

**International Leadership Forum on
Global Harmonized System: Regulatory Implementation**

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Introduction

The American Society of Safety Engineers (ASSE) has a subgroup, the International Practice Specialty (IPS), which provides a global professional forum for advancing the international issues that affect safety, health and environmental (SH&E) professionals. IPS supports one of the key elements of the Society's vision statement—to provide global leadership for the safety profession. IPS enhances the professional development of its members through an open exchange of ideas, technology, research and management processes. IPS provides a network for like-minded safety professionals, and it has developed into a resource on matters of importance to the global safety profession and to the Society as a whole.

In order to further the vision of the Society, the International Practice Specialty is bringing out an International Leadership Forum during PDC 2013 at Las Vegas on an important topic titled "Global Harmonization System- Regulatory Implementation around the world.

Global Harmonizing System (GHS)

Globally Harmonized System (GHS) of Classification and Labeling of Chemicals is a system that defines and classifies the hazards of chemical products, and communicates health and safety information on labels and material safety data sheets (called Safety Data Sheets, or SDSs, in GHS). The goal is that the same set of rules for classifying hazards, and the same format and content for labels and safety data sheets (SDS) will be adopted and used around the world.

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.
- Reducing the need for animal testing.

Elements of GHS

The two major elements of GHS are:

1. Classification of the hazards of chemicals according to the GHS rules: GHS provides guidance on classifying pure chemicals and mixtures according to its criteria or rules.
2. Communication of the hazards and precautionary information using Safety Data Sheets and labels:
 - i. *Labels*: With the GHS system, certain information will appear on the label. For example, the chemical identity may be required. Standardized hazard statements, signal words and symbols will appear on the label according to the classification of that chemical or mixture. Precautionary statements may also be required, if adopted by your regulatory authority.
 - ii. *Safety Data Sheets (SDS)*: The GHS SDS has 16 sections in a set order, and minimum information is prescribed.

The GHS system covers all hazardous chemicals and may be adopted to cover chemicals in the workplace, transport, consumer products, pesticides and pharmaceuticals. The target audiences for GHS include workers, transport workers, emergency responders and consumers.

Key Terms in the GHS Vocabulary

- **SDS**: Safety Data Sheet. SDS is the term used by GHS for Material Safety Data Sheet (MSDS).
- **Hazard group**: While not given a formal definition, GHS divides hazards into three major groups - health, physical and environmental.

- **Class:** Class is the term used to describe the different types of hazards. For example, Gases under Pressure is an example of a class in the physical hazards group.
- **Category:** Category is the name used to describe the sub-sections of classes. For example, Self-Reactive Chemicals have 7 categories. Each category has rules or criteria to determine what chemicals are assigned to that category. Categories are assigned numbers (or letters) with category 1 (or A) being the most hazardous.
- **Hazard Statement:** For each category of a class, a standardized statement is used to describe the hazard. For example, the hazard statement for chemicals which meet the criteria for the class Self-heating substances and mixtures, Category 1 is Self-heating; may catch fire. This hazard statement would appear both on the label and on the SDS.
- **Signal word:** There are two signal words in the GHS system - Danger and Warning. These signal words are used to communicate the level of hazard on both the label and the SDS. The appropriate signal word to use is set out by the classification system. For example, the signal word for Self-heating substances and mixtures, Category 1 is Danger while Warning is used for the less serious Category 2. There are categories where no signal word is used.
- **Pictogram:** Pictogram refers to the GHS symbol on the label and SDS. Not all categories have a symbol associated with them.

GHS Hazard Groupings and Building Block Concept

Within the GHS classification system, there are three major hazard groups:

- Physical hazards.
- Health hazards.
- Environmental hazards.

Within each of these hazard groups there are classes and categories. Each of these parts is called a building block. Each country can determine which building blocks of the GHS system it will use in their different sectors (workplace, transportation, consumers). Once the building blocks are chosen, the corresponding GHS rules for classification and labels must be used.

Classes within the Health Hazard Group

Criteria for classifying chemicals have been developed for the following health hazard classes:

- Acute toxicity.
- Skin corrosion/irritation.
- Serious eye damage/eye irritation.
- Respiratory or skin sensitization.
- Germ cell mutagenicity.
- Carcinogenicity.
- Reproductive toxicity.
- Specific target organ toxicity - single exposure.
- Specific target organ toxicity - repeated exposure.
- Aspiration hazard.

In addition, there are specific classification rules for chemical mixtures for each health hazard class.

Classes within the Physical Hazard Group

Criteria for classifying chemicals have been developed for the following physical hazard classes:

- Explosives.
- Flammable gases.
- Flammable aerosols.
- Oxidizing gases.
- Gases under pressure.
- Flammable liquids.
- Flammable solids.
- Self-reactive substances and mixtures.
- Pyrophoric liquids.
- Pyrophoric solids.
- Self-heating substances and mixtures.
- Substances and mixtures which, in contact with water, emit flammable gases.
- Oxidizing liquids.
- Oxidizing solids.
- Organic peroxides.
- Corrosive to metals.

Classes within the Environmental Hazard Group

Criteria for classifying chemicals have been developed for the following environmental hazard class:

- Hazardous to the aquatic environment (acute and chronic).
- Hazardous to the ozone layer.

In addition, there are specific classification rules for chemical mixtures for each environmental hazard class.

GHS is a dynamic system. The international GHS committee meets twice a year to work on developing potential new hazard classes as well as resolving specific issues, and updating the latest GHS publication. Currently many different countries 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.