



Global View on the Status of the GHS

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Discussion Points

- History of how the GHS was developed/**negotiated**
 - Reason we have Building Blocks
- Anticipated application of the GHS Building Blocks impact on:
 - Transport
 - Workplace (i.e. classification & labeling of chemicals in a workplace)
- High Level review of it's adoption around the world
 - Is it being implemented as anticipated?
- Let's identify the opportunities moving forward



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How was the GHS developed?

Harmonization of major existing regulations

- 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

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Observations on the existing regulations

- Various Scopes of coverage
 - Workplace: OSHA HazCom Standard; WHMIS
 - Supply & Use: EU Dangerous Substance & Preparations Directives
 - Consumer Products: US, Canada
 - Pesticides: Canadian and US regulations
 - Transport: UNTDG Model Regulations
- Various Approaches to Hazard Identification/Classification
 - Hazard based SDS and Labels:
 - OSHA HazCom; WHMIS, EU Directives
 - Risk based labeling elements without SDS requirements:
 - Consumer labeling based on likelihood of injury in CPSC
 - US & Canadian pesticide regulations
 - Hazard based taking transport conditions (i.e. risk) into considerations:
 - UNTDG Model Regulations

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Observations on the existing regulations

- Various Target Audiences and Forms of Communication

Target Audience	Forms of Communication			
	Labels	SDS	Placards	Transport Documents
Workers	X	X		
Consumers	X			
Transport workers	X		X	X
Emergency Responders	X	X	X	



The Globally Harmonized System

- The GHS framework satisfies various regulatory needs by providing:
 - Definition of scope
 - Guidance on it's application
 - “Building Blocks” that consists of harmonized and standardized elements
 - Hazard classification criteria for Hazard Classes/Categories
 - Label Elements (e.g. Pictograms, Signal Words and Hazard Statements)
 - 16-Section SDS format and minimum content



Anticipated Application of Building Blocks

- The GHS is not a model regulation or legislation
- The full range of building blocks is available to everyone, and can be used if an authority chooses to cover a certain hazard when it aligns its regulation with the GHS
- Coverage of hazards varies by the perceived needs of the target audience for information so:
 - The full range of building blocks do not have to be adopted
 - Authorities can determine which of the building blocks will be applied in different parts of their systems



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Anticipated Impact to Existing Regulations

- The application of GHS building blocks is not expected to impact the scope of existing regulatory schemes
- **However**, specific classification processes, hazard classification criteria, label elements and SDS requirements will need to be modified to align with the GHS



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Transport Sector Alignment with GHS

Model Regulations.

Figures 1 and 2 summarize the relationship between the different revised editions of the GHS and the UN Model Regulations and its related transport legal instruments.

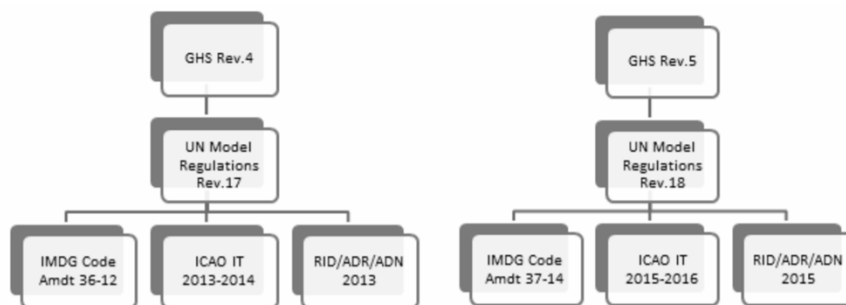


Figure 1: Implementation of the GHS (Rev.4) through transport of dangerous goods regulations for 2013-2014

Figure 2: Expected implementation of the GHS (Rev.5) through transport of dangerous goods regulations for 2015-2016

Source: UNECE GHS Implementation Website

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“Workplace” Sector Alignment with GHS¹

Country	Label	SDS	Based on Revision
Implemented			
New Zealand (NZ)	✓ - July 1, 2008	✓ - December 31, 2010	0
Korea (KR)	✓ - June 30, 2010	✓ - June 30, 2010	3
Japan (JP)	✓ - December 2006	✓ - December 2010	4
China (CN)	✓ - December 1, 2011	✓ - December 1, 2011	4
Brazil (BR)	✓ - December 10, 2012	✓ - February 3, 2013	4
European Union (EU)	✓ - December 1, 2010	✓ - December 1, 2010	4 (4 th ATP)
Pending Implementation			
United States (US)	June 1, 2015	June 1, 2015	3
Australia (AU)	January 1, 2017	February 1, 2017	3
Canada (CA)	June 1, 2017	June 1, 2017	3 (5)

