Globally Harmonized System of Classification and Labeling of Chemicals

What is the GHS and Who Developed It?

GHS stands for the Globally Harmonized System of Classification and Labeling of Chemicals.

Developed by the United Nations, the premise of the GHS is that existing chemical classification and labeling systems (such as OSHA’s Hazard Communication Standard (HCS) “should be harmonized in order to develop a single, globally harmonized system to address classification of chemicals, labels and safety data sheets.”

Why Have the GHS?

Many countries and organizations have established laws and regulations requiring information to be prepared and transmitted through labels and/or safety data sheets to those people using or handling hazardous chemicals.

While most of the laws and regulations put in place by local, state, national and international agencies are similar – their differences can be significant enough to require different labels and MSDSs to be produced for the same chemical depending upon where it is used or who is using it.

Inconsistencies between national and international laws create a regulatory and compliance nightmare that at best disrupts commerce and at worst compromises safety.

More alarming, some countries have no system at all.

By standardizing the components of dissimilar systems, the GHS will protect workers, consumers, emergency responders, the environment and the public by creating a comprehensive system through which chemical hazards are identified and communicated to all who are potentially exposed.

Additionally, global adoption of GHS is expected to reduce costs and inefficiencies associated with the international trade of chemicals.

United States Participation:

An Interagency Working Group was put together by the U.S. State Department and comprised of four U.S. agencies represented the U.S. in the creation of the GHS, the four agencies were:

- OSHA (served as the lead agency for the U.S.)
- The Department of Transportation (DOT)
- The Environmental Protection Agency (EPA)
- Consumer Product Safety Commission (CPSC)
What will change?

- Safety Data Sheets (SDS): GHS has dropped the word “Material” from Material Safety Data Sheets (MSDS). It will now be called Safety Data Sheets (SDS).

- SDS will now contain 16 sections for each chemical where a MSDS may have contained from 8 to 16 sections depending on the format. The 16 section headings for GHS are now:
  1. Identification
  2. Hazard(s) identification
  3. Composition/Information on Ingredients
  4. First-aid measures
  5. Fire-fighting measures
  6. Accidental release measures
  7. Handling and storage
  8. Exposure control/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

- The new requirements for manufacturer’s labels include six components:
  1. Product name or identifier
  2. Signal word (Danger or Warning)
  3. Hazard statement
  4. Precautionary statements
  5. Name, address and telephone number of the chemical manufacturer, importer or the responsible party
  6. Pictograms

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The Basic Parts of A GHS-Compliant Label

1. **n-Propyl Alcohol**
   - UN No. 1274
   - CAS No. 71-23-8

2. **DANGER**
   - Highly flammable liquid and vapor. Causes serious eye damage. May cause drowsiness and dizziness.
   - Keep away from heat/sparks/open flames/hot surfaces. No smoking. Avoid breathing dust/vapours/spray. Wear protective gloves/protective clothing/eye protection/face protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present. Continue rinsing.
   - Fill Weight: 18.65 lbs.
   - Gross Weight: 20 lbs.
   - Lot Number: B66754434
   - Fill Date: 6/21/2013
   - Expiration Date: 6/21/2020

3. **Acme Chemical Company • 711 Roadrunner St. • Chicago, IL 60601 USA • www.acmechem.com • 123-444-5567**

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1. **Product Identifier** - Should match the product identifier on the Safety Data Sheet.
2. **Signal Word** - Either use “Danger” (severe) or “Warning” (less severe)
3. **Hazard Statements** - A phrase assigned to a hazard class that describes the nature of the product’s hazards
4. **Precautionary Statements** - Describes recommended measures to minimize or prevent adverse effects resulting from exposure.
5. **Supplier Identification** - The name, address and telephone number of the manufacturer or supplier.
6. **Pictograms** - Graphical symbols intended to convey specific hazard information visually.
• All secondary containers must be labeled with:
  1. Product identifier
  2. Signal word (Danger or Warning)
  3. Hazard statement
  4. Pictograms

![Secondary Container Label for an Acetone Container used in a Lab or a Shop](image)

- Acetone
- Danger!
- Flammable Liquid

- With GHS, the lower the categorization numbers the greater the severity of the hazard. The GHS numbers do not show up on the label but appear on the Safety Data Sheets.

  1 = Severe Hazard, 4 = Minor Hazard

- Pictograms (hazard symbols):
  1. Convey health, physical and environmental hazard information.
  2. Nine pictograms are designated under the GHS red border, black symbol, white background for health and physical hazards.
<table>
<thead>
<tr>
<th>Health Hazard</th>
<th>Flame</th>
<th>Exclamation Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carcinogen</td>
<td>Flammables</td>
<td>Irritant (skin and eye)</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>Pyrophorics</td>
<td>Skin Sensitizer</td>
</tr>
<tr>
<td>Reproductive Toxicity</td>
<td>Self-Heating</td>
<td>Acute Toxicity (harmful)</td>
</tr>
<tr>
<td>Respiratory Sensitizer</td>
<td>Emits Flammable Gas</td>
<td>Narcotic Effects</td>
</tr>
<tr>
<td>Target Organ Toxicity</td>
<td>Self-Reactives</td>
<td>Respiratory Tract Irritant</td>
</tr>
<tr>
<td>Aspiration Toxicity</td>
<td>Organic Peroxides</td>
<td>Hazardous to Ozone Layer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Non-Mandatory)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gas Cylinder</th>
<th>Corrosion</th>
<th>Exploding Bomb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gases Under Pressure</td>
<td>Skin Corrosion/Burns</td>
<td>Explosives</td>
</tr>
<tr>
<td></td>
<td>Eye Damage</td>
<td>Self-Reactives</td>
</tr>
<tr>
<td></td>
<td>Corrosive to Metals</td>
<td>Organic Peroxides</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flame Over Circle</th>
<th>Environment (Non-Mandatory)</th>
<th>Skull and Crossbones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxidizers</td>
<td>Aquatic Toxicity</td>
<td>Acute Toxicity (fatal or toxic)</td>
</tr>
</tbody>
</table>

(Notation: GHS = Globally Harmonized System)