

# Hazard Communication & GHS

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2023

- What is GHS?
- Hazard Communication Program
  - Training
  - Labeling  
Pictograms & GHS Hazard Classes
  - Safety Data Sheets

GHS