



## Right to Know - Hazardous Communications (GHS)

Intent - to provide employees with information to help them to make knowledgeable decisions about the chemical hazards in their workplace.

Where can you find the answers to your questions? 29 Code of Federal Regulations (CFR) 1910.1200.

### Requirements of Standard

- Written program for each location to cover issues of chemical safety and hazard communication (HazCom)
- Labels to identify each chemical
- Material Safety Data Sheets (SDSs)
- Safe work procedures/practices
- Employee training on SDS information and safe chemical procedures/practices
- Ensures all employees' right to know the hazards of chemicals they work with at their job
- Mandates that employees must be provided with information about chemicals they work with through
  - Information on chemical labels
  - Safety Data Sheets (SDSs)
  - Training on hazard communication
  - Written HazCom plan

### Why Is a Standard Necessary?

- To evaluate the hazards of all chemicals imported into, produced, or used in workplaces in the United States
- To prevent or minimize employee exposure to chemicals
- Chemical exposure can contribute to serious health effects
  - heart ailments
  - kidney/lung damage
  - sterility
  - burns/rashes
  - cancer
  - central nervous system damage

## Globally Harmonized System

The three major areas of change are in hazard classification, labels, and safety data sheets.

- **Hazard classification:** The definitions of hazard have been changed to provide specific criteria for classification of health and physical hazards, as well as classification of mixtures. These specific criteria will help to ensure that evaluations of hazardous effects are consistent across manufacturers, and that labels and safety data sheets are more accurate as a result.
- **Labels:** Chemical manufacturers and importers will be required to provide a label that includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.
- **Safety Data Sheets:** Will now have a specified 16-section format.



## Right to Know - Hazardous Communications (GHS)

### How will labels change under the revised Hazard Communication Standard?



**Pictogram:** a symbol plus other graphic elements, such as a border, background pattern, or color that is intended to convey specific information about the hazards of a chemical. Each pictogram consists of a different symbol on a white background within a red square frame set on a point (i.e. a red diamond). There are nine pictograms under the GHS. However, only eight pictograms are required under the HCS.

**Signal words:** a single word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The signal words used are "danger" and "warning." "Danger" is used for the more severe hazards, while "warning" is used for less severe hazards.

**Hazard Statement:** a statement assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard.

**Precautionary Statement:** a phrase that describes recommended measures to be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical, or improper storage or handling of a hazardous chemical.

**SAMPLE LABEL**

<p style="text-align: center;"><b>PRODUCT IDENTIFIER</b></p> <p>CODE _____ Product Name _____</p> <p style="text-align: center;"><b>SUPPLIER IDENTIFICATION</b></p> <p>Company Name _____ Street Address _____ City _____ State _____ Postal Code _____ Country _____ Emergency Phone Number _____</p> <p style="text-align: center;"><b>PRECAUTIONARY STATEMENTS</b></p> <p>Keep container tightly closed. Store in 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 measure 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.</p> <p><b>In Case of Fire:</b> use dry chemical (BC) or Carbon dioxide (CO<sub>2</sub>) fire extinguisher to extinguish.</p> <p><b>First Aid</b> If exposed call Poison Center. If on skin (on hair): Take off immediately any contaminated clothing. Rinse skin with water.</p>	<p style="text-align: center;"><b>HAZARD PICTOGRAMS</b></p> <div style="text-align: center;">   </div> <p style="text-align: center;"><b>SIGNAL WORD</b> <b>Danger</b></p> <p style="text-align: center;"><b>HAZARD STATEMENT</b> <b>Highly flammable liquid and vapor. May cause liver and kidney damage.</b></p> <p style="text-align: center;"><b>SUPPLEMENTAL INFORMATION</b></p> <p><b>Directions for use</b> _____ _____ _____</p> <p>Fill weight: _____ Lot Number _____ Gross weight: _____ Fill Date: _____ Expiration Date: _____</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Danger</b> is the more serious of the signal words and indicates a higher level of hazard.</p> <p><b>Warning</b> is less serious than "danger" and indicates a lower hazard level.</p> </div>
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## Right to Know - Hazardous Communications (GHS)

