



Hazard Communication and GHS

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Deadlines



Effective Completion Date	Requirement(s)	Who
December 1, 2013	Train employees on the new label elements and safety data sheet (SDS) format.	Employers
June 1, 2015 - December 1, 2015	Compliance with all modified provisions of this final rule, except: The distributor shall not ship containers labeled by the chemical manufacturer or importer unless it has a GHS label	Chemical manufacturers, importers, distributors and employers
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.	Employers

Major Changes

- **Hazard classification:** The definitions have been changed to provide specific criteria for classification of health and physical hazards.
- **Labels:** Must include a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.
- **Safety Data Sheets:** Specified 16-section format.

Definitions

- Added
 - Classification,
 - Hazard category,
 - Hazard class,
 - **Hazard not otherwise classified**,
 - Hazard statement,
 - Label elements,
 - Pictogram,
 - Precautionary statement,
 - Product identifier,
 - Pyrophoric gas,
 - Safety data sheet,
 - Signal word,
 - **Simple asphyxiant**, and
 - Substance
- Deleted
 - **Combustible liquid**,
 - **Compressed gas**,
 - Explosive,
 - **Flammable**,
 - **Flashpoint**,
 - Hazard warning,
 - Identity,
 - Material safety data sheet,
 - Organic peroxide,
 - Oxidizer,
 - Pyrophoric,
 - Unstable (reactive), and
 - Water-reactive
- Also covered
 - **Combustible dust**

Hazardous Chemical

- Any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified
- Specific criteria to address health and physical hazards as well as classification of chemical mixtures

Physical Hazards

- Explosive;
- Flammable (gases, aerosols, liquids, or solids);
- Oxidizer (liquid, solid or gas);
- Self-reactive;
- Pyrophoric (liquid or solid);
- Self-heating;
- Organic peroxide;
- Corrosive to metal;
- Gas under pressure; or
- Emits flammable gas in contact with water

Health Hazards

- Acute toxicity (any route of exposure);
- Skin corrosion or irritation;
- Serious eye damage or eye irritation;
- Respiratory or skin sensitization;
- Germ cell mutagenicity;
- Carcinogenicity;
- Reproductive toxicity;
- Specific target organ toxicity (single or repeated exposure); or
- Aspiration hazard

Labels

- Product identifier;
- **Signal word**;
- Hazard statement(s);
- **Pictogram(s)**;
- Precautionary statement(s); and,
- Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party.

Label Elements

- Harmonized signal word
 - Warning
 - Danger
- Hazard statement
 - Nature of hazard
 - Degree of hazard
- Precautionary statement
 - Preventive measures

Pictograms



- ✦ Flammables
- ✦ Pyrophorics
- ✦ Self-heating
- ✦ Emits flammable gas
- ✦ Self-reactives
- ✦ Organic peroxides



- ✦ Skin corrosion/burns
- ✦ Eye damage
- ✦ Corrosive to metals



- ✦ Oxidizers









- ✦ Gases under pressure









- ✦ Explosives
- ✦ Self-reactives
- ✦ Organic peroxides

Pictograms




-  Irritant (skin and eye)
-  Skin sensitizer
-  Acute toxicity (harmful)
-  Narcotic effects
-  Respiratory tract irritant
-  Hazardous to ozone layer (non-mandatory)




-  Carcinogen
-  Mutagenicity
-  Reproductive toxicity
-  Respiratory sensitizer
-  Target organ toxicity
-  Aspiration toxicity



-  Acute toxicity (fatal or toxic)



-  Aquatic toxicity (non-mandatory)

SAMPLE LABEL

CODE _____
Product Name _____

Product Identifier

Company Name _____
Street Address _____
City _____ State _____
Postal Code _____ Country _____
Emergency Phone Number _____

Supplier Identification

Keep container tightly closed. Store in a cool, well-ventilated place that is locked.
Keep away from heat/sparks/open flame. No smoking.
Only use non-sparking tools.
Use explosion-proof electrical equipment.
Take precautionary measures against static discharge.
Ground and bond container and receiving equipment.
Do not breathe vapors.
Wear protective gloves.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
Dispose of in accordance with local, regional, national, international regulations as specified.

