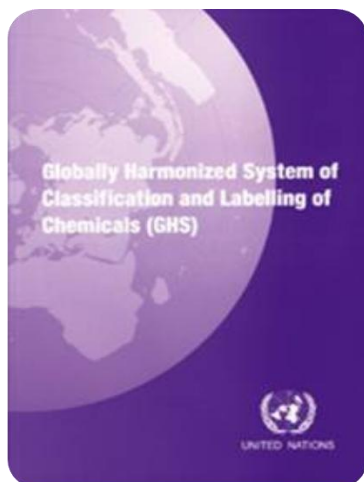


CONCEPT OF GHS



Chemicals, through the different steps from their production to their handling, transport and use, are a real danger for human health and the environment. People of any ages, from children to elderly, using many Chemicals, through the different steps from their production to their handling, transport and use, are a real danger for human health and the environment. People of any ages, from children to elderly, using many different languages and alphabets, belonging to various social conditions, including illiterates, are daily confronted to dangerous products (chemicals, pesticides, etc.)

To face this danger, and given the reality of the extensive global trade in chemicals and the need to develop national programs to ensure their safe use, transport and disposal, it was recognized that an internationally-harmonized approach to classification and labeling would provide the foundation for such programs. Once countries have consistent and appropriate information on the chemicals they import or produce in their own countries, the infrastructure to control chemical exposures and protect people and the environment can be established in a comprehensive manner.

The new system, which was called "***Globally Harmonized System of Classification and Labeling of Chemicals (GHS)***", addresses classification of chemicals by types of hazard and proposes harmonized hazard communication elements, including labels and Safety Data Sheets (SDS). It aims at ensuring that information on physical hazards and toxicity from chemicals be available in order to enhance the protection of human health and the environment during the handling, transport and use of these chemicals. The GHS also provides a basis for harmonization of rules and regulations on chemicals at national, regional and worldwide level, an important factor also for trade facilitation.

While governments, regional institutions and international organizations are the primary audiences for the GHS, it also contains sufficient context and guidance for those in industry who will ultimately be implementing the requirements which have been adopted.

The Plan of Implementation of the World Summit on Sustainable Development (WSSD), adopted in Johannesburg in 2002, encourages countries to implement the GHS as soon as possible with a view to having the system fully operational by 2008.

GHS Classification

BACKGROUND OF GHS

| | |
|------------------|---|
| 1989-1990 | <ul style="list-style-type: none">▪ The International Labor Organization (ILO) developed and adopted a convention and recommendation on Safety in the Use of Chemicals at Work. Adoption of these instruments requires a country to having a system for hazard classification and labeling.▪ The ILO technical committee also passed a resolution asking the ILO to study the task required to achieve harmonization.▪ The ILO concluded that there were four major existing systems that needed to be harmonized to achieve a global approach. |
| 1992 | <ul style="list-style-type: none">▪ The United Nations Conference on the Environment and Development (UNCED) took place in 1992 in Brazil. Agreements were endorsed by United Nations General Assembly to establish 6 programme areas to strengthen national and international efforts related to the environmentally sound management of chemicals.▪ The Programmed Area B under Chapter 19, Agenda 21 was the issue of Harmonization of classification and labeling of chemicals (GHS)▪ Specific Mandate was "A globally harmonized hazard classification and compatible labeling system, including material safety data sheets and easily understandable symbols, should be available, if feasible, by the year 2000." |
| 1999 | <ul style="list-style-type: none">▪ The United Nations Economic and Social Council decided to enlarge the mandate of the Committee of Experts on the Transport of Dangerous Goods by reconfiguring it into a Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals (CETDGGHS), and by creating, besides the Sub-Committee of Experts on the Transport of Dangerous Goods (TDG Sub-Committee), a new Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS Sub-Committee). |
| 2002 | <ul style="list-style-type: none">▪ The first version of the GHS was adopted in December 2002 by the Sub-Committee on the Globally Harmonized System of Classification and Labeling of Chemicals (SCEGHS), and endorsed by the Committee on the Transport of Dangerous Goods and the Globally Harmonized System of Classification and Labeling of Chemicals. |
| 2004-2005 | <ul style="list-style-type: none">▪ At its second session (10 December 2004), the Committee of Experts adopted a set of amendments to the GHS which included various revised provisions concerning classification and labeling, new provisions for aspiration hazards and new guidance on the use of precautionary statements and pictograms and on the preparation of Safety Data Sheets (SDS). The first revised edition of the GHS, published in 2005, took account of all these amendments. |
| 2006-2007 | <ul style="list-style-type: none">▪ At its third session (15 December 2006), the Committee of Experts adopted a set of amendments to the first revised edition of the GHS. The second revised edition of the GHS takes account of all these amendments, which include new and revised provisions concerning, inter alia, the classification and labeling of explosives; respiratory and skin sensitizers; toxic by inhalation gases and gas mixtures; additional guidance on the interpretation of the building block approach and on the evaluation of the carcinogenic potential of chemicals; and the codification of hazard and precautionary statements. |