Each container entering the workplace must be labeled with the following:





- Name of product (identifier)
- Signal word
- Pictogram
- Hazard Statement
- Precautionary Statements for each hazard class & category
- Contact information

There are 10 health hazard classes, each of which is divided into categories at [29 CFR 1910.1200 Appendix A-Health Hazard Criteria](#), which include:

1. Acute Toxicity, Categories 1-4 (with 1 being the most dangerous, 4 the least dangerous)
2. Skin Corrosion/Irritation, Categories 1A, 1B, 1C, and 2
3. Serious Eye Damage/Eye Irritation, Categories 1, 2A, and 2B
4. Respiratory or Skin Sensitization, Category 1A and 1B
5. Germ Cell Mutagenicity, Categories 1A, 1B, and 2
6. Carcinogenicity, Categories 1A, 1B, and 2
7. Reproductive Toxicity, Categories 1A, 1B, 2, and additional category for effects on or via lactation
8. Specific Target Organ Toxicity - Single Exposure (STOT-SE), Categories 1-3
9. Specific Target Organ Toxicity - Repeated or Prolonged Exposure (STOT-RE), Categories 1 and 2
10. Aspiration Hazard, Category 1



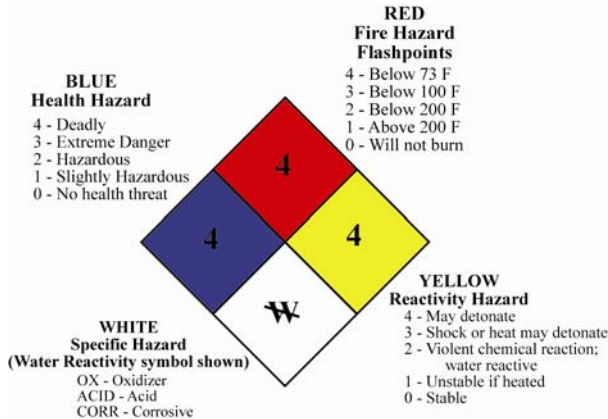
Chart below illustrates the assignment of standardized GHS label elements for the acute oral toxicity categories.

ACUTE ORAL TOXICITY – Annex 1					
	Category 1	Category 2	Category 3	Category 4	Category 5
<b>LD<sub>50</sub></b>	≤ 5 mg/kg	> 5 < 50 mg/kg	≥ 50 < 300 mg/kg	≥ 300 < 2000 mg/kg	≥ 2000 < 5000 mg/kg
<b>Pictogram</b>					No symbol
<b>Signal word</b>	<b>Danger</b>	<b>Danger</b>	<b>Danger</b>	<b>Warning</b>	<b>Warning</b>
<b>Hazard statement</b>	<b>Fatal if swallowed</b>	<b>Fatal if swallowed</b>	<b>Toxic if swallowed</b>	<b>Harmful if swallowed</b>	<b>May be harmful if swallowed</b>

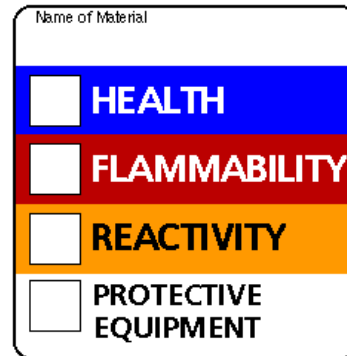


## Right to Know - Hazardous Communications (GHS)

### NFPA 704?



### Hazardous Material Identification System



## Globally Harmonized System

	NFPA HMIS	GHS	
Nearly no risk	0	5	Nearly no risk
	1	4	
Moderate risk	2	3	Moderate risk
	3	2	
Extremely high risk	4	1	Extremely high risk