Precautionary Statements

In Case of Fire: use dry chemical (BC) or Carbon Dioxide (CO₂) fire extinguisher to extinguish.

First Aid

If exposed call Poison Center.
If on skin (or hair): Take off immediately any contaminated clothing. Rinse skin with water.

Hazard Pictograms



Signal Word Danger

Highly flammable liquid and vapor.
May cause liver and kidney damage.

Hazard Statements

Supplemental Information

Directions for Use

Fill weight: _____ Lot Number: _____
Gross weight: _____ Fill Date: _____
Expiration Date: _____

Safety Data Sheet

Section 1. Identification

Section 2. Hazard(s) identification

Section 3. Composition/information on ingredients

Section 4. First-aid measures

Section 5. Fire-fighting measures

Section 6. Accidental release measures

Section 7. Handling and storage

Section 8. Exposure controls/personal protection

Section 9. Physical and chemical properties

Section 10. Stability and reactivity

Section 11. Toxicological information

Section 12. Ecological information

Section 13. Disposal considerations

Section 14. Transport information

Section 15. Regulatory information

Section 16. Other information, including date of preparation or last revision

Hazard Categories

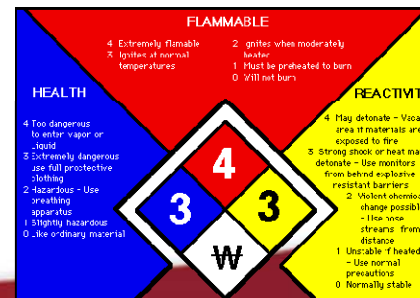
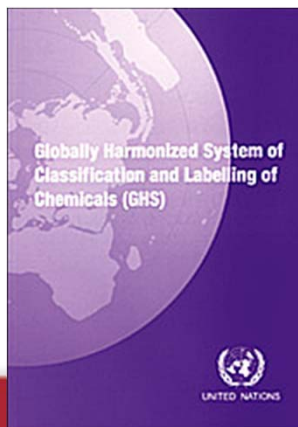
■ GHS Hazard Categories

- Cat. 1 ~ 'Severe Hazard'
- Cat. 2 ~ 'Serious Hazard'
- Cat. 3 ~ 'Moderate Hazard'
- Cat. 4 ~ 'Slight Hazard'
- Cat. 5 ~ 'Minimal Hazard'



■ HMIS/NFPA Hazard Ratings

- 0 = Minimal Hazard
- 1 = Slight Hazard
- 2 = Moderate Hazard
- 3 = Serious Hazard
- 4 = Severe Hazard



HAZARDOUS MATERIAL IDENTIFICATION GUIDE			
TYPE HAZARD	● HEALTH	DEGREE	
	● FLAMMABILITY		
● REACTIVITY			
○ PROTECTIVE EQUIPMENT			
	4 - Extreme		
	3 - Serious		
	2 - Moderate		
	1 - Slight		
	0 - Minimal		
HAZARD RATING	Health	Flammability	Reactivity
	<ul style="list-style-type: none"> 4 - Extreme: Highly toxic - May be fatal on short term exposure. Special protective equipment required. 3 - Serious: Toxic - Avoid inhalation or eye contact. 2 - Moderate: Moderately Toxic - May be harmful if inhaled or absorbed. 1 - Slightly: Slightly Toxic - May cause slight irritation. 0 - Minimal: All chemicals have this degree of toxicity. 	<ul style="list-style-type: none"> 4 - Extreme: Extremely flammable gas or liquid - Flash Point below 23°F 3 - Serious: Flammable - Flash Point 23°F to 100°F 2 - Moderate: Combustible - Requires moderate heating to ignite. Flash Point 100°F to 200°F 1 - Slight: Slightly Combustible - Requires strong heating to ignite. 0 - Minimal: Not flammable under normal conditions. 	<ul style="list-style-type: none"> 4 - Extreme: Explosive at room temperature. 3 - Serious: May explode if shocked, heated under confinement or mixed with water. 2 - Moderate: Irritable - May react with water. 1 - Slight: May react if heated or mixed with water. 0 - Minimal: Non-reactive - Does not react with water.

