

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

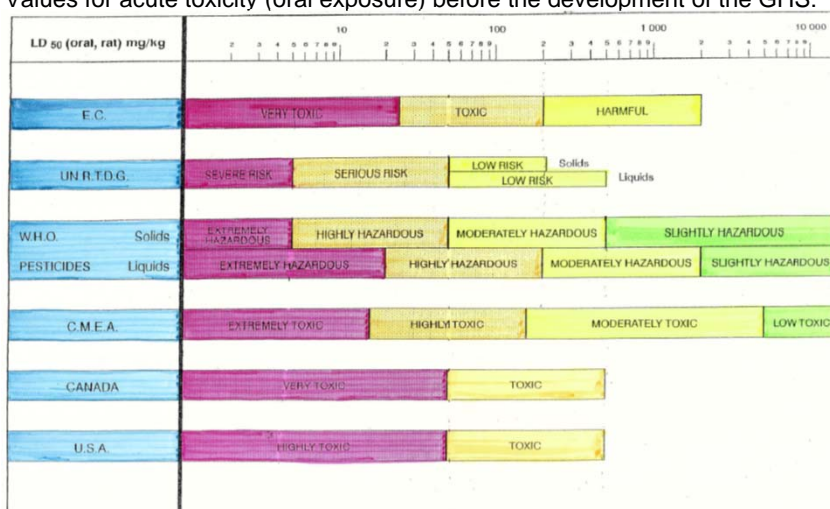
Sub-regional workshop for Central Asia
on industrial accidents prevention
(Astana, 26-28 May 2015)

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Secretary to the ECOSOC Sub-Committee of Experts on the GHS



Need for harmonized system

- Values for acute toxicity (oral exposure) before the development of the GHS:



Source: "Report on the magnitude of the task of harmonising existing systems of classification and labelling for hazardous chemicals, ILQ/HCS.1"



Globally Harmonized System

- International mandate for its development
Agenda 21, Chapter 19 (Rio, 1992):



“... there is a need to develop harmonized hazard classification and labelling systems, building on ongoing work...”

- “Globally harmonized”:
 - Across countries, and
 - Across sectors (nationally/internationally)
- “Building on ongoing work”:
 - Not developed from scratch = based on existing systems
 - Allowing use of all available data = no additional testing required
 - No reduction in the level of protection offered

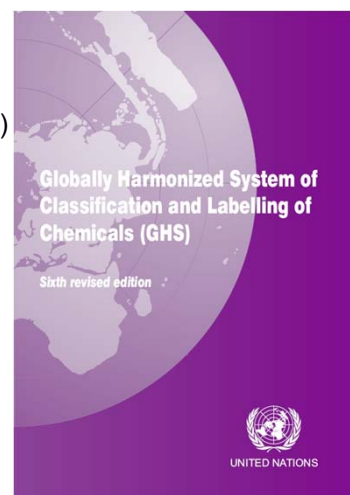


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Globally Harmonized System

- Harmonizes:
 - Classification (based on hazards)
 - Labelling
 - Safety Data Sheets (contents and format)
- Identifies and quantifies hazards
 - Identification: Hazard classes
 - Quantification: Hazard categories
- 3 types of hazard
 - Physical hazards
 - 16 hazard classes
 - Health hazards
 - 10 hazard classes
 - Environmental hazards
 - 2 hazard classes



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Scope

- All hazardous chemicals. However...
 - application of hazard communication elements may vary by product category or stage in the life cycle (GHS, section 1.1.2)
 - pharmaceuticals, veterinary products, food additives, cosmetics and pesticide residues in food:
 - » Not covered at the point of intentional human intake or ingestion or intentional application to animals; but
 - » Covered by workplace (manufacturing, storage) and transport requirements (when applicable);
- Articles (except explosive articles) are not covered by the GHS (see GHS §1.3.2.1)



