



April 19, 2016

GHS Implementation – New Opportunities!

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GHS Implementation – New Opportunities!

UN Global Harmonization system

- Life before GHS
- Purpose & Development of GHS

Review of National Implementations of GHS and Opportunities!

- Review of differences in national implementation of GHS

Prior to GHS

Various national requirements developing related to classification of inherent properties of chemicals and hazard communication

- Increasing concerns related to technical barriers to global trade
- Evolution of chemical controls based in part on hazard determination
- Challenging to manage widely different national requirements
 - Expertise/knowledge of different criteria required to determine the classification of a product supplied in Canada, EU, USA, etc.

Life Before GHS

- No consistent nomenclature or definitions to describe hazard properties
 - Definitions dependent on country/regulatory agency

EU DSD criteria	Very toxic < 25	Toxic > 25 - 200	Harmful > 200 - 2000	
	Acute Toxicity Classification Criteria (LD50)		200 - 300	
UN GHS criteria	Category 1 < 5	Category 2 > 5 - < 50	Category 3 > 50 - < 300	Category 4 > 300 - < 2,000

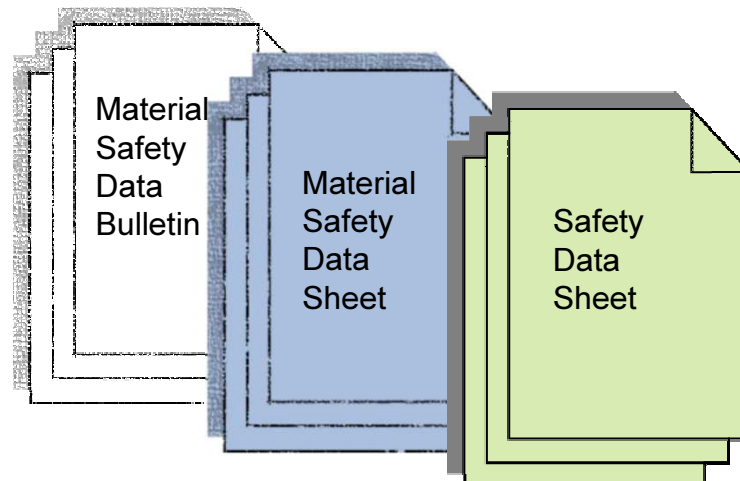
- Labels conforming to different standards & various hazard communication phrases



Life before GHS

Material Safety Data Sheets/Safety Data Sheets

- No consistency
 - Canada WHIMS 1988
MSDS - 9 Sections
 - European Union Safety Data sheet Directive (91/155/EEC)
SDS – 16 sections
 - USA OSHA
MSDS – no format defined (content only prescribed in 1910.100(g))
- Multiple names for hazard communication document



GHS – Purpose

GHS should be judged based on the original UN agreed purpose

Purpose of GHS

To **enhance the protection** of human health & the environment by providing an **internationally comprehensible system** for hazard communication

To **provide a recognized framework** for **countries without an existing system**

To facilitate international trade in chemicals whose **hazards have been properly assessed and identified on an international basis**

Harmonization: **common and coherent basis** for chemical **classification and communication**

Level of **protection should not be reduced** as a result of harmonizing classification and labelling systems

- Implementing GHS can present a number of change management challenges!

GHS Development

Conception

- 1992 UN Conference on Environment Development

Gestation

- Harmonization Teams conducted detailed review of existing classification and labelling schemes around the world
- Established harmonized criteria in a voluntary framework

Birth

- Adopted December 2002 (1st Edition published 2003)
 - Intended to serve as the initial basis for the global implementation of the system

Development

- Continued growth (changes every 2 years)
- More countries adopting system

GHS Implementation – New Opportunities!