The 16 physical hazard classes and their associated hazard categories are defined at [29 CFR 1910.1200, Appendix B-Physical Hazard Criteria](#), and include:










1. Explosives, Divisions 1.1-1.6 (with 1.1 being the most hazardous, 1.6 the least hazardous)
2. Flammable Gases, Categories 1 and 2
3. Flammable Aerosols, Categories 1 and 2
4. Oxidizing Gases, Category 1
5. Gases Under Pressure, 4 Groups include: Compressed gas, Liquefied gas, Dissolved gas, and Refrigerated liquefied gas
6. Flammable Liquids, Categories 1-4
7. Flammable Solids, Categories 1 and 2
8. Self-Reactive Chemicals, Types A-G
9. Pyrophoric Liquids, Category 1
10. Pyrophoric Solids, Category 1
11. Self-Heating Chemicals, Categories 1 and 2
12. Chemicals Which, in Contact with Water, Emit Flammable Gases, Categories 1-3
13. Oxidizing Liquids, Categories 1-3
14. Oxidizing Solids, Categories 1-3
15. Organic Peroxides, Types A-G
16. Corrosive to Metals, Category 1



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As of June 1, 2015, the Hazard Communication Standard (HCS) will require pictograms on labels to alert users of the chemical hazards

### HCS PICTOGRAMS & HAZARDS

<p><b>Health Hazard</b></p>  <ul style="list-style-type: none"> <li>• Carcinogen</li> <li>• Mutagenicity</li> <li>• Reproductive Toxicity</li> <li>• Respiratory Sensitizer</li> <li>• Target Organ Toxicity</li> <li>• Aspiration Toxicity</li> </ul>	<p><b>Flame</b></p>  <ul style="list-style-type: none"> <li>• Flammables</li> <li>• Pyrophorics</li> <li>• Self-Heating</li> <li>• Emits Flammable Gas</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>	<p><b>Exclamation Mark</b></p>  <ul style="list-style-type: none"> <li>• Irritant (skin and eye)</li> <li>• Skin Sensitizer</li> <li>• Acute Toxicity (harmful)</li> <li>• Narcotic Effects</li> <li>• Respiratory Tract Irritant</li> <li>• Hazardous to Ozone Layer (Non Mandatory)</li> </ul>
<p><b>Gas Cylinder</b></p>  <ul style="list-style-type: none"> <li>• Gases under pressure</li> </ul>	<p><b>Corrosion</b></p>  <ul style="list-style-type: none"> <li>• Skin Corrosion/ burns</li> <li>• Eye Damage</li> <li>• Corrosive to Metals</li> </ul>	<p><b>Exploding Bomb</b></p>  <ul style="list-style-type: none"> <li>• Explosives</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>
<p><b>Flame over Circle</b></p>  <ul style="list-style-type: none"> <li>• Oxidizers</li> </ul>	<p><b>Environment (Non-mandatory)</b></p>  <ul style="list-style-type: none"> <li>• Aquatic Toxicity</li> </ul>	<p><b>Skull &amp; Crossbones</b></p>  <ul style="list-style-type: none"> <li>• Acute Toxicity (fatal or toxic)</li> </ul>

#### Secondary Container Labels

- name (as on SDS)
- hazard warnings

#### Routes of Occupational Exposure

- **Inhalation** - nearly all materials that are airborne can be inhaled
- **Skin Absorption** - skin contact with a substance can result in four possible actions
- **Ingestion** - most workers do not deliberately swallow materials they handle
- **Injection** - associated with bloodborne pathogens
- **Ocular** - absorbed through the eyes

#### The Hazards

- A chemical can cause a *“physical hazard”* or a *“health hazard”*
- The Hazard Communication Standard applies to both hazard types



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### Physical Hazards

- Physical hazards are exhibited by certain chemicals because of their physical properties — flammability, reactivity, etc.
- These chemicals fall into the following classes:
  - flammable liquids or solids
  - combustible liquids
  - compressed gases
  - explosives
  - Organic peroxide
  - Oxidizers
  - Pyrophoric materials (may ignite spontaneously in air temperatures of 130°F or below)
  - Unstable materials
  - Water reactive materials



### FLAMMABILITY

(a product may be considered flammable or toxic by one agency or country, but not by another.)