OBJECTIVES OF GHS

It is anticipated that, when implemented, the GHS will:

- (a) enhance the protection of human health and the environment by providing an internationally comprehensible system for hazard communication;
- (b) provide a recognized framework for those countries without existing systems;
- (c) reduce the need for testing and evaluation of chemicals; and
- (d) facilitate international trade in chemicals whose hazards have been properly assessed and identified on an international basis.

APPLICATION OF GHS

One of the objectives of the work on GHS has been the development of a harmonized hazard communication system through 1) labeling and 2) Safety Data Sheets (SDS) based on the classification criteria developed for the GHS whereas there are 3 different types of hazards:-

- I) Physical Hazards
- II) Health Hazards
- III) Environmental Hazards

HAZARD CLASSIFICATION

Under each hazard, it can be classified into hazard classes according to its nature as follows:-

I) PHYSICAL HAZARDS (16 HAZARD CLASSES)

1. Explosives
2. Flammable gases
3. Flammable aerosols
4. Oxidizing gases
5. Gases under pressure
6. Flammable liquids
7. Flammable solids
8. Self-reactive substances and mixtures
9. Pyrophoric liquids
10. Pyrophoric solids
11. Self-heating substances and mixtures
12. Substances and mixtures which, in contact with water emit flammable gases
13. Oxidizing liquids
14. Oxidizing solids
15. Organic peroxides
16. Corrosive to metals

GHS Classification

II) HEALTH HAZARDS (10 HAZARD CLASSES)

1. Acute toxicity
2. Skin corrosion/irritation
3. Serious eye damage/eye irritation
4. Respiratory or skin sensitization
5. Germ cell mutagenicity
6. Carcinogenicity
7. Reproductive toxicity
8. Specific target organ systemic toxicity (TOST) – Single exposure
9. Specific target organ systemic toxicity (TOST) – Repeated exposure
10. Aspiration hazard

III) ENVIRONMENTAL HAZARDS (1 HAZARD CLASS)

1. Hazardous to the aquatic environment










HAZARD COMMUNICATION: LABELLING

The information required on a GHS label are:-

1) Pictograms























A pictogram means a graphical composition that includes a symbol plus other graphic elements, such as a border, background pattern or colour that is intended to convey specific information. All hazard pictograms used in the GHS should be in the shape of a square set at a point. Pictograms prescribed by the GHS should have a black symbol on a white background with a red frame sufficiently wide to be clearly visible.

GHS Symbols












| | | |
|---|---|--|
| Flame | Flame over circle | Exploding bomb |
|  |  |  |
| Corrosion | Gas cylinder | Skull & crossbones |
|  |  |  |
| Exclamation mark | Health hazard | Environment |
|  |  |  |


