The Globally Harmonized System (GHS)

An Overview of Classification and Labeling of Chemicals

OverNite Software, Inc.

1. Introduction

In May of 2012, the United States Department of Labor's Occupational Safety and Health Administration (OSHA) implemented changes to the existing Hazard Communication Standard (HCS) that align the standard with the United Nations' Globally Harmonized System of Classification and Labeling of Chemicals (GHS). Many companies are scrambling to not only comply with the change in regulation, but to also fully understand the new system. This document is designed to help you understand the GHS and form an implementation plan at your own company to avoid the ramifications of non-compliance and the risk of falling behind your competition.

2. What is GHS?

The GHS provides effective hazard communication through the standardization of hazard classification, labeling, and safety data sheets (SDS).

This standard was negotiated and adopted by the United Nations and is based on many existing systems from around the world, including OSHA's HCS.

These systems may be similar in content and approach, but they contain significant differences. For example, when the same product is marketed in different countries, the systems require multiple classification labels and safety data sheets. The same is true even when the product is marketed in the same country if the product has different parts of the life cycle covered by different regulatory authorities. These requirements lead to inconsistent protection for those potentially exposed to the chemicals and creates extensive regulatory burdens on companies producing chemicals. For example, in the United States (U.S.) there are requirements for classification and labeling of chemicals for the Consumer Product Safety Commission (CPSC), the Department of Transportation (DOT), the Environmental Protection Agency (EPA), and the Occupational Safety and Health Administration (OSHA).

Companies in the U.S. are expected to be GHS compliant by June 1, 2015. There are target dates between now and 2015 that your company must meet, in order to be OSHA compliant.

3. Why is global harmonization necessary?

Due to the extent of the changes, companies will require a significant amount of time to train their employees and to change their labeling and classifications to the new standards, including their material safety data sheets (MSDS).

Many different countries currently have different systems for classification and labeling of chemical products. In addition, several different systems can exist even within the same country. This situation has been expensive for governments to regulate and enforce, costly for companies who have to comply with many different systems, and confusing for workers who need to understand the hazards of a chemical in order to work safely.

The GHS promises to deliver several distinct benefits. Among them are:

- Promoting regulatory efficiency
- Facilitating trade
- Easing compliance
- Reducing costs
- Providing improved, consistent hazard information
- Encouraging the safe transport, handling and use of chemicals
- Promoting better emergency response to chemical incidents, and
- Reducing the need for animal testing

4. What are the most notable changes to the regulation?

The most notable changes to the HCS regulation affect hazard labels, safety data sheets (SDS), and include the implementation of a performance-oriented approach to hazard classification.