	20°	40°	60°	100°	140°	200°
<b>OSHA</b>	Flammable			Combustible		
<b>GHS</b>	Flammable				Combustible	

### Health Hazards

- Health hazard – occurs when a chemical produces *acute* or chronic health effect on exposed employees



### Acute Health Effects

- Happen quickly
- High, brief exposure
- Examples
  - carbon monoxide poisoning
  - hydrogen sulfide poisoning
  - cyanide inhalation



### Chronic Health Effects

- May be caused by chemical exposures that do not cause immediate, obvious harm or make you feel sick right away
- May not see, feel, or smell the danger
- Effects are long, continuous and follow repeated long-term exposure
  - Lung cancer from cigarette smoking
- Black lung from coal mine dust



## Right to Know - Hazardous Communications (GHS)

### Safety Data Sheets

Safety Data Sheets (SDSs) describe the properties and hazards of a specific chemical. They are available from

### SDS Information

- Product Information
- Composition, Ingredients
- Hazards Identification
- First Aid Measures
- Fire Fighting Measures
- Accidental Release Measures
- Handling and Storage
- Exposures Controls, PPE
- Physical and Chemical Properties
- Stability and Reactivity
- Toxicological Information
- Ecological Information
- Disposal Considerations
- Transportation Information
- Regulatory Information
- Other Information

### Material Safety Data Sheets answer a series of four questions

1. What is the material and what do I need to know?
2. What should I do if a hazardous situation occurs?
3. How can I prevent hazardous situations from occurring?
4. Is there any other useful information about this chemical?

### Where Are Your SDSs?

- Must be readily accessible to employees during their work shift
- Are typically kept in a centralized location
- Must be updated as new information becomes available

### How to manage SDS's now:

**Step 1** – Make a list of all your chemicals

**Step 2** – Create checklist or use a spreadsheets to monitor the chemicals.

**Step 3** – Go through your current MSDS and see if any are in the SDS format- 16 sections

**Step 4** – As new chemical shipments come in, ensure your receiving process is keeping/documenting the new SDS

**Step 5** – If a company does not send you a new SDS, check their website or contact them.



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### Written Hazard Communication Plan

The standard requires Industry

- to develop and implement a written hazard communication program
- to provide Hazard Communication training for its employees
  - initially (to newly hired personnel)
  - whenever a new hazard is introduced into the workplace

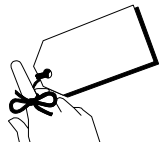
### 1910.1200(h)(1)

- *Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new chemical hazard the employees have not previously been trained about is introduced into their work area.*

### The plan should include:

- a list of the hazardous chemicals known to be present in your workplace
- how SDS filing requirements are being met
- labeling system being used
- detailed information on training and compliance
- methods to inform you of non-routine tasks and safe procedures
- methods to inform outside contractors of the HazCom program

### Other issues to consider training



Compressed Gases  
Corrosives  
Toxins  
First Aid Treatment

- Clean Up Procedures
- Disposal Procedures
- Contractor Requirements
- Use of Protective Equipment
- Safe Handling Procedures

### Things all employees should know

- Labeling requirements
- Type of labeling system
- Location(s) or operation(s) utilizing hazardous chemicals
- Physical and health hazards of chemicals
- Methods/observations used to detect presence or release
- What's in the drum or bag?
- What is the safest way to handle the material?
- What if it spills, leaks, or ignites?
- Protective measures
- Location of the written HCP
- Name of designated hazard communication coordinator
- Location of SDSs and how to obtain a copy