

GHS

The Globally Harmonized System
of Classification and Labeling of Chemicals

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- What is GHS?
- OSHA's new HAZCOM standard; HCS is aligned with GHS.
- It can be found on OSHA website at:
- <http://www.osha.gov/dsg/hazcom/ghs-final-rule.html>



What will Change?

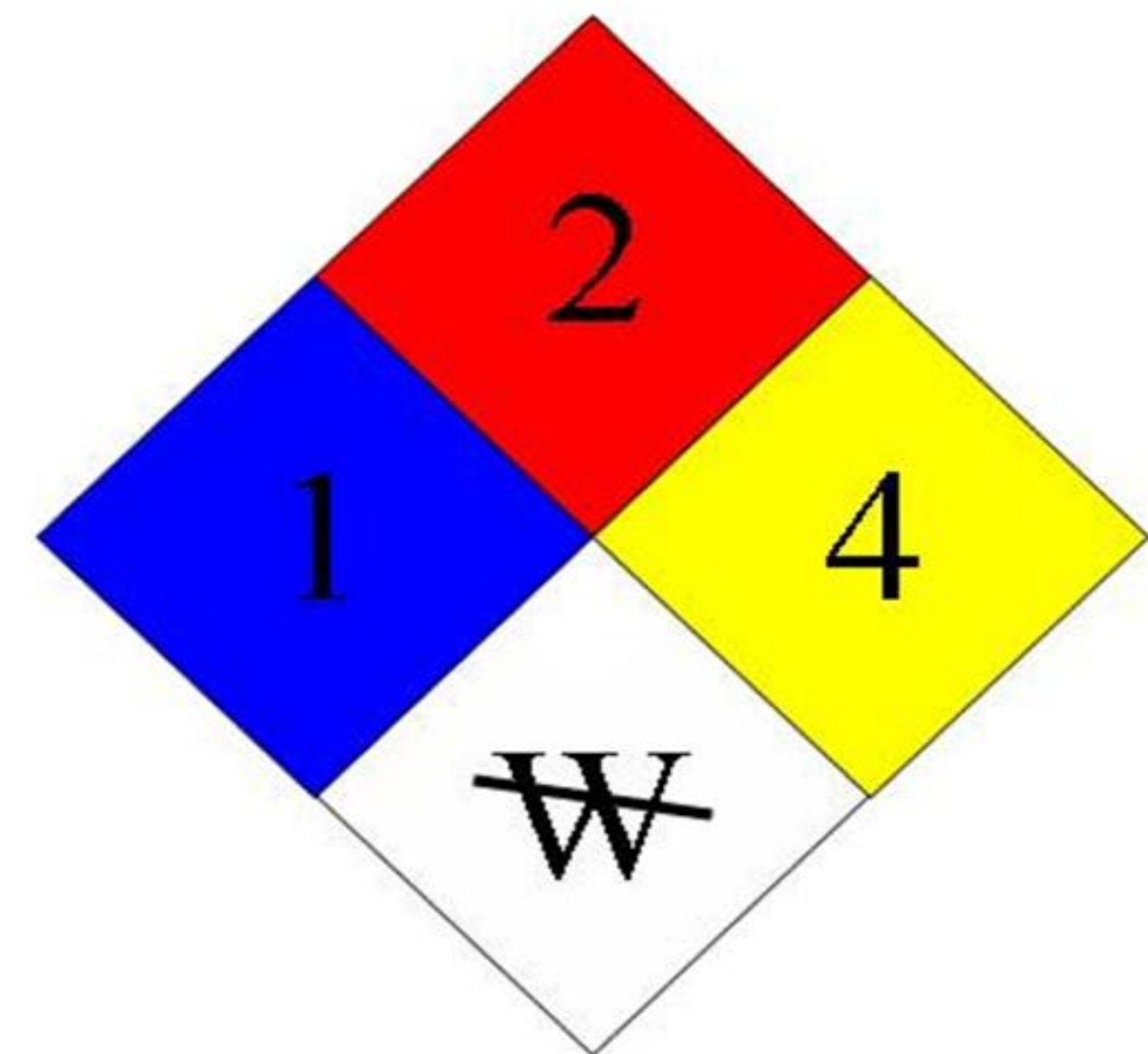
- Pictograms and Hazard Classification
- Labels
- Safety Data Sheets

- Effective – May 25, 2012
- Training – by December 1, 2013
- Compliance with rule – by June 1, 2015
- Distributor shall not ship container unless it is a GHS label – by December 1, 2015
- During the transition may comply with either standard, or both.