1. Earliest date in cases where multiple transitional periods apply (e.g. new substances, existing substances, mixtures)

Physical Hazards

Hazard Class/Category Based on Revision:	US 3	CA 3	EU 4	AU 3	NZ 0	CN 4	JP 4	KR 3	BR 4
2.1 Explosives									
Unstable									
Division 1.1									
Division 1.2									
Division 1.3									
Division 1.4									
Division 1.5									
Division 1.6									
2.2 Flammable Gases									
Category 1									
Category 2									
Category A*									
Category B*									

* Introduced in Revision 4

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Physical Hazards

Hazard Class/Category Based on Revision:	US 3	CA 3	EU 4	AU 3	NZ 0	CN 4	JP 4	KR 3	BR 4
2.3 Aerosols									
Category 1									
Category 2									
Category 3*									
2.4 Oxidizing Gases									
Category 1									
2.5 Gases Under Pressure									
Compressed									
Liquefied									
Refrigerated Liquefied									
Dissolved									
2.6 Flammable Liquids									
Category 1									
Category 2									
Category 3									
Category 4									

* Introduced in Revision 4

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Physical Hazards

Hazard Class/Category Based on Revision:	US 3	CA 3	EU 4	AU 3	NZ 0	CN 4	JP 4	KR 3	BR 4
2.7 Flammable Solids									
Category 1									
Category 2									
2.8 Self-Reactive									
Type A									
Type B									
Type C									
Type D									
Type E									
Type F									
Type G									
2.9 Pyrophoric Liquids									
Category 1									
2.10 Pyrophoric Solids									
Category 1									

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Physical Hazards

Hazard Class/Category Based on Revision:	US 3	CA 3	EU 4	AU 3	NZ 0	CN 4	JP 4	KR 3	BR 4
2.11 Self-Heating									
Category 1									
Category 2									
2.12 In Contact with Water									
Category 1									
Category 2									
Category 3									
2.13 Oxidizing Liquids									
Category 1									
Category 2									
Category 3									
2.14 Oxidizing Solids									
Category 1									
Category 2									
Category 3									

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Physical Hazards

Hazard Class/Category Based on Revision:	US 3	CA 3	EU 4	AU 3	NZ 0	CN 4	JP 4	KR 3	BR 4
2.15 Organic Peroxides									
Type A									
Type B									
Type C									
Type D									
Type E									
Type F									
Type G									
2.16 Corrosive to Metals									
Category 1									



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Physical Hazard Opportunities

- Out of 53 Physical Hazard Category building blocks there are:
 - 2 building blocks that are not consistently adopted
 - Flammable Gases Category 2
 - Flammable Liquids Category 4
 - 3 “newer” building blocks – not sure what will happen when the regulations get updated
 - Flammable Unstable Gases Category A and Category B
 - Aerosols Category 3



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Health Hazards

Hazard Class/Category Based on Revision:	US 3	CA 3	EU 4	AU 3	NZ 0	CN 4	JP 4	KR 3	BR 4
3.1 Acute Toxicity									
Category 1									
Category 2									
Category 3									
Category 4									
Category 5									
3.2 Skin Corrosion/Irritation									
Category 1 (1A, 1B, 1C)									
Category 2									
Category 3									
3.3 Serious Eye Damage/ Eye Irritation									
Category 1									
Category 2/2A									
Category 2B									



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Health Hazards

Hazard Class/Category Based on Revision:	US 3	CA 3	EU 4	AU 3	NZ 0	CN 4	JP 4	KR 3	BR 4
3.4 Respiratory or Skin Sensitization									
Category 1									
Category 1A									
Category 1B									
3.5 Germ Cell Mutagenicity									
Category 1A									
Category 1B									
Category 2									
3.6 Carcinogenicity									
Category 1A									
Category 1B									
Category 2									



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Health Hazards

Hazard Class/Category Based on Revision:	US 3	CA 3	EU 4	AU 3	NZ 0	CN 4	JP 4	KR 3	BR 4
3.7 Reproductive Toxicity									
Category 1A									
Category 1B									
Category 2									
Lactation									
3.8 Target Organ - Single									
Category 1									
Category 2									
Category 3									
3.9 Target Organ - Repeated									
Category 1									
Category 2									
3.10 Aspiration									
Category 1									
Category 2									