Hazard versus risk

GHS classification is based on intrinsic properties (hazards)



hazard x exposure = risk

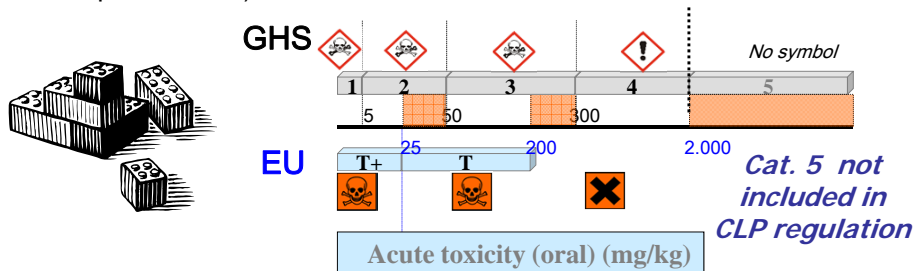
If you can minimize the hazard or the exposure, you minimize the risk or the likelihood of harm

Successful hazard communication alerts the user to the presence of a hazard and the need to minimize exposures and resulting risks



Building block approach

- Building blocks = hazard classes/categories
- Competent authorities (CAs) decide how to apply them based on:
 - their needs; and
 - target audiences/sectors (workplace, transport, consumer products, pesticides...)



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Industrial Accidents Convention

Hazard class	Hazard category						
	Unstable explosives	Div. 1.1	Div. 1.2	Div. 1.3	Div. 1.4	Div. 1.5	Div. 1.6
Explosives							
Flammable gases (including chemically unstable gases)	1A 1B	2A 2B					
Aerosols	1	2	3				
Oxidizing gases	1						
Oxidizing liquids	1	2	3				
Oxidizing solids	1	2	3				
Gases under pressure	Compressed Liquefied Refrigerated liquefied Dissolved						
Flammable liquids	1	2	3	4			
Flammable solids	1	2					
Self-reactive subst/mixtures	Type A	Type B	Type C	Type D	Type E	Type F	Type G
Organic peroxides							
Pyrophoric liquids	1						
Pyrophoric solids	1	2					
Self-heating subst/mixtures	1	2	3				
subst/mixtures which in contact with water emit flammable gases	1	2	3				
Corrosive to metals	1						

GHS physical hazards/categories covered by Annex I to the Convention

GHS physical hazards/categories not covered by Annex I to the Convention



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Industrial Accidents Convention

Hazard class	Hazard category				
Acute toxicity (oral/dermal/inhalation)	1		2	3 (inhalation only)	4 5
Skin corrosion/irritation	1A 1B 1C	2	3		
Serious eye damage/eye irritation	1	2 2A 2B			
Respiratory or skin sensitization	1A 1B				
Germ cell mutagenicity	1A 1B	2			
Carcinogenicity	1A 1B	2			
Reproductive toxicity	1A 1B	2	Effects on or via lactation		
Specific target organ toxicity (single exposure)	1	2	3		
Specific target organ toxicity (repeated exposure)	1	2			
Aspiration hazard	1	2			

GHS health hazards/categories covered by Annex I to the Convention

GHS health hazards/categories not covered by Annex I to the Convention



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Industrial Accidents Convention

Hazard class	Hazard category			
Hazardous to the aquatic environment	Acute 1 Cronic 1	Acute 2 Cronic 2	Acute 3 Cronic 3	Cronic 4
Hazardous to the ozone layer	1			

GHS environmental hazards/categories covered by Annex I to the Convention

GHS environmental hazards/categories not covered by Annex I to the Convention

Additional hazards not (yet) covered by the GHS but covered by Annex I to the Convention:

- Substances and mixtures which react violently with water (e.g. acetyl chloride, titanium tetrachloride)
- Substances and mixtures which in contact with water liberate toxic gas (substances and mixtures which in contact with water or damp air evolve gases classified for acute toxicity in category 1, 2 or 3, such as aluminium phosphide or phosphorus pentasulphide)



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GHS hazard communication

- Label (both written and graphic information):