- UN Global Harmonized System – a System not a Standard
 - Defines criteria
 - Flexibility encourages adoption
 - Living system (revised regularly)
- National implementation of GHS - one Size does not fit All
 - ✓ Consistent nomenclature (e.g. substances/mixtures)
 - ✓ Consistent criteria for defining properties (e.g. Flammable Cat 1)
 - ✓ Consistent structure for hazard communication (16 section SDS)
 - ✓ Consistent labelling requirements (hazard symbol & label statements)
 - ✓ Differences in classification & labelling are inherent in the design of GHS
- Opportunities
 - ❑ GHS may not be perfect but has potential
 - ❑ Understanding the “System” can aid implementation & living with GHS changes

GHS “Ingredients”

- UN Harmonized Voluntary System

“GHS” provides a Harmonized framework and set of rules for Classification & Labelling of Products



Harmonized “Menu” of Ingredients

Hazard Groups	Hazard Classes	Categories
• Physical Hazards	e.g. Flammable liq.	• Category 1
• Health Hazards	e.g. acute toxicity	• Category 2
• Environmental Hazards	e.g. Hazardous to the ozone layer.	• Category 3
		• Category 4
		• Category 5

GHS Rules for Mixtures

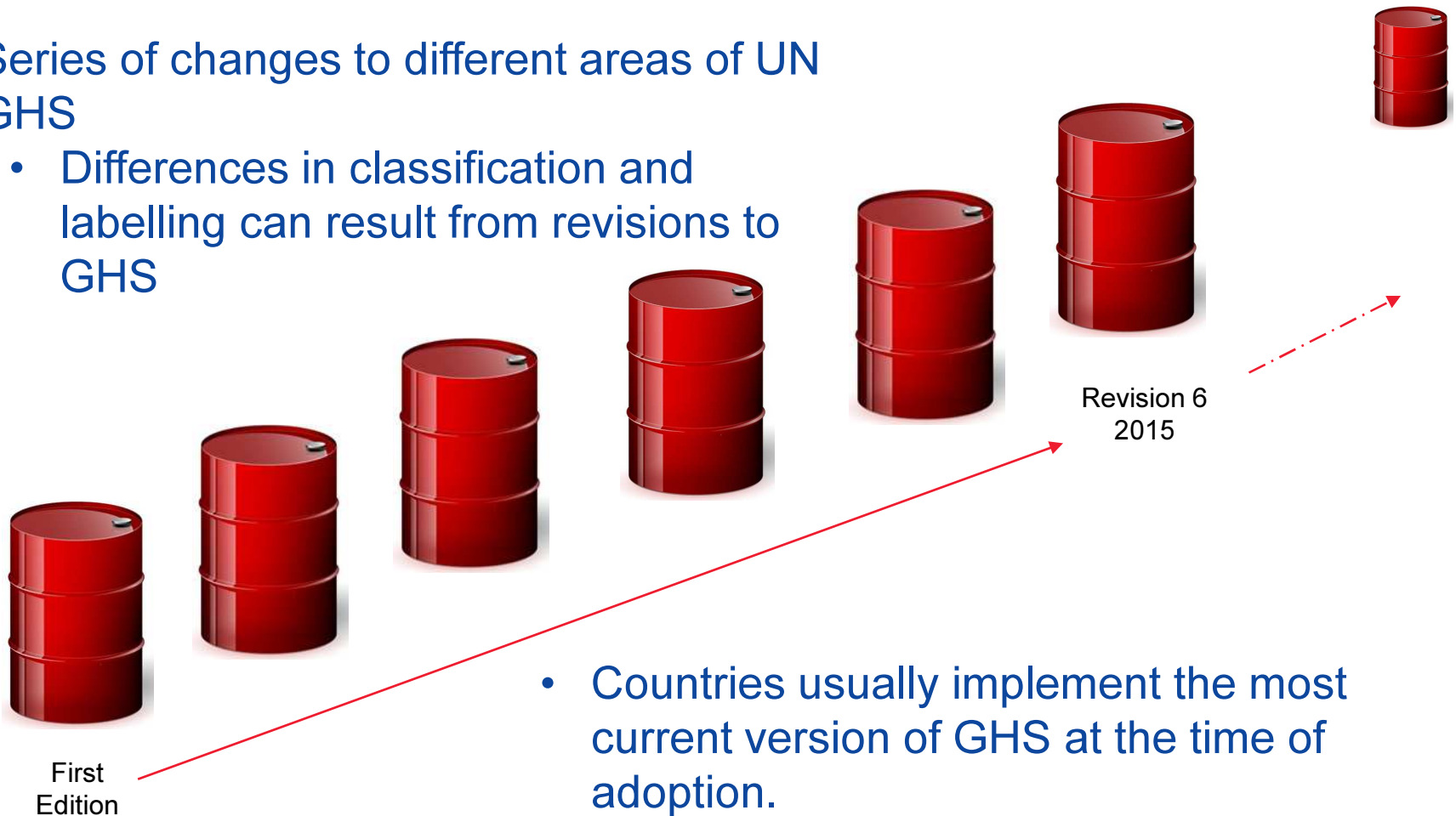
- Test data (for mixture)
- Bridging principles
- Calculation method (e.g. apply M-Factors or SCL)
- Use Low or High threshold for certain health hazards