* Not in Purple Book at time of NZ adoption

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Health Hazard Opportunities

- Out of 29 Health Hazard Category building blocks there are:
 - 2 building blocks that are not consistently adopted
 - Eye Irritation Category 2B
 - Aspiration Hazard Category 2
 - 2 building blocks that are only intended for vulnerable populations
 - Acute Toxicity Category 5
 - Skin Irritation Category 3

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Classification Threshold Building Blocks

- A few Hazard Classes have building block options for the cut-off value/concentration limit that triggers classification
 - Respiratory or Skin Sensitization
 - Carcinogenicity
 - Reproductive Toxicity
 - Specific Target Organ Toxicity – Single or Repeated Exposure
- Different adoption of the threshold building blocks can lead to inconsistent classification of untested mixtures globally. For example,
 - US OSHA HazCom2012 adopted the lower threshold option
 - EU CLP adopted the higher threshold option.



Skin Sensitization

Table 3.4.5

Ingredient Classified as:	Cut-off/concentration limits triggering classification of a mixture as: Skin sensitizer Category 1 All physical states
Skin sensitizer Category 1	$\geq 0.1\%$ (see note)
	$\geq 1.0\%$
Skin sensitizer Sub-category 1A	$\geq 0.1\%$
Skin sensitizer Sub-category 1B	$\geq 1.0\%$

Opportunity: Delete generic Category 1 and require default classification into Sub-Category 1A unless data supports classification into Sub-Category 1B. This is consistent with the GHS Guiding Principle that protection should not be reduced.



Respiratory Sensitization

Table 3.4.5

Ingredient Classified as:	Cut-off/concentration limits triggering classification of a mixture as: Respiratory Sensitizer Category 1	
	Solid/Liquid	Gas
Respiratory sensitizer Category 1	$\geq 0.1\%$ (see note)	$\geq 0.1\%$ (see note)
	$\geq 1.0\%$	$\geq 0.2\%$
Respiratory sensitizer Sub-category 1A	$\geq 0.1\%$	$\geq 0.1\%$
Respiratory sensitizer Sub-category 1B	$\geq 1.0\%$	$\geq 0.2\%$

Opportunity: Delete generic Category 1 and require default classification into Sub-Category 1A unless data supports classification into Sub-Category 1B. This is consistent with the GHS Guiding Principle that protection should not be reduced.

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Carcinogenicity

Table 3.6.1

Ingredient classified as:	Cut-off/concentration limits triggering classification of a mixture as:		
	Category 1 carcinogen		Category 2 carcinogen
	Category 1A	Category 1B	
Category 1A carcinogen	$\geq 0.1\%$	--	--
Category 1B carcinogen	--	$\geq 0.1\%$	--
Category 2 carcinogen	--	--	$\geq 0.1\%$ (note 1)
			$\geq 1.0\%$ (note 2)

Opportunity: Delete the 1% cut-off/concentration limit option. This is consistent with the GHS Guiding Principle that protection should not be reduced.

Consider leaving Note 1 that labeling is optional until $\geq 1\%$

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Reproductive Toxicity

Table 3.7.1

Ingredients classified as:	Cut-off/concentration limits triggering classification of a mixture as:			
	Category 1 reproductive toxicant		Category 2 reproductive toxicant	Additional category for effects on or via lactation
	Category 1A	Category 1B		
Category 1A reproductive toxicant	$\geq 0.1\%$ (note 1)	--	--	--
	$\geq 0.3\%$ (note 2)			
Category 1B reproductive toxicant	--	$\geq 0.1\%$ (note 1)	--	--
	--	$\geq 0.3\%$ (note 2)		
Category 2 reproductive toxicant	--	--	$\geq 0.1\%$ (note 3)	--
	--	--	$\geq 3.0\%$ (note 4)	
Additional category for effects on or via lactation	--	--	--	$\geq 0.1\%$ (note 1)
	--	--	--	$\geq 0.3\%$ (note 2)

Opportunity: Delete the 0.3% and 3% cut-off/concentration limit options. This is consistent with the GHS Guiding Principle that protection should not be reduced.



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STOT – Single & Repeated Exposure

Tables 3.8.2 & 3.9.3

Ingredient Classified as:	Cut-off/concentration limits triggering classification of a mixture as:	
	Category 1	Category 2
Category 1 Target organ toxicant	$\geq 1.0\%$ (note 1)	$1.0 \leq \text{ingredient} < 10\%$ (note 3)
	$\geq 10\%$ (note 2)	
Category 2 Target organ toxicant	-	$\geq 1.0\%$ (note 4)
		$\geq 10\%$ (note 5)

Opportunity Option 1: Delete the “step-down” and 10% cut-off/concentration limit options. This is consistent with the GHS Guiding Principle that protection should not be reduced.