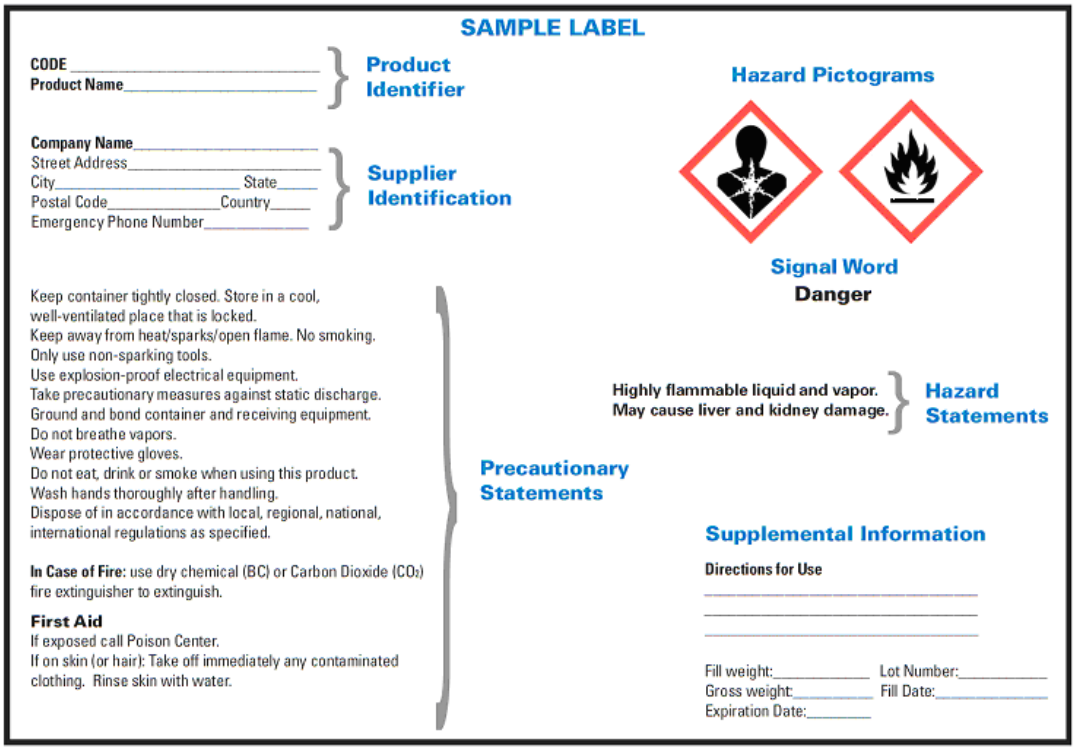
A. Labeling

The labeling of hazardous chemicals is now standardized with minimum informational requirements. Employers are responsible for ensuring that employees are trained on the information included on labels and on how that information is to be used. At a minimum, manufacturers and importers must include the following information on all labels:

- Product identifier
- Supplier name, address, and telephone number
- Precautionary statement(s)
- Pictogram(s) with red borders
- Signal word - Warning or Danger
- Hazard statement

Workplace container labeling and hazard warnings must also be consistent with the revised regulation.

Example of new label:



B. Pictograms

The revised HCS utilizes nine pictograms to communicate hazards:

HCS Pictograms and Hazards

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 (harmful)
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer (Non Mandatory)

Corrosion

- Skin Corrosion/ burns
- Eye Damage
- Corrosive to Metals

Exploding Bomb

- Explosives
- Self-Reactives
- Organic Peroxides

Gas Cylinder

- Gases under Pressure

Flame Over Circle

- Oxidizers

Environment (Non-Mandatory)

- Aquatic Toxicity

Skull & Crossbones

- Acute Toxicity (fatal or toxic)

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C. Safety Data Sheets

Manufacturers and importers must supply new standardized safety data sheets (SDS) to replace material safety data sheets (MSDS). Employers must train employees on the new SDS that includes the following 16 sections:

- Material identification
- Hazard identification
- Composition information
- First-aid measures
- Fire-fighting measures
- Accidental release measures
- Handling and storage
- Exposure controls
- Physical and chemical properties
- Stability and reactivity
- Toxicological effects
- Ecological effects
- Disposal considerations
- Transport information
- Regulatory information
- Other information

D. Hazard Classification

Under the new regulation, hazardous materials are evaluated and classified by the chemical manufacturer or importer using a specification approach. Chemical hazards are classified as:

Physical

- Explosives
- Flammable gases
- Flammable aerosols
- Oxidizing gases
- Gases under pressure
- Flammable liquids
- Flammable solids
- Self-reactive chemicals
- Pyrophoric liquids
- Pyrophoric solids
- Self-heating chemicals
- Chemicals which, in contact with water, emit flammable gases
- Oxidizing liquids
- Oxidizing solids
- Organic Peroxides
- Corrosive to metals

Health

- Acute toxicity
- Skin corrosion or irritation
- Serious eye damage or eye irritation
- Respiratory or skin sensitization
- Germ cell mutagenicity
- Carcinogenicity
- Reproductive toxicity
- Specific target organ toxicity - single exposure
- Specific target organ toxicity - repeated or prolonged exposure
- Aspiration hazard
- Simple asphyxiation
- Combustible dust
- Pyrophoric gas
- Hazards not otherwise classified

E. Hazard Categories

In addition, most of the hazard classifications are categorized by the severity of the hazards that they pose. Categories are noted on a numeric or alphabetical scale. Materials that are most dangerous are at the beginning of the scale and the least dangerous materials are at the end of the scale.

For example:
One of the physical hazard classes is Flammable Liquids with Categories 1 to 4. A chemical classified as a Flammable Liquid, Category 1 is more hazardous than a chemical classified as a Flammable Liquid, Category 4. This standard of categorization is one of the more significant changes with the introduction of the GHS. Under the old standard, companies that had adopted labeling methods of the National Fire Protection Association (NFPA) or Hazardous Materials Identification System (HMIS) used a numbering scale in reverse of the current standard.

5. What are some of the benefits of GHS?

GHS provides a common method for classifying, labeling, and delivering information about the hazards of a material. Many countries around the world have already implemented the GHS. Its widespread use and standardized approach offers the following benefits:

- Increased safety and health for affected employees
- Reduced accidents, fatalities, injuries, and illnesses associated with hazardous chemicals
- Increased quality and consistency of information provided to workers, employers, and users
- Reduced confusion
- Increased comprehension of hazards and control
- Improved downstream risk management
- Improved training
- Decreased instances of risk due to illiteracy
- Improved facilitation of international trade of chemicals

6. What must my company do to be compliant with HCS 2012?

Employers must ensure that their written hazard communication programs are up-to-date and include:

- A list of the present hazardous chemicals by using the product identifier referenced on safety data sheets
- Labels and other forms of warning
- Safety data sheets
- Employee information
- Employee training
- Methods that will be used to inform employees of the hazards of non-routine tasks
- Methods of informing and protecting employees from other employers' on-site of hazards (where applicable)
- Availability of the program