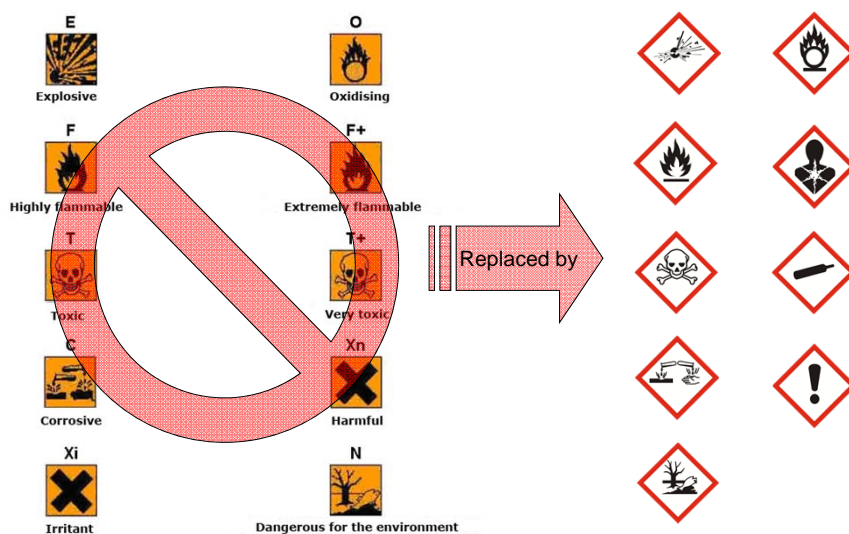
- **Pictograms** (e.g: health hazard pictogram)
- **Signal words** (severity of hazard): “Danger” or “Warning”
- **Hazard statements** (nature of the hazard): e.g. “may cause cancer”
- **Precautionary statements** (5 types) and **precautionary pictograms**:
 - General, Prevention, Response, Storage, Disposal
- **Product identifier**: (proper shipping name (transport), chemical id....)
- **Supplier identification**: (Name, address and phone number of the manufacturer or supplier)



- Safety Data Sheet



EU labelling changes after GHS



GHS labelling example



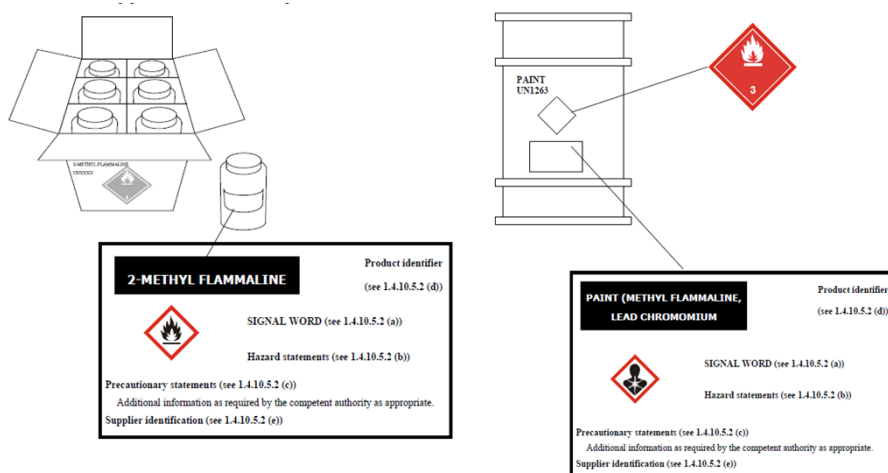
Source: European Chemicals Agency (ECHA)



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GHS labelling example



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GHS hazard communication: SDS

- harmonized content and format
 - 16 sections
 - Information to be presented in the following order
- | | |
|--|--|
| 1. Identification (subst/mixt. and supplier) | 9. Physical and chemical properties |
| 2. Hazard(s) identification | 10. Stability and reactivity |
| 3. Composition/information on ingredients | 11. Toxicological information |
| 4. First-aid measures | 12. Ecological information |
| 5. Fire-fighting measures | 13. Disposal considerations |
| 6. Accidental release measures | 14. Transport information |
| 7. Handling and storage | 15. Regulatory information |
| 8. Exposure controls/personal protection | 16. Other information (including on preparation and revision of the SDS) |