What Will Change – Hazard Classification

- The NFPA diamond will no longer suffice as the hazard warning for OSHA.
- In the diamond, 1 is the least hazard.
- In GHS, 1 will be the highest hazard.

- Hazard Category 1
- Fatal if swallowed
- Fatal in contact with skin
- Fatal if inhaled
- etc



Pictograms



Hazard Classification

- Health Hazards – Appendix A
- Physical Hazards – Appendix B
- Some based on animal testing (including human data)
- Can use existing animal testing data.
- There are formulas for untested mixtures.
- You don't need to conduct animal testing.



Health Hazard Classifications

- Acute Toxicity
- Skin Corrosion/Irritation
- Serious Eye damage/Eye irritation
- Respiratory or Skin Sensitization
- Germ Cell Mutagenicity
- Carcinogenicity
- Reproductive Toxicity
- Specific Target Organ Toxicity Single Exposure
- Specific Target Organ Toxicity Repeated Exposure
- Aspiration Hazard

Exercise Toluene - Acute Toxicity

- Toxicological data:
 - Oral LD50 rat – $>5,580$ mg/kg
 - Dermal LD50 rabbit – $12,196$ mg/kg
 - Inhalation LC50 rat – $12,500$ ppm
- No Oral Toxicity
- No Dermal Toxicity
- Acute Toxicity – Inhalation Category 4

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Physical Hazard Classifications

- Explosive
- Flammable Gases
- Flammable Aerosols
- Oxidizing gases
- Gases under pressure
- Flammable Liquids
- Flammable Solids
- Self Reactive Chemicals
- Pyrophoric Liquids
- Pyrophoric Solids
- Self Heating Chemicals
- Chemicals Which, in Contact with Water, Emit Flammable Gases.
- Oxidizing Liquids
- Oxidizing Solids
- Organic Peroxides
- Corrosive to Metals

Exercise Toluene - Flammability

- Flash point 4 °C
- Boiling point 111 °C
- Flammable Liquid Hazard Category 2
- Signal Word Danger
- Hazard Statement highly flammable liquid and vapor
- Pictogram



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Labels

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

Sample Label for Toluene



Toluene



Danger! Highly flammable liquid and vapor. May be fatal if swallowed and enters airways. Causes skin irritation. Causes serious eye irritation. Harmful if inhaled. May cause drowsiness or dizziness. Suspected of damaging fertility or the unborn child. May cause damage to organs.

Keep away from heat/sparks/open flames/hot surfaces – No smoking. Do not breathe dust/fume/gas/mist/vapors/spray. Use personal protective equipment as required. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing Do not induce vomiting.

Chemical Supply Company
141 Main Street
Anywhere, MO 01234
314-222-2222

Precautionary Statements

“Thus, the final rule adopts the precautionary statements, which are taken from the GHS. However, it allows the use of additional statements where necessary, as long as they are accurate, do not conflict, and are placed in supplementary information. Additionally, chemical manufacturers and importers can use their judgment to combine related statements to shorten the amount of information on a label, as well as omit any statements that can be demonstrated to be inapplicable to the particular chemical involved.” OSHA

Mixtures? Acute Toxicity Inhalation

- 70% Toluene – LC50 rat 12,500ppm
- 30% Hydrofluoric acid – LC50 rat 1,278ppm
- Formula is $\frac{100}{ATE_{mix}} = \sum \frac{C_i}{ATE_i}$

$$\frac{100}{ATE_{mix}} = \frac{70}{4500} + \frac{30}{700}$$

$$ATE_{mix} = 1,712$$

Acute Toxicity – Inhalation Category 3

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SDS

- (i) Section 1, Identification;
- (ii) Section 2, Hazard(s) identification;
- (iii) Section 3, Composition/information on ingredients;
- (iv) Section 4, First-aid measures;
- (v) Section 5, Fire-fighting measures;
- (vi) Section 6, Accidental release measures;
- (vii) Section 7, Handling and storage;
- (viii) Section 8, Exposure controls/personal protection;

SDS

- (ix) Section 9, Physical and chemical properties;
- (x) Section 10, Stability and reactivity;
- (xi) Section 11, Toxicological information;
- (xii) Section 12, Ecological information;
- (xiii) Section 13, Disposal considerations;
- (xiv) Section 14, Transport information;
- (xv) Section 15, Regulatory information; and
- (xvi) Section 16, Other information, including date of preparation or last revision.

OSHA Standard

- Hazard Classification – Appendix A - C
- Labels – Appendix C
- Safety Data Sheets – Appendix D

Questions