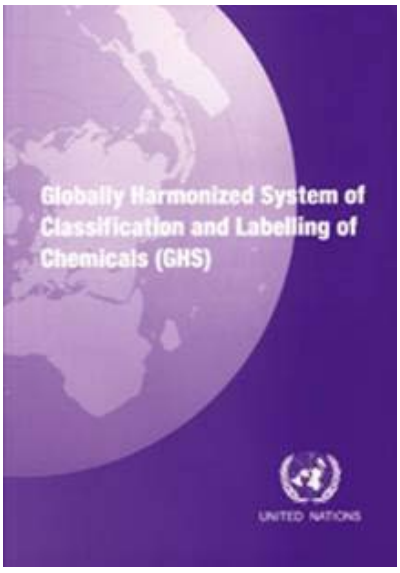
OSHA has implemented a schedule of dates for which various components of the new system must be in place.

Effective Completion Date	Requirement(s)	Who
December 1, 2013	Train employees on the new label elements and safety data sheet format.	Employers
June 1, 2015*	Compliance with all modified provisions of the final rule, except: The distributor shall not ship containers labeled by the chemical manufacturer or importer unless it is a GHS label. This requirement must be in compliance by December 1, 2015	Chemical manufacturers, importers, distributors and employers
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards	Employers

In the interim, employers are required to be in compliance with either the existing HCS or the revised HCS, or both.

7. Why should I train my employees on the new standards now?

Employees must be trained on the new label elements and SDS format by December 1, 2013. While that date may seem like the distant future, it is important to note that suppliers have already begun the transition. If you have not seen it already, products with new labels and SDS will be at your work site soon. Training workers will now prepare them for the changes, increase awareness, and enhance safety.



The GHS itself is not a regulation or a standard. The GHS Document referred to as "The Purple Book" establishes agreed hazard classification and communication provisions with explanatory information on how to apply the system. The elements in the GHS supply a mechanism to meet the basic requirement of any hazard communication system: to decide if the chemical product produced and/or supplied is hazardous and to prepare a label and/or safety data sheet as appropriate. Rather than simply incorporating the text of the GHS into their national requirements, regulatory authorities in countries adopting the GHS take the changed criteria and provisions and implement them through their own regulatory process and procedures. The GHS Document thus provides countries with the regulatory building blocks to develop or modify existing national programs that address classification of hazards and transmittal of information about those hazards and associated protective measures. This helps to ensure the safe use of chemicals as they move through the product life cycle from "cradle to grave."

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8. How can OverNite Software help?

OverNite Software, inc. is a safety training company and provider of a full service learning management system. OSHA guidelines are a crucial piece of the puzzle for our industry. When we first learned about the new GHS standards, we reacted quickly to update our highly popular HCS training courses.

As part of the implementation of GHS into the hazard communication standards, we are revising **all** of our affected library courses. Courses that are undergoing complete revisions include:

- 822 Hazard Communication - English and Spanish
- 460 Municipal: Hazard Communication

Other courses undergoing compliance updates include:

- 967 CFS: Hazardous Material Awareness
- 854 HAZWOPER: Identifying Hazardous Material
- 862 HAZWOPER: Chemical Hazards
- 780 Hazardous Materials
- 433 Hazardous Materials

This is just a condensed version of the changes that the new GHS will bring. We are hoping that with this snapshot and a commitment to early implementation, your company will not only meet the OSHA-mandated deadline for implementation, but already be functioning within these guidelines earlier to stay ahead of not only change, but the competition as well.

Our proactive approach to these changes gives our clients the advantage of being in compliance with employee training requirements well before OSHA's compliance date.

9. What can be done now?

Realistically, the question is how committed is your company to implementing these new standards? Usually, when government regulations are changed the companies that are flexible and able to alter their modus operandi the quickest benefit the most. This takes a commitment from top management to effectively do this.

Example:
OverNite Software, inc. (OSI) is a safety training company and provider of a full service LMS. OSHA guidelines are a crucial piece of the puzzle for their industry. When word got out about the new GHS standards, they reacted quickly and decisively. Instead of waiting for a date closer to the deadline to change their courses and system, they immediately responded by hiring new employees to help implement the changes now.

By immediately responding to these changes, not only is OSI prepared for any audits or challenges brought on by these new regulations themselves, but they are able to give their core base of clients the confidence and comfort in knowing that when the implementation date arrives, they will already be functioning within OSHA guidelines.

10. Where can I learn more?

More information about the revised regulation can be found on OSHA's website: http://www.osha.gov/dsg/hazcom/index.html and http://www.osha.gov/dsg/hazcom/index2.html

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