

# The Globally Harmonized System (GHS) of Classification and Labelling of Chemicals

Development of a Worldwide System for Hazard Communication



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Conference, 3/2/2004

# What is the GHS?

- 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.

# Benefits of Harmonization

- 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

- 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

- 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

- 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.

# The Scope of the GHS

- 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

## Classification Criteria

- Health and Environmental Hazards
- Physical Hazards
- Mixtures

## Hazard Communication

- Labels
- Safety Data Sheets

# Health & Environmental Hazards

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

# Physical Hazards

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

# Key Label Elements








- Product identifier
- Supplier identifier
- Chemical identity
- Hazard pictograms\*
- Signal words\*
- Hazard statements\*
- Precautionary information

**\*Standardized**








# GHS Pictograms






# Allocation of Label Elements

ACUTE TOXICITY: INHALATION				
Category 1	Category 2	Category 3	Category 4	Category 5
				No symbol
Danger Fatal if inhaled	Danger Fatal if inhaled	Danger Toxic if inhaled	Warning Harmful if inhaled	Warning May be harmful if inhaled
			<p>Not required under the <i>UN Recommendations on the Transport of Dangerous Goods, Model Regulations</i>.</p> <p><u>Note:</u> For gases under the UN Model Regulations, replace the number 6 in the bottom corner of the pictogram by 2. For UN Model Regulations pictogram colours: Symbol and figure: black. Background: white.</p>	

# Allocation of Label Elements

SKIN CORROSION/IRRITATION				
Category 1A	Category 1B	Category 1C	Category 2	Category 3
 <p><b>Danger</b></p> <p>Causes severe skin burns and eye damage</p>	 <p><b>Danger</b></p> <p>Causes severe skin burns and eye damage</p>	 <p><b>Danger</b></p> <p>Causes severe skin burns and eye damage</p>	 <p><b>Warning</b></p> <p>Causes skin irritation</p>	<p>No symbol</p> <p><b>Warning</b></p> <p>Causes mild skin irritation</p>
			<p>Not required under the <i>UN Recommendations on the Transport of Dangerous Goods, Model Regulations</i>.</p> <p><u>Note:</u> UN Model Regulations pictogram colours: Symbol: black background: upper half: white; lower half: black with white border; Figure 8: white.</p>	

# Allocation of Label Elements

CARCINOGENICITY				
Category 1A	Category 1B	Category 2	-	-
				
<b>Danger</b>	<b>Danger</b>	<b>Warning</b>		
May cause cancer <i>(state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard )</i>	May cause cancer <i>(state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard )</i>	Suspected of causing cancer <i>(state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard )</i>		
Not required under the <i>UN Recommendations on the Transport of Dangerous Goods, Model Regulations.</i>				

# Safety Data Sheets

- Used primarily in workplace settings, but also for community right-to-know.
- GHS provisions are based on the 16-section SDS format developed by industry in ANSI and ISO standards.
- Both ISO and ANSI are pursuing changes to their standards to make them consistent with the GHS.

# Current Activities

- Intergovernmental Forum on Chemical Safety (IFCS) commitment for 2008.
- World Summit on Sustainable Development (2008 commitment).
- Asia-Pacific Economic Cooperation (APEC) 2006 commitment.
- NAFTA discussions on pesticides and workplace.
- Trading partners' commitments to implementation.

# Issues

- Developed countries will have more difficulty adopting the GHS given the extent of current regulatory requirements that would have to be changed.
- Timing of adoption can create compliance difficulties if not coordinated.
- Modifications during implementation should be limited—difficult to adopt a moving target.

# Relationship to Control Banding

- Establishes an international system of classification and labeling that can be used in control banding.
- Provides an additional impetus for implementation of the GHS as a practical use of the information to control exposures.
- Provides physical hazard information too.

# US/EU Proposed Pilot Project

- US/EU have proposed a pilot project related to the GHS and control banding.
  - Based on 2 high production volume chemicals.
  - Classify according to GHS and prepare label and SDS.
  - Design control banding approach for both.
  - <http://www.useuosh.org/>

# Additional Sources of Information

- United Nations Web Site:

<http://www.unece.org/trans/danger/publi/ghs/officialtext.html>

- OSHA Web Site:

<http://www.osha.gov>

## Hazard Communication Button