Appendix A. Table A.1.1: Acute toxicity hazard categories and acute toxicity estimate (ATE) values defining the respective categories

Exposure route	Category 1	Category 2	Category 3	Category 4
Oral (mg/kg bodyweight) <i>see: Note (a)</i> <i>Note (b)</i>	≤ 5	>5 and ≤ 50	>50 and ≤ 300	>300 and ≤ 2000
Dermal (mg/kg bodyweight) <i>see: Note (a)</i> <i>Note (b)</i>	≤ 5	>50 and ≤ 200	>200 and ≤ 1000	>1000 and ≤ 2000
Inhalation - Gases (ppmV) <i>see: Note (a)</i> <i>Note (b)</i> <i>Note (c)</i>	≤ 100	>100 and ≤ 500	>500 and ≤ 2500	>2500 and ≤ 20000
Inhalation - Vapors (mg/l) <i>see: Note (a)</i> <i>Note (b)</i> <i>Note (c)</i> <i>Note (d)</i>	≤ 0.5	>0.5 and ≤ 2.0	>2.0 and ≤ 10.0	>10.0 and ≤ 20.0
Inhalation – Dusts and Mists (mg/l) <i>see: Note (a)</i> <i>Note (b)</i> <i>Note (c)</i>	≤ 0.05	>0.05 and ≤ 0.5	>0.5 and ≤ 1.0	>1.0 and ≤ 5.0

Appendix B. Table B.6.1: Criteria for flammable liquids

Category	Criteria
1	Flash point < 23°C (73.4°F) and initial boiling point ≤ 35°C (95°F)
2	Flash point < 23°C (73.4°F) and initial boiling point > 35°C (95°F)
3	Flash point ≥ 23°C (73.4°F) and ≤ 60°C (140°F)
4	Flash point > 60°C (140°F) and ≤ 93°C (199.4°F)

NFPA Category	Criteria
1	Flash point ≥ 93.4°C (200°F)
2	Flash point ≥ 37.8°C (100°F) and below 93.4°C (200°F)
3	Flash point < 22.8°C (73°F) and boiling point ≥ 37.8°C (100°F) and Flash point ≥ 22.8°C (73°F) and below 37.8°C (100°F)
4	Flash point < 22.8°C (73°F) and boiling point < 37.8°C (100°F)

Changes to Other Standards

- Flammable liquids are defined differently and definitions do not include combustible liquids. Standards that cover flammable liquids have been revised to reflect the new definitions and sign and label requirements.
 - 1910.106 Flammable liquids (significant change)
 - 1910.107 Spray finishing using flammable and combustible materials
 - 1910.123-126 Dipping and coating operations
 - 1910.1450 Occupational exposure to hazardous chemicals in laboratories

Changes to Other Standards

- Sign and label requirements in chemical-specific standards such as:
 - Asbestos,
 - Lead, and
 - Hexavalent chromium
- Revised to include signal words and standard hazard statements.
- Hazard communication requirements in these standards have also been revised to align with HCS.

Changes to Other Standards

- 1910.119 Process safety management
- 1910.120 Hazardous waste operations
- 1910.252 General requirements for welding, cutting, and brazing
- 1915 Maritime standards
- 1926 Construction standards

Resources

- OSHA's haz com page -
<http://www.osha.gov/dsg/hazcom/index.html>
- Final rule (federal register) -
<https://www.federalregister.gov/articles/2012/03/26/2012-4826/hazard-communication>
- UN Purple Book, 3rd Edition -
http://www.unece.org/trans/danger/publi/ghs/ghs_rev03/03files_e.html
- UN Purple Book, 4th Edition (not yet adopted by OSHA)-
http://live.unece.org/trans/danger/publi/ghs/ghs_rev04/04files_e.html