GHS “Formulation” depends on the “ingredients” adopted by national governments

UN GHS is a System not a Static Standard

UN GHS revisions every two years

- Series of changes to different areas of UN GHS
 - Differences in classification and labelling can result from revisions to GHS



Countries Adopting Different Editions of GHS

- Global companies need to manage multiple editions of GHS and anticipate countries adopting future editions



GHS Revisions – rev 5 Changes

Summary of changes in revision 5 (published in 2013)

- Addition of new test method for oxidizing solids
- Clarification of hazard classification criteria
 - skin corrosion/irritation
 - severe eye damage/irritation
- Revised/simplified classification & labelling summary tables
- New codification system for pictograms
- Revised/rationalized Precautionary statements

GHS Revision 6

Summary of changes in revision 6

- **New hazard** class for desensitized explosives
- **New hazard category** for pyrophoric gases
- Miscellaneous provisions intended to **clarify the criteria** for some hazard classes (explosives, specific target organ toxicity following single exposure, aspiration hazard and hazardous to the aquatic environment);
- Additional information to be included in the Safety Data Sheets (section 9);
- Revised and further **rationalized precautionary statements**
- New example in Annex 7 addressing labelling of small packages

Published: July 2015



GHS Revisions – Potential Opportunities

GHS Change Management

- Encourage national regulatory agencies to **accept use of the latest revision of GHS** (including new/revised/deleted precautionary statements) taking into account the GHS building blocks and categories implemented into national legislation
- Consider UN Model regulations for GHS
 - Precedent set with model regulations for Transportation
 - “UN Recommendations on the Transport of Dangerous Good – Model Regulations
(source:http://www.unece.org/trans/danger/publi/unrec/guidingprinciples/guidingprinciplesrev15_e.html)

GHS Revisions – Opportunity

Minimize changes to existing Precautionary statements in revision 5

- Examples (rev 4 versus rev 5)

P Statement Code	Revisions 4 Statement	New/Improved Revision 5 Statements
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources . No smoking
P420	Store away from other materials	Store separately
P381	Eliminate all ignition sources if safe to do so.	In case of leakage, remove all ignition sources

- Impacts on Industry of changes to existing P Statements
 - Translation into all relevant languages
 - Impact assessment to identify product SDSs and Label to be revised
 - Management of old and new statements depending on timing for national implementation of revision 5
- Limit changes to P Statements only if modification enhances protection of human health and the environment

GHS National Implementations - Opportunity

- Wording of GHS P statements can change in national regulations

GHS P Statement Code	Revisions 5 Statement	USA OSHA P Statements	
P272	Contaminated work clothing should not be allowed out of the workplace.	Contaminated work clothing must not be allowed out of the workplace.	

