

Current Status and Prospects of Korea GHS and MSDS

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Globally Harmonized System

- General Overview of GHS
- GHS implementation status in Korea
- MSDS requirements
- Prospects and Conclusion

Scope

Classifying substances and mixtures

- Health and Environmental effects
- Physical hazards

Hazard communication requirements

- MSDSs
- Labels

Countries can choose to implement GHS in its entirety or implement only certain parts (building block approach)

- 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

Classifying Substances and Mixtures - Health (10) and Environment Hazards (1)

- Acute toxicity
- Skin corrosion/irritation
- Severe eye damage/eye irritation
- Respiratory sensitizer
- Skin sensitizer
- Germ cell mutagenicity
- Carcinogenicity
- Toxic to reproduction
- Specific Target Organ Toxicity following Single Exposure
- Specific Target Organ Toxicity following Repeated Exposure
- Aspiration hazard
- Hazardous to the Aquatic Environment (Acute; Chronic)

Classifying Substances and Mixtures - Physical Hazards (16)

- Explosives
- Flammable Gases
- Flammable Aerosols
- Oxidizing Gases
- Gases under Pressure
- Flammable Liquids
- Flammable Solids
- Self-Reactive Substances
- Pyrophoric Liquids
- Pyrophoric Solids
- Self-Heating Substances
- Substances which on contact with water emit flammable gases
- Oxidizing Liquids
- Oxidizing Solids
- Organic Peroxides
- Substances Corrosive to Metal

- Ministry of Environment (MOE)
 - Toxic Chemical Control Law (TCCL)
 - Final Draft of full adoption of GHS from July 1, 2008
 - Latest: Draft amendment to TCCL by NIER (Notice 2008-183, May 2008)
- Ministry of Labor (MOL)
 - Standards for Classification and Labeling of Chemical Substances and Material Safety Data Sheet (MSDS) (Revised Jan. 1, 2008)

Ministry of Labor – Classification, Label & MSDS

- Physical hazards, health hazards & environmental hazards
- July 1, 2008 (pure substance & mixtures)
- Extension dates:
 - Substances: July 1, 2010
 - Mixtures: Jan. 1, 2015 (draft amendment on May 2008) → July 1, 2013 (MOL Decree No. 303, June 27, 2008)

Ministry of Environment – TCCL Chemical List

- Toxic chemical classification (expected to be publicly available after 2010)
- Single toxic chemical: July 1, 2011
- Mixtures: July 1, 2013
- **Exception:** “New single toxic chemical” after July 1, 2008 must comply with GHS standards

Building blocks of UN & Korea GHS (MOL vs. MOE)

Classifications	UN	Korea MoL	Korea MoE (Draft)
FLAMMABLE GASES	Category 1 - 2	Category 1	Category 1 - 2
FLAMMABLE LIQUIDS	Category 1 - 4	Category 1 - 3	Category 1 - 3
ACUTE TOXICITY	Category 1 - 5	Category 1 - 4	Category 1 - 4
SKIN CORROSION / IRRITATION	Category 1 - 3	Category 1 - 2	Category 1 - 2
SERIOUS EYE DAMAGE / EYE IRRITATION	Category 1, 2A, 2B	Category 1, 2A	Category 1, 2
AQUATIC TOXICITY (ACUTE)	Category 1 - 3	Category 1	Category 1 - 3

- Fully adopts the 16 sections of the UN Purple Book
- Must comply with the GHS standards
 - Pure substances: July 1, 2010
 - Mixtures: July 1, 2013
- Should be prepared in the Korean language
- The test data conducted in compliance with GLP (Good Laboratory Practice).
- Should be prepared for all substances and mixtures containing more than 1% of physical, health, and environmental hazards.