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STOT – Single & Repeated Exposure

Tables 3.8.2 & 3.9.3

Ingredient Classified as:	Cut-off/concentration limits triggering classification of a mixture as:	
	Category 1	Category 2
Category 1 Target organ toxicant	$\geq 1.0\%$ (note 1)	$1.0 \leq \text{ingredient} < 10\%$ (note 3)
	$\geq 10\%$ (note 2)	
Category 2 Target organ toxicant	-	$\geq 1.0\%$ (note 4)
		$\geq 10\%$ (note 5)

Opportunity Option 2: Delete the Category 1 1% & Category 2 10% cut-off/concentration limit options. This is also consistent with the GHS Guiding Principle that protection should not be reduced.

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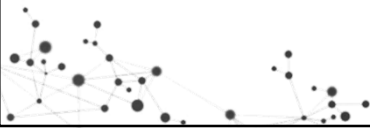
Threshold Building Blocks - Opportunities

- Update the cut-off/concentration limit mixtures tables to eliminate building block options:
 - Respiratory or Skin Sensitization
 - Delete the generic Category 1 option and use current 1A & 1B values.
 - Carcinogenicity
 - Delete the 1% option for Category 2 and use current 0.1% value. Keep label optional until $\geq 1\%$
 - Reproductive Toxicity
 - Delete the 0.3% option for Category 1A, 1B, Lactation and 3% option for Category 2 and use the current 0.1% values.
 - Specific Target Organ Toxicity – Single or Repeated Exposure
 - Option 2: Delete the Category 1 1% & Category 2 10% cut-off/concentration limit options

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Environmental Hazards

Hazard Class/Category Based on Revision:	US 3	CA 3	EU 4	AU 3	NZ 0	CN 4	JP 4	KR 3	BR 4
4.1 Hazardous to the Aquatic Environment									
Short-Term Hazard									
Category 1	█	█	█	█	█	█	█	█	█
Category 2	█	█	█	█	█	█	█	█	█
Category 3	█	█	█	█	█	█	█	█	█
Long-Term Hazard									
Category 1	█	█	█	█	█	█	█	█	█
Category 2	█	█	█	█	█	█	█	█	█
Category 3	█	█	█	█	█	█	█	█	█
Category 4	█	█	█	█	█	█	█	█	█
4.2 Hazardous to the Ozone Layer									
Category 1	█	█	█	█	█	█	█	█	█



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Environmental Hazard Opportunities

- Out of 8 Environmental Hazard Category building blocks there are:
 - 2 building blocks are not consistently adopted
 - Short-term Hazards to the Aquatic Environment Category 2 & 3
 - Hazardous to the Ozone Layer - ??



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Future Opportunities

- The GHS is a work in progress that will continue to evolve
- Let's build on the progress that's been achieved!!
- Now that the first phase of implementations is near completion it seems appropriate to take the learning's and begin discussions at the UN. Some specific suggested Purple Book items:
 - Negotiate the removal of the cut-off/concentration limit building block options.
 - This will significantly improve harmonized classification for untested mixtures across GHS implementations
 - Updated language in Chapter 1.1.3 Application of the GHS to further illustrate what constitutes correct/incorrect implementations of GHS building blocks. For example:
 - Update in GHS Labeling procedures (e.g. Order of Precedence for Symbols)
 - Changes in GHS classification criteria (e.g. Tested Mixture criteria for Carcinogens, Mutagens and Reproductive toxicity).

The CGI logo is located in the bottom right corner of the slide. It consists of the letters 'CGI' in a bold, sans-serif font. To the left of the letters is a decorative graphic of a network of black dots connected by thin lines, resembling a molecular structure or a data network.

Future Opportunities

Some specific suggested Purple Book items (continued):

- Update Labeling Procedures to achieve greater harmonization
- Update Safety Data Sheet requirements to achieve greater harmonization

Additional discussions to improve global harmonization:

- Better international coordination of moving to newer versions of the Purple Book to minimize issues caused by newer building blocks being implemented at different times across countries
- Potential for individual authorities to provide guidance on how stakeholders can navigate in a world where regulations are on different versions of the Purple Book
- Logistics around GHS compliant labels/SDS at customs

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