Opportunity

- Build consensus on new statements to reduce risk of national deviations
- If national reasons to deviate from UN GHS P statements, consider country specific statement
 - Example of country specific label statements
 - European Union has EU specific label phrases (e.g. EUH66)

GHS SDS Authoring - Opportunity

Training of SDS Authors – opportunity

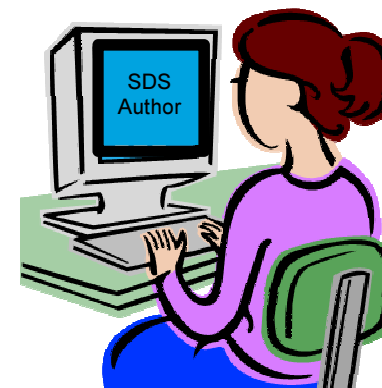
- **Authors trained in UN GHS system**

- Easier transition to authoring national compliant SDS

- Ability to author for GHS countries (especially with smart authoring system) as consistent criteria and common system

- Easier to utilize/interpret classification data from suppliers in other (GHS) countries – no need to translate “EU DSD Toxic” definition for USA substance classification

- Increasing availability of substance data to aid in appropriate GHS classification



http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

GHS SDS Authoring - Opportunity

Addressing hazard communication in countries w/out national regulations – opportunity



- Alignment of Classification/labelling and SDSs with GHS
 - Decision on building blocks & GHS version often driven by supply chain consideration
 - Positioned to transition to potential future national adoption of GHS
- Voluntary (industry) adoption of GHS
 - Supports UN GHS purpose and encourages adoption of single system for hazard classification and communication

National Harmonized GHS Classification Lists

Inconsistent substance classifications on national harmonized lists

Example - Differences between National Lists for Stoddard solvent) EU CLP Regulation (Annex VI) – GHS classification

Index No	International Chemical Identification	EC No	CAS No	Classification		Labelling			Specific Conc. Limits, M-factors	Notes
				Hazard Class and Category Code(s)	Hazard statement Code(s)	Pictogram, Signal Word Code(s)	Hazard statement Code(s)	Suppl. Hazard statement Code(s)		
649-345-00-4	stoddard solvent; Low boiling point naphtha — unspecified; [A colourless, refined petroleum distillate that is free from rancid or objectionable odours and that boils in a range of approximately 148,8 °C to 204,4 °C (300 °F to 400 °F).]	232-489-3	8052-41-3	Carc. 1B Muta. 1B STOT RE 1 Asp. Tox. 1	H350 H340 H372 (central nervous system) H304	GHS08 Dgr	H350 H340 H372 (central nervous system) H304			P

* STOT RE 1 = Specific Target Organ Toxicity Repeat Exposure Cat 1

Note P:

The classification as a carcinogen or mutagen **need not apply** if it can be shown that the substance **contains less than 0,1 % w/w benzene** (EINECS No 200-753-7).



No.	Chemical Name	CAS No.	Classification		Labelling		
			Classification Code	H-code	H-code	Signal Word	Hazard Pictogram
197	Stoddard solvent Low boiling point naphtha – unspecified; [A colourless, refined petroleum distillate that is free from rancid or objectionable odors and that boils in a range of approximately 300°F to 400°F.]	8052-41-3	Carc. 1B Muta. 1B Asp. Haz.	H350 H340 H304	H350 H340 H304	Danger	

- Substance listed as carcinogenic
- No note to explain substance is NOT non-carcinogenic if Benzene less than 0.1%
- Different classification compared to EU (MY does not include STOT RE 1) hazard statement)

Guidance on GHS Classification

Opportunity

- Encourage greater leverage of sector specific guidance rather than development of more national substance classification lists

Guidance on the application of GHS criteria

Note: This webpage contains links to third party web sites which are provided as additional information on GHS. The third parties in question have informed the United Nations Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals that they had developed guidance on the GHS for their own sectors. However, this does not imply any endorsement of the Sub-Committee or the United Nations. The third party remains responsible for the guidance. Users of this webpage are reminded that competent authorities in various elements of the GHS based on the needs of the competent authorities. Refer also to the "Terms and conditions of use" of the United Nations website.

