

# The Globally Harmonized System (GHS) for Hazard Classification and Labelling



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Development of a Worldwide System for Hazard Communication



# What is the GHS?

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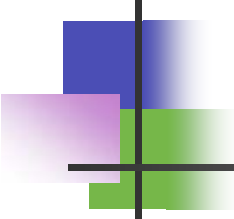
- A common and coherent approach to defining and classifying hazards, and communicating information on labels and safety data sheets.
- Target audiences include workers, consumers, transport workers, and emergency responders.
- Provides the underlying infrastructure for establishment of national, comprehensive chemical safety programs.



# Why is the GHS needed?

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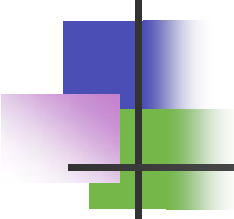
- No country has the ability to identify and specifically regulate every hazardous chemical product.
- For example, in the United States, there are an estimated 650,000 such products.
- Adoption of requirements for information to accompany the product helps address protection needs.



## Why? (cont.)

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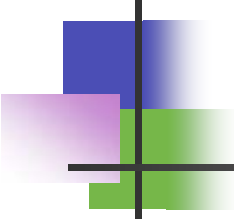
- Many different countries have come to the same conclusion about using information dissemination as a regulatory means to address chemical hazards.
- While similar, they are different enough to require multiple labels and safety data sheets for the same product in international trade.



## Why? (cont.)

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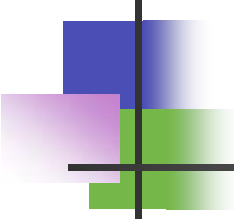
- Countries with systems have different requirements for hazard definitions as well as information to be included on a label or material safety data sheet.
- For example, a product may be considered flammable or toxic in one country, but not in another to which it is being shipped.



## Why? (cont.)

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- These differences impact both protection and trade.
- In the area of protection, users in countries that don't have specific requirements may see different label warnings or data sheet information for the same chemical.



## Why? (cont.)

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- In the area of trade, the need to comply with multiple regulations regarding hazard classification and labelling is costly and time-consuming.
- Small to medium enterprises are effectively precluded from international trade in chemicals due to the regulatory burden of compliance.



# Benefits of Harmonization

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- Countries, international organizations, chemical producers and users of chemicals all benefit.
  - Enhance protection of humans and environment.
  - Facilitate international trade in chemicals.
  - Reduce need for testing and evaluation.
  - Assist countries and international organizations to ensure the sound management of chemicals.





# International Mandate

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- An international mandate to harmonize was adopted at the United Nations Conference on the Environment and Development (UNCED) in 1992 in Brazil:
  - *A globally-harmonized hazard classification and compatible labelling system, including material safety data sheets and easily understandable symbols, should be available, if feasible, by the year 2000.*



# Major Existing Systems

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- UN Transport Recommendations
- European Union (EU) Directives on Substances and Preparations
- Canadian Requirements for Workplace, Consumers and Pesticides
- US Requirements for Workplace, Consumers and Pesticides



# Principles Of Harmonization

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- Protections will not be reduced; comprehensibility will be key.
- All types of chemicals will be covered; will be based on intrinsic properties (hazards) of chemicals.
- All systems will have to be changed.



# Process of Harmonization

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- Under the umbrella of the Interorganization Programme for the Sound Management of Chemicals (IOMC). Coordinating Group for Harmonization of Chemical Classification Systems (CG/HCCS) managed the process.
- Technical work divided among international focal points.



# The Technical Focal Points

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- The Organization for Economic Cooperation and Development (OECD)
- The UN Committee of Experts for the Transport of Dangerous Goods (UNCETDG)
- The International Labor Organization (ILO)



# The Scope of the GHS

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- Covers all hazardous chemical substances, dilute solutions, and mixtures.
- Pharmaceuticals, food additives, cosmetics and pesticide residues in food will not be covered at the point of intentional intake, but will be covered where workers may be exposed, and in transport.