For detailed guidance on the preparation of SDS, see Annex 4 of the GHS

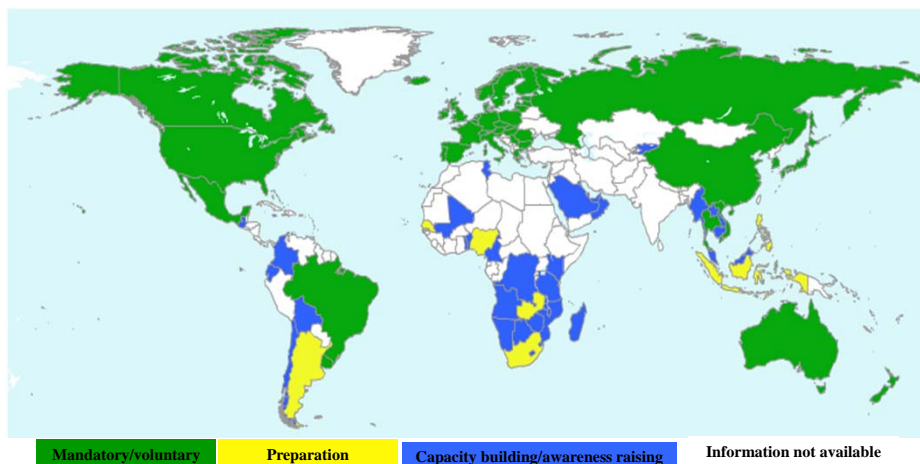


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GHS implementation: status

Detailed information about the status of implementation worldwide:
http://www.unece.org/trans/danger/publi/ghs/implementation_e.html



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GHS implementation: transport



Examples of GHS implementation



Examples of GHS implementation

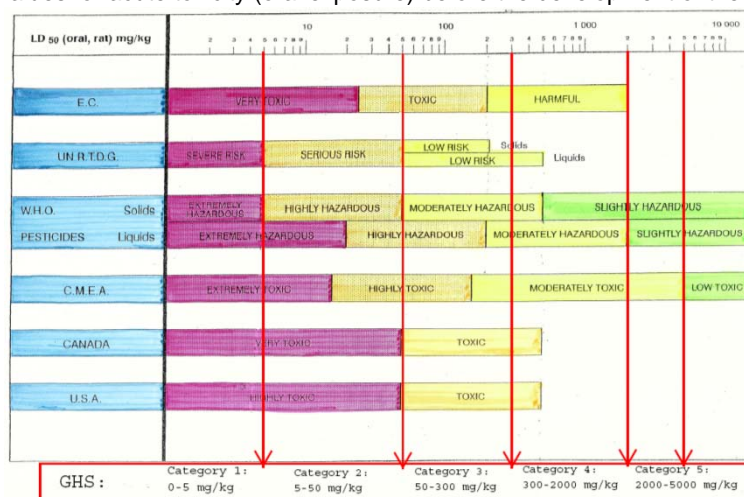


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GHS implementation

- Values for acute toxicity (oral exposure) before the development of the GHS:



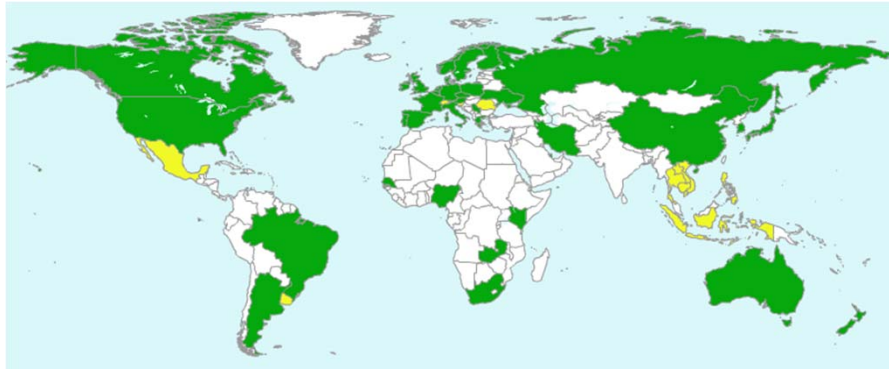
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GHS Sub-Committee

- Current membership



■ = 36 Full members

■ = Observers



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Support materials: GHS Sub-Com.

- Full text of the GHS in all UN official languages
- Presentations about the GHS
- Information on its implementation worldwide
- GHS guidance
 - Classification examples
 - Application to specific substances
- Reports from the GHS Sub-Committee sessions

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



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Support materials (UNITAR)

- Developing a National GHS Implementation Strategy
- Understanding the GHS: A Companion Guide to the Purple Book
- OMC: Assisting Countries with the Transition Phase for GHS Implementation (tools and resources of the IOMC to support implementation of the GHS)
- GHS classification course (online)

<http://www2.unitar.org/cwm/publications/ghs.aspx>



Thank you!

<http://www.unece.org/trans/danger/danger.htm>

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