Hazard Communication – MSDS

Sixteen section MSDS required

1. Substance identity and company contact information
2. Hazards identification
3. Chemical composition and data on components
4. First aid measures
5. Fire-fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure controls and personal protection
9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information



MSDS: Old vs. New



Pre-GHS		GHS MSDS	
Section 2. Composition/information on ingredients		Section 3. Composition/information on ingredients	
Section 3. Hazards identification	<ol style="list-style-type: none">1. Urgent hazard information2. Eye effect3. Skin effect4. Inhalation effect5. Effect on oral taken6. Chronic effect	Section 2. Hazards identification	<ol style="list-style-type: none">1. Hazard information2. Label including Pictogram<ul style="list-style-type: none">- Signal word- Hazard statement- precautionary statement3. Other hazards which are not included in the classification criteria (e.g. dust explosion hazard)



- Chemicals that are listed as “Substances Excepted from Preparing and Maintaining its Material Safety Data Sheet” in Enforcement Decree of the Industrial Safety and Health Act Article 32 (2).
 1. Radioactive substances regulated by Nuclear Energy Act
 2. Medical, pharmaceutical, and cosmetic products regulated by Pharmaceutical Law
 3. Narcotics and drugs that are regulated by Narcotics and Drugs Management Law
 4. Agricultural Chemicals that are regulated by Agricultural Chemicals Management Law
 5. Materials that are regulated by Feed Management Law

6. Materials that are regulated by Fertilizer Management Law
7. Food and food additives regulated by Food Sanitation Act
8. Psychotropic drugs pursuant to the Psychotropic Drugs Control Act - Deleted (9.22.2006)
9. Chemicals that are regulated by Laws regarding firearms, swords and explosives control
- 9-2. Waste materials that are regulated by Waste Management Law
10. Materials excluding regulated substances above 1 or 9-2 that are not used for industrial purpose, but for general public consumption

11. Other materials that Minister of Ministry of Labor approves as the least harmful substances, including:

- All substances and mixtures that contain
 - less than 1% of physical, health, or environmental hazards
 - less than 0.1% of carcinogenicity substances or germ cell mutagenicity substances
 - less than 0.2% of respiratory sensitizers
 - less than 0.3% of toxic to reproduction substances
- Complete products in **solids** where workers would not be exposed to the product and its chemical substances. The exception does apply to products that contain carcinogenic substances.

- CBI can be claimed to:
 - Chemical name
 - CAS number or identification number
 - Amount of each typical composition

→ In MSDS Section 3,
Composition/information on ingredients.

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- Toxic chemicals regulated under Toxic Chemical Control Law Article 19
- **Banned Toxic Chemicals** regulated under Toxic Chemical Control Law Article 32
- **Harmful Substances Prohibited from Manufacturing** regulated under Industrial Safety and Health Act Article 29
- **Harmful Substances Requiring Permission** regulated under Industrial Safety and Health Act Article 30
- **Controlled Hazardous Substances** regulated under Industrial Safety and Health Act

- Section 9 – Physical and chemical properties
 - 17 properties (from Appearance to Viscosity) are identical to the ones of UN Purple book.
 - Korea added Molecular Weight as No. 18 property
- Section 14 – Transport Information
 - Korea MSDS does not require No. 7 information of Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code

- **Section 15 – Regulatory Information**
 - Restrictions under the Industrial Safety & Health Act
 - Restrictions under the Toxic Chemicals Control Act
 - Observational chemicals**
 - Prohibited chemicals**
 - Restricted chemicals**
 - Restrictions under the Safety Control of Dangerous Substances Act
 - Restrictions under the Wastes Control Act
 - Restrictions under other foreign or domestic laws

- GHS classification of substances and mixtures
 - KOSHA (MOL) provides 3,410 substances with GHS classification (*actually*, 2,076 substances completed)
 - Classification of mixtures is highly challenging
- Waiting on EU REACH decision
- MOL vs. MOE – will harmonize?
- Still in process – determining UN vs. Korea specific regulations

Compliance will be:

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



Questions



Thank you

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