# The GHS Elements

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## Classification Criteria

- Health and Environmental Hazards
- Physical Hazards
- Mixtures

## Hazard Communication

- Labels
- Safety Data Sheets



# Health & Environmental Hazards

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Acute Toxicity

Skin Corrosion/Irritation

Serious Eye Damage/Eye Irritation

Respiratory or Skin Sensitization

Germ Cell Mutagenicity

Carcinogenicity

Reproductive Toxicity

Target Organ Systemic Toxicity – Single and Repeated Dose

Hazardous to the Aquatic Environment





# Tiered Approach to Classification

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Generally use test data for the mixture, when available



Use bridging principles, if applicable



For health and environmental hazards, estimate hazards based on the known ingredient information



# Physical Hazards

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- Definitions, test methods and classification criteria for transport were used as a basis for the work since they were already harmonized.



# Physical Hazards

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Explosives

Flammability – gases, aerosols, liquids, solids

Oxidizers – liquid, solid, gases

Self-Reactive

Pyrophoric – liquids, solids

Self-Heating

Organic Peroxides

Corrosive to Metals

Gases Under Pressure

Water-Activated Flammable Gases



# Comprehensibility

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## **Guiding principles:**

- Information should be conveyed in more than one way.
- The comprehensibility of the components of the system should take account of existing studies and evidence gained from testing.
- The phrases used to indicate the degree (severity) of hazard should be consistent across different hazard types.



# Labels

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- The Working Group identified about 35 different types of information that are currently required on labels by different systems.
- To harmonize, key information elements needed to be identified.
- Additional harmonization may occur on other elements in time, in particular for precautionary statements.



# Key Label Elements

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Product identifier

Supplier identifier

Chemical identity

Hazard pictograms\*

Signal words\*

Hazard statements\*

Precautionary information

**\*Standardized**



# Pictogram Shape and Colour

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- For transport, pictograms will have the background and symbol colours currently used.
- For other sectors, pictograms will have a black symbol on a white background with a red diamond frame. A black frame may be used for shipments within one country.
- Where a transport pictogram appears, the GHS pictogram for the same hazard should not appear.

# Transport Pictograms





# GHS Pictograms





# Signal Words

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“Danger” or “Warning”

- Used to emphasize hazard and discriminate between levels of hazard.



# Hazard Statements

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- A single harmonized hazard statement for each level of hazard within each hazard class
  - Example: 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



# Precautionary Information

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- GHS label should include appropriate precautionary information.
- The GHS document includes examples of precautionary statements which can be used.
- The intent is to harmonize precautionary statements in the future.



# Role of the SDS in the GHS

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- The SDS should provide comprehensive information about a chemical substance or mixture.
- Primary Use: The Workplace
- Employers and workers use the SDS as a source of information about hazards and to obtain advice on safety precautions.



# SDS Format: 16 headings

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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 control/personal protection



## Format: 16 headings (cont.)

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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



# Confidential Business Information

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- National authorities should establish appropriate mechanisms for CBI protection. CBI will not be harmonized under the GHS.
- The provisions for CBI protection should not compromise the health and safety of users.
- CBI claims should be limited to the names of chemicals and their concentrations in mixtures.
- Mechanisms should be established for disclosure in emergency and non-emergency situations.





# Status of the GHS

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- Technical work is done.
- A new UN group has been established to address implementation and maintenance of the GHS.
- The GHS was adopted in December 2002 in the UN.
- It will be available for countries to adopt in 2003.



# Status in the US

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- US agencies with requirements for labels and MSDSs have been actively involved in the development process.
- Could be adopted either:
  - Legislatively in Congress; or
  - By regulation in each affected agency.



# Conclusion

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- Development of the GHS has been a long and complicated process.
- Hopefully, it will be adopted by countries around the world and will achieve the projected benefits for protection and trade.



# Information Sources

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- OSHA has a web page on the GHS:

[http://www.osha.gov/SLTC/  
hazardcommunications/global.html](http://www.osha.gov/SLTC/hazardcommunications/global.html)

- Includes links to the completed GHS document & international organizations.