Hazard Category	Corresponding GHS Criteria
Acute toxicity (Chapter 3.1)	Acute toxicity (Chapter 3.1)
Skin corrosion/irritation (Chapter 3.2)	Skin corrosion/irritation (Chapter 3.2)
Serious eye damage/eye irritation (Chapter 3.3)	Serious eye damage/eye irritation (Chapter 3.3)
Skin corrosion/irritation (Chapter 3.2) and serious eye damage/eye irritation (Chapter 3.3)	Serious eye damage/eye irritation (Chapter 3.3)
Respiratory or skin sensitization (Chapter 3.4)	Respiratory or skin sensitization (Chapter 3.4)
Specific target organ - single exposure (Chapter 3.8)	Specific target organ - single exposure (Chapter 3.8)
Hazardous to the aquatic environment (Chapter 4.1)	Hazardous to the aquatic environment (Chapter 4.1)

Section 2: Sector specific guidance

Guidance on the application of GHS criteria to petroleum substances
(developed by the International Petroleum Industry Environmental Conservation Association)

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

UN evaluating practicality of a UN harmonized classification list

ExxonMobil

Key Requirements for Harmonized Lists

- Transparency (data considered, study quality, etc.)
- Science based classification
- Consensus (reflect input from stakeholders)
- Evergreen (regularly updated based on new information and/or changes to UN GHS)

National Lists of Classified Substances

Country/Region	Reference	# Substances
European Union	EU CLP Annex VI	Approximately 3,900
Serbia (Candidate EU country)	Decree No 46/2014 (May 5, 2014)	Approximately 3,900
Australia	Hazardous Substances Information System (HSIS), as amended through September 2014)	
Korea	Occupational Safety & Health Agency, December 2011	6,316
Korea	National Emergency Management Agency GHS Guidance for Classification and Labeling for Dangerous Goods, 2009	1078 (Physchem classifications only)
China	SAWS No. 2015-80, August 19, 2015)	Approximately 3,000
Japan	JAISH GHS Classification List (as updated through March 27, 2009)	370
Malaysia	Industry Code of Practice on Chemicals Classification and Hazard Communication 2014, Part 1, April 2014	233
Taiwan	Council of Labor Affairs, GHS Documents, June 2014	Approximately 3,200
Quebec (Canada)	Guidance WHMIS 2015 Classifications (CSST/SRT) (April 27, 2015)	Approximately 2,100

Harmonized System ≠ Harmonized Label

- National implementation of GHS system gives rise to different labels depending on the country



- Classification/Labelling dependent on:
 - ✓ Hazard Group(s) & Classes
 - ✓ Categories adopted
 - ✓ Version (edition) of GHS
 - ✓ National (mandatory) Substance Classification List
 - ✓ Country specific requirements e.g. European Union “EUH” statements
 - ✓ National Language

GHS is a Journey

Summary


- GHS is a global system that by design allows national flexibility and can result in differences in how products are classified/labelled
- Understanding of the variables associated with national adoption of GHS brings opportunities
- Harmonized substance classification lists should be transparent, based on consensus & kept evergreen

Product Name: **Opportunities via understanding**

Hazard Statements:
H901: *Not all countries adopt the same edition of GHS.*
H902: *Classification depends on Hazard Classes & Categories adopted.*
H903: *Classification of mixtures also depends on whether high or low thresholds adopted*

Precautionary Statements:
P801: *Substances having the same CAS# can have different classifications due to different properties, impurities, constituents, etc.*
P802: *National GHS Classification lists should be based on sound science.*

Supplier: UNECE Inc.


Signal Word: Harmonized

This is not a real label!