

Global GHS: Current Status and Challenges

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What is the GHS?



- Globally Harmonized System for Classification and Labelling of Chemicals
- A common and coherent United Nations approach to defining and classifying intrinsic hazards of chemical substances and mixtures, and conveying information about those hazards on labels and Safety Data Sheets (SDS)
- Criteria for hazard classification and hazard communication (Labels and SDSs) are harmonized and standardized.



Why need GHS?

- Substance of 257 mg/kg of LD₅₀

Pre-GHS

EU : Harmful
US : Toxic
Canada : Toxic
AU: Harmful
India: Non-toxic
Japan: Toxic
Malaysia: Harmful
Thailand: Harmful
New Zealand: Hazardous
China: Not Dangerous
Korea: Toxic

GHS standard

<Acute Toxicity>

Hazard Category 3
Toxic

Category 1: LD₅₀ ≤ 5 mg/kg

Category 2: 5 < LD₅₀ ≤ 50 mg/kg

Category 3: 50 < LD₅₀ ≤ 300
mg/kg

GHS - Goal



- Target: Establish consistent infrastructure to control chemical exposure and protect people and the environment
 - Streamlined hazard communication requirements
 - Consistent classification and labeling content
- Countries can choose to implement GHS in its entirety or implement only certain parts (“building block” approach)
- Develop a harmonized system for the classification of materials and for hazard communication (labels and SDS) by the end of 2000 and implement in 2008.
- One system for workers, consumers, transport workers, and emergency responders.
- Provides the underlying infrastructure for establishment of national, comprehensive chemical safety programs.

The UN GHS “Purple Book”



- The UN Committee of Experts for the Transport of Dangerous Goods (“Orange Book”) and the Globally Harmonised System of Classification and Labeling of Chemicals (“Purple Book”) formally adopted the GHS in December 2002.
- Published in 2003
- Updated every 2 year
 - First revised edition published in 2005
 - Second revised edition published in 2007
 - Third revised edition published in July 2009.
- National implementations to stay aligned with revisions



Labels: Pre-GHS and GHS

[산업안전보건법 제41조 규정에 의한 경고표지]

혼합물 A



고인화성물질



독성물질 **변이원성물질**
생식독성물질



자극성물질

유해물질에 따른 조치사항

- 취급장소에는 화재취약기구를 가동할 것
- 취급시 방독마스크, 보호안경, 보호의, 보호장갑 등 개인보호구를 착용할 것
- 위험의 증착된 등을 제거하고 화재시 열차상 분말소화기로, 또는 이산화탄소 소화기를 사용할 것

대전광역시 유성구 문지동 산업안전보건연구원
 기타 자세한 사항은 물질안전보건자료(MSDS)를 참조할 것



테트라에틸 납 (Cas No. 78-00-2)







위험

유해위험 문구	상기인 지정액인 피복은 밀착하면 유해한 증발하면 지정액인 피복에 자국을 일으킬 수에 강한 자극을 일으킬 수 있음 2차 또는 3차노출을 일으킬 수 있음 유해한 증발이 발생할 수 있음 유해한 자극을 일으킬 수 있음 유해한 증발이 발생할 수 있음 유해한 증발이 발생할 수 있음 유해한 증발이 발생할 수 있음
예방조치 문구	그동안 대량으로 취급을 영구적으로 지정된 액체는 취급 후에는 손을 씻어야 함으로 취급하기 전에는, 보호안경 보호의 보호의, 안전보호구를 착용하십시오. 특히 피부기밀재의 진찰을 받으시오. 포함된 모든 액체를 벗거나 제거하십시오. 증발하면 신중한 취급이 있는 경우는 유리기구 사용하기 위한 지체부 위험을 상충하십시오. 눈에 떨어질 땀 또는 물과 접촉을 피하십시오. 가능한 한 위험한 구역으로부터 제거하십시오. 계속 필요시, 발동시켜 지정하십시오. 용기는 완전히 잘 되는 곳에 변형의 발생하여 저장하십시오. (관련 법규에 명시된 내용에 따라 폐기처리를 하십시오.)

대전광역시 부평구 기능대학길 25 산업안전교육원 (000-000-0000)

Pre-GHS system

- Chemical name
- 7 Pictograms
- Classification (i.e: "Mixture A")
- Cautions/measures

GHS System

- Product information
- Pictograms
- Signal word
- Precautionary Statements
- Hazardous Statements
- Supplier information

Safety Data Sheet



- Based on 16 section SDS format
- Section 2: Hazard Identification
 - includes the GHS classification as well as the GHS label elements
- Country specific SDS regulatory requirements still need to be considered
 - Section 15 Regulatory Information



GHS around the globe (1)

- GHS legislation or standards have been passed in:
 - Asia Pacific:
 - New Zealand (2001)
 - Korea (2008)
 - Singapore (2008)
 - China (2009)
 - Japan (2006)
 - Taiwan (2008)
 - Vietnam (2008)
 - Indonesia (2009)
 - Europe
 - EU (2008)
 - Russia (2009)
 - Africa
 - South Africa (2008)
 - Americas
 - Brazil (2009)
 - Transportation - SOLAS (International Convention for the Safety of Life at Sea) (2009)



GHS around the globe (2)

- Draft regulations on GHS published:
 - USA
 - Australia
 - Malaysia
 - Philippines
- Implementation activities
 - Canada – GHS compliant SDS accepted with reference to WHMIS
 - MERCOSUR countries – SDS standards
 - ANDEAN Community – National Plan, capacity building
 - UNITAR/ILO Global GHS Capacity Building Programme: Cambodia, Gambia, Laos, Nigeria, Senegal, Zambia
 - Serbia, Croatia, Turkey
 - Thailand

New Zealand



- GHS classification criteria implemented by the Hazardous Substances & New Organisms Act in July 2001
- Implemented since July 2, 2001, for new hazardous substances (for existing substances, a transitional period of five years was established).
- Applicable to all (new and existing) substances since July 1, 2006.

- HSNO Approved Code of Practice for Preparation of Safety Data Sheets (HSNO CoP 8-1 09-06)
- HSNO Approved Code of Practice for Labeling of Hazardous Substances (HSNO CoP 10-1 08-07)
- NZ classifications have some additions to and deviations from UN GHS www.unece.org/trans/doc/2006/ac10c4/UN-SCEGHS-11-inf14e.pdf
- Correlation table between UN GHS to New Zealand GHS <http://www.ermanz.govt.nz/hs/compliance/chemicals.html>
- GHS labels and MSDSs
 - From July 2008 for chemicals that fall under a Group Standard
 - But labels in accordance with overseas jurisdictions (Europe, Australia, USA or Canada) are accepted until end of 2010

Japan



- GHS label (article 57-1) and GHS MSDS (article 57-2) required by the Industrial Safety and Health law as of December 1, 2006
- Japan Industrial Standard (JIS) Z 7250:2005 – Material Safety Data Sheets for Chemical Products
- Japan Industrial Standard (JIS) Z 7251:2006 – Labeling of Chemicals based on GHS
- Japan Industrial Standard (JIS) Z 7252:2009 – Classification
- Japan Chemical Industrial Association (JCIA) - GHS Guideline for MSDS and labeling (2nd edition – Oct. 2008) based on JIS Z 7250 and Z 7251
- METI published two GHS classification guidances on May 2009 – for government and enterprise

- Advisory list with GHS classifications published by NITE (National Institute of Technology and Evaluation) – so far, 1,655 substances
<http://www.safe.nite.go.jp/ghs/list.html>
- Recent advisory GHS classification list provided by JAISH (Japan Advanced Information Center of Safety and Health) – 328 substances of hazardous and harmful substances designated by EU or other countries.
http://www.jaish.gr.jp/anzen/gmsds/bunrui/bunrui_index.html

Korea



Ministry of Labor:

- Industrial Safety and Health Law
- Pure substances: July 1, 2010; Mixtures: July 1, 2013
- KOSHA provides advisory list with GHS classifications – 6,500 substances (website: <http://www.kosha.or.kr/index.jsp> - members only)

Ministry of Environment:

- Ministerial Decree of Toxic Chemical Control Law
- Classification and labelling of new chemicals under the revised TCCL is mandatory since July 1, 2008.
- Existing chemicals with transitional period: Single toxic chemical (June 30, 2011); Mixtures (June 30, 2013)
- GHS classification – started from NIER No. 2, Feb. 2009 under Regulation on the Standard of Classification and Labeling of Toxic Substances → the latest NIER No. 2010-4, January 25, 2010

MOL and MOE aim to harmonize the implementations by end of 2009

- Different hazard categories/ timelines for implementation
 - Example) Serious Eye Damage/irritation

Taiwan



- Regulation of Labeling and Hazard Communication of Dangerous and Harmful Substances (effective on December 31, 2008) (“CLA Regulation”)
 - CLA Regulation - without Environmental Hazard Categories
 - Taiwan CLA GHS website: <http://ghs.cla.gov.tw/en/>
- Management Measures on Toxic Substances Labeling and Material Safety Data Sheet (EPA No. 0960095329) (Effective Date: December 31, 2008) (“EPA Regulation”)
 - EPA Regulation with Environmental Hazard Categories
- Taiwan National Standard, CNS 15030: Classification and Labeling of Chemicals (based on GHS (Rev.1)(2005)).
 - Precautionary statements have not been officially adopted.
- MSDSs and labels are required for (Phase I implementation)
 - 1,062 substances specified by the CLA (Council of Labor Affairs) and for products containing these
 - 413 dangerous, harmful (original) + 649 dangerous (amendment) =1,062
 - 259 toxic chemicals listed by EPA
 - Grace period until December 31, 2009



EU CLP - Regulation (EC) No 1272/2008



- Applicable in 27 EU member countries, in force January 20, 2009
- Repealing Directives 67/548/EEC (Dangerous Substances Directive, DSD) and 1999/45/EC (Dangerous Preparations Directive, DPD) on June 1, 2015
- Applies to substances Dec 1, 2010 and to mixtures June 1, 2015 for
 - Classification, Labels, SDS classification information
- Title V, chapter 2 C&L inventory
 - Applies to substances subject to registration under REACH and to substances placed on the market (as pure substances or in a mixture)
 - Notification to ECHA from December 1, 2010 and then latest 1 month after placing on the market - deadline is January 3, 2011
- Norway: in parallel with existing classification regulation
 - National classification of 10 substances valid until 1 June 2015
- Switzerland:
 - Swiss chemicals ordinance amended to provide an option of GHS classification and labeling. (in force on February 1, 2009)
 - For GHS-option, Regulation (EC) No 1272/2008 is mandatory
 - 1st step – chemical products sold for professional use
- Iceland: Follows Regulation (EC) No 1272/2008, implemented as of Jan. 2009
- Turkey: Regulation (EC) No 1272/2008, not yet implemented



Singapore



- MSDSs and labels are required by the Workplace Safety and Health Regulation (2006) section 42 and 43.
- Singapore Standard SS 586:2008:
 - Revision of SS 286:1984 (Caution Labeling for Hazardous Substances) and CP 98:2003 (Preparation of Material Safety Data Sheets (MSDS))
 - Not all hazards categories are adopted
 - Transitional period:
 - Manufacturers and suppliers
 - Single substances: by the end of 2010
 - Mixtures: by the end of 2012
 - End Users
 - Single substances: by the end of 2011
 - Mixtures: by the end of 2013



Vietnam



GHS is implemented in the Vietnam Chemical Law by Decree No. 108/2008/ND-CP of October 7, 2008

Follows and refers to the UN GHS classifications

Implements all UN hazard categories





Classification:

- **GB20576-2006 to GB20602-2006** (“26 GBs”) - translation of UN Purple book
- Published October 2006, in force Jan 1, 2008.

MSDSs and Labels are required by Decree No 423 of Ministry of Labor of Dec 20, 1996, and effective Jan.1. 1997

- GB 13690-1992 (Classification and labelling of hazardous chemicals in common use) replaced by GB 13690–2009 (General Rule for Classification and Hazard Communication of Chemicals)
- **GB 13690–2009** published Dec 2009 & effective: May 1, 2010

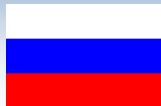
SDSs: GB /T 16483-2008 (Safety data sheet for chemical products content and order of sections)

- Issued: June 6, 2008; Implementation: Feb. 1, 2009

Labels:

- 1) **GB/T 22234-2008** (Labeling of chemicals based on GHS)
 - Effective from Feb. 1, 2009.
 - Equivalent to the Japanese JIS Z 7251:2006
- 2) **GB 15258-2009** (General Rules for Preparation of Precautionary Label for Chemicals) - Published Dec 2009 & effective: May 1, 2010 (1 year of transitional period from the effective date)

Russia



- Technical regulation on chemical safety (which is expected to be approved by the end of 2010).
- Russian GOST standard 30333-2007 on SDS is based on GHS 2005:
- Russian GOST 31340-2007 on “Labelling of chemicals. General requirements” (in force since January 1, 2009);

Adopted by

- Russia,
- Kazakhstan,
- Azerbaijan,
- Byelorussia,
- Kirghizia,
- Moldova,
- Tadjikistan,
- Uzbekistan

In force January 2009



South Africa



- Regulation on Classification and Labelling of Chemical Substances is under revision
- New standard can be used during the transition period:
 - Pure substances until 2012
 - Mixtures until 2016
- SANS 10234:2008 (GHS of Classification and Labelling of Chemicals)
- Supplement to SANS 10234:2008 (List of Classification and Labeling of Chemicals in accordance with the GHS)
- Issued December 2009



Brazil



- ABNT NBR 14725-1: (Chemicals - Information about safety, health and environment - Part 1: Terminology)
- ABNT NBR 14725-2: ((Chemicals - Information about safety, health and environment - Part 2: Hazard Classification)
 - Other classification systems can be used up to Feb. 26, 2011. As of Feb. 27, 2011, chemicals should be classified only in accordance with this part
- ABNT NBR 14725-3: (Chemicals - Information about safety, health and environment - Part 3: Labelling)
 - Supplements existing specific legislation on labeling of chemicals. Until Feb. 26, 2011, the use of this standard is optional. Feb. 27, 2011, the chemicals must be labeled in accordance with this part
- ABNT NBR 14725-4: (Safety data sheet for chemicals (SDS))
 - SDSs can be prepared in accordance with the previous edition of this Standard (ABNT NBR 14725:2005) until Feb. 26, 2011. As of Feb. 27, 2011 the MSDS should be prepared only in accordance with this issue (NBR 14725-4:2009).
- Effective on September 26, 2009



Indonesia



- Ministry of Industry Regulation No. 87/M-IND/PER/9/2009 regarding Globally Harmonized System of Classification and Labeling of Chemicals.
 - issued on Sept. 24, 2009.
 - effective on March 24, 2010
- Regulation of the Minister of Trade of the Republic of Indonesia Number 44/MDAG/PER/9/2009 regarding the Distribution and Supervision of Dangerous Substances
 - Implements GHS
 - Requires MSDSs
 - Annex 1: substances regulated for import
 - Annex 2: substances regulated for distribution
 - Annex 1 & 2 replaces 254/MPP/Kep/7& 04/M-DAG/PER/2/2006 /2000
 - Annex IV: GHS criteria
 - Effective (60 days from its issuance date): Nov. 15, 2009



IMO - SOLAS

2009 Amendment to the International Convention for the Safety of Life at Sea (SOLAS):

- Ships carrying MARPOL Annex I (Prevention Pollution by Oil) cargoes and marine fuel oils are to be provided with MSDS prior to loading such cargoes, effective January 1, 2011
- IMO recommendation BLG 13/10 for MSDSs for MARPOL Annex I cargoes, effective July 1, 2009
 - MSDS must be in accordance with the UN GHS
 - Reference to MARPOL Annex I throughout the MSDS
 - Sec 2, 3 & 11: specific reference to benzene, hydrogen sulphide and total sulphur



Proposal:

- To modify the current Hazard Communication Standard “HCS” to conform with the United Nations Globally Harmonized System of Classification and Labeling of Chemicals “GHS released by OSHA September 2009
- Not all hazard classes and categories are proposed adopted
 - Excluded: Acute Toxicity Category 5 for oral, dermal, or inhalation exposures; Skin Corrosion/ Irritation Category 3; and Aspiration Hazard Category 2.
- “Unclassified Hazards” – Hazard information must appear in MSDS, but no harmonized labeling elements
- The HCS “floor” of chemicals as well as NTP, IARC, and OSHA carcinogens are removed.

Timeline:

- Public comments to be submitted by **December 29, 2009**
- Minimum of **18 months** before the final rule is promulgated
- **Three** years from promulgation comply (2 years for training)
- EU GHS labels are accepted now provided conformance with the current OSHA standard

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=27218

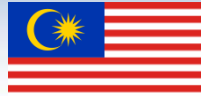
Australia



Proposed revisions to the workplace chemicals regulatory framework

- Draft National Code of Practice for the Labelling of Workplace Hazardous Chemicals (July 31, 2009) [Comments due date: Sept. 25, 2009]
- Draft National Code of Practice for the Preparation of Safety Data Sheets (July 31, 2009) [Comments due date: Sept. 25, 2009]
- Australian Criteria for the Classification Hazardous Chemicals (previously known as the 'Approved Criteria') (To be advised)
<http://www.safeworkaustralia.gov.au/swa/HealthSafety/HazardousSubstances/Proposed+Revisions/>
- Prospect for 2010: Starting legislation enacting National Model Regulations for workplace chemicals and application of the GHS.





- Department of Health and Safety (DOHS)
 - Draft regulation for the implementation of GHS to workplace chemicals
- Occupational Safety and Health (Classification, Labeling and Safety Data Sheet for Hazardous Chemicals) Regulation 20xx [“CLASS”] (not finalized & published yet)
 - To replace 1997 Regulations on Classification, Packaging, Labeling and Safety Data Sheets for Chemicals
 - Implementation is expected for 2010 for substances and 2013 for mixtures

Philippines



- JOINT ADMINISTRATIVE ORDER NO. 01 Series of 2009, issued May 25 2009
- The objective is the adoption and implementation of classification criteria, labeling and Safety Data Sheet (SDS) requirements of the GHS
- The order sets out the duties and responsibilities of the GHS implementing and coordinating government agencies in the adoption:
 - Department of Agriculture (DA);
 - Department of Environment and Natural Resources (DENR);
 - Department of Finance (DOF);
 - Department of Health (DOH);
 - Department of Interior and Local Government (DILG);
 - Department of Labor and Employment (DOLE);
 - Department of Transportation and Communications (DOTC); and
- Department of Trade and Industry (DTI).
- Specifies the SDS requirements



GHS Development



3E
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WebInsight

GHS Comparison Chart

(By 3E Company)

Color code:

Green Box - country's different adoption of UN GHS

Red letters - different ministries of one country show discrepant UN GHS category adoption.

Purple letters - added by Third revised edition of UN GHS

UN	Classifications	UN (Third Revised Edition)	China (GB/T 22234 - 2008)	Taiwan (CLA)	Taiwan (EPA)	Korea (MoL)	Korea (MoE)	Kc (Mo
		2009	Effective from Feb 1, 2009	In effect since Dec.31, 2008	In effect since Dec.31, 2008	<u>Deadline:</u> - Pure Substances: July 1, 2010 - Mixtures: July 1, 2013	<u>Deadline:</u> - Single toxic chemical: June 30, 2011 - Mixtures of toxic chemicals: June 30, 2013	Effecti Nov. 1
16	CORROSIVE TO METALS	Category 1	Category 1	Category 1	Category 1	Category 1	Category 1	Cate
17	ACUTE TOXICITY	Category 1 - 5	Category 1 - 5	Category 1 - 5	Category 1 - 5	Category 1 - 4	Category 1 - 4	Categi
18	SKIN CORROSION /	Category 1(incl.	Category 1(incl.	Category 1 (1A 1B 1C)	Category 1 (1A 1B 1C)	Category 1 - 2	Category 1 - 2	Categi

GHS summary

- GHS provides for a globally harmonized classification and hazard communication for chemical substances and mixtures.
 - Regulatory requirements
 - Industrial standards (Classification, SDS, labelling)
- Companies with global supply and trade of their chemicals will benefit from the national implementations of the GHS system as the basic principles for classification of the chemicals will be harmonized.
 - Building block approach - a partial implementation of GHS
 - National lists of GHS classifications – mandatory or optional
 - Keeping parts of previous classification and labeling requirements
 - Implementation of revisions to the UN Purple book – source of variations



Still challenges ahead...

Compliance will be:

- Labor intensive, costly & time consuming especially initially
- Confusing (conflicting regulatory approach among governmental agencies/ministries)
- GHS is not that “*harmonized*” yet
- Transitional (occurring over period of months/years)

Impact on Businesses

- Analyze existing formulations
- Source the capability to:
 - Re-classify substances and mixtures
 - Take into consideration country specific classifications and variations in GHS adoption
 - Develop new MSDS and labeling documentation
 - Evaluate compliance with new notification requirements
- Companies have to decide how to meet these different requirements where the GHS classification and the labeling of a chemical substance or mixture may vary from country to country
- Overview and updates (*not always current*)

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

Acronyms (1)

- GHS – Globally Harmonized System of Classification and Labeling of Chemicals
- (M)SDS – (Material) Safety Data Sheet
- WHMIS - The Workplace Hazardous Materials Information System (Canada)
- MERCOSUR (The Common Market of the South) - Argentina, Brazil, Paraguay, and Uruguay
- HSNO – Hazardous Substances and New Organisms Act (New Zealand)
- ERMA – Environment Risk and Management Authority (New Zealand)
- ISHL – Industrial Safety and Health Law (Japan, Korea)
- MHLW – Ministry of Health, Labor, and Welfare (Japan)
- METI – Ministry of Economy, Trade and Industry (Japan)
- MOE – Ministry of Environment (Japan, Korea)
- MOL – Ministry of Labor (Korea)
- NITE – National Institute of Technology and Evaluation (Japan)
- KOSHA – Korea Occupational Safety and Health Association (under Korea MOL)
- NIER – National Institute of Environmental Research (under Korea MOE)
- CLA – Council of Labor Affairs (Taiwan)
- EPA – Environmental Protection Administration (Taiwan)

Acronyms (2)

- CLP Regulation - Regulation on **C**lassification, **L**abelling and **P**ackaging of chemical substances and mixtures (EU)
- ECHA – European Chemical Agency (EU)
- REACH - Regulation on **R**egistration, **E**valuation, **A**uthorisation and Restriction of **C**hemicals
- SS – Singapore Standard; CP (Code of Practice)
- GB – Guo Biao (National Standard – China)
- MEP – Ministry of Environmental Protection (China – former SEPA)
- GOST - **G**osudarstvennyy **S**tandard (State Standard) (Russia)
- SANS – South African National Standards (South Africa)
- ABNT - **A**ssociação **B**rasileira de **N**ormas **T**écnicas (the Brazilian Association of Technical Standards) (Brazil)
- OSHA – Occupational Safety and Health Administration (US)
- NTP – National Toxicology Program
- IARC – International Agency for Research on Cancer
- UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods
- IMO – International Maritime Organization
- MARPOL Convention – International Convention for the Prevention of Pollution from Ships (Maritime Pollution)

Thank you!

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2010 ChemStewards Regional Roundtables



- If you would like to *learn more about GHS* and other hot industry topics make sure to register for the upcoming ChemStewards Roundtables.
- Dates and Locations:
 - **Northeast:** April 13 (Hosted by [Polysciences](#))
 - Warrington, Pennsylvania
 - **Southern:** April 22 (Hosted by [KMCO](#))
 - Crosby, Texas
 - **Ohio Valley:** Date TBD (Hosted by [SunChemical](#))
 - Cincinnati, Ohio
 - **Carolinas:** (TBD)
- To register email chemstewards@socma.com



2009 Regional Roundtable at ChemLogix.
Speaker: James Johnston, OSHA
Presentation: Hazard Communication Update