GHS Classification

GHS Pictograms

| I. PHYSICAL HAZARDS - 16 Hazard Classes | | | |
|---|---|--|--|
| 1. Explosives | 2. Flammable gases | 3. Flammable aerosols | 4. Oxidizing gases |
|  |  |  |  |
| 5. Gases under pressure | 6. Flammable liquids | 7. Flammable solids | 8. Self-reactive substances and mixtures |
|  |  |  |   |
| 9. Pyrophoric liquids | 10. Pyrophoric solids | 11. Self-heating substances and mixtures | 12. Substances and mixtures which in contact with water, emit flammable gases |
|  |  |  |  |
| 13. Oxidizing liquids | 14. Oxidizing solids | 15. Organic peroxides | 16. Corrosive to metals |
|  |  |   |  |
| II. HEALTH HAZARDS - 10 Hazard Classes | | | |
| 1. Acute toxicity | 2. Skin corrosion/irritation | 3. Serious eye damage/eye irritation | 4. Respiratory or skin sensitization |
|  |  |  |  |

GHS Classification

| | | | |
|--|--|---|--|
|  |  |  |  |
| 5. Germ cell mutagenicity | 6. Carcinogenicity | 7. Reproductive toxicity | 8. Specific organ toxicity - Single exposure |
|  |  |  |   |
| 9. Specific organ toxicity - Repeated exposure | 10. Aspiration hazard | | |
|  |  | | |

| II. ENVIRONMENTAL HAZARDS - 1 Hazard Classes | |
|---|--|
| 1. Hazardous to aquatic environment | |
|  | |

2) Signal words

A signal word means a word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The signal words used in the GHS are “Danger” and “Warning”.

“**Danger**” is used for the more severe hazard categories

“**Warning**” is used for the less severe.

3) Hazard Statements

A hazard statement means a phrase assigned to a hazard class and category that describes the nature of the hazards of a hazardous product including, where appropriate, the degree of hazard.

GHS Classification

Example of Hazard Statements for Flammable liquids

Category 1 “Extremely flammable liquid and vapour”

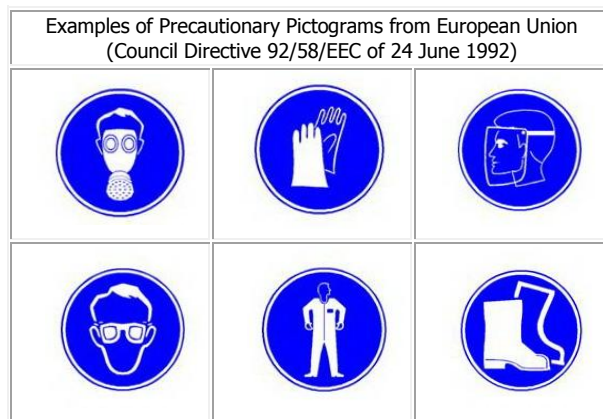
Category 2 “Highly flammable liquid and vapour”

Category 3 “Flammable liquid and vapour”

Category 4 “Combustible liquid”

4) Precautionary Statements

A precautionary statement means a phrase (and/or pictogram) that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous product, or improper storage or handling of a hazardous product. The GHS label should include appropriate precautionary information. Annex 3 contains examples of precautionary statements, which can be used.



5) Product identifier

- (i) A product identifier should be used on a GHS label and it should match the product identifier used on the SDS. Where a substance or mixture is covered by the UN Model Regulations on the Transport of Dangerous Goods, the UN proper shipping name should also be on the package;
- (ii) The label for a substance should include the chemical identity of the substance.
- (iii) Where a substance or mixture is supplied exclusively for workplace use, the competent authority may choose to give suppliers discretion to include chemical identities on the SDS, in lieu of including them on labels.
- (iv) The competent authority rules for CBI (Confidential Business Information) take priority over the rules for product identification.

6) Supplier information

The name, address and telephone number of the manufacturer or supplier of the substance or mixture should be provided on the label.

GHS Classification

HAZARD COMMUNICATION: Safety Data Sheet (SDS)

The SDS should be produced for all substances and mixtures which meet the harmonized criteria for physical, health or environmental hazards under the GHS.

SDS FORMAT

The information in the SDS should be presented using the following 16 headings in the order given below:

1. Identification
2. Hazard(s) identification
3. Composition/information on ingredients
4. First-aid measures
5. Fire-fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure controls/personal protection
9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information

ที่มา : http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html