Final Rule. 77 Federal Register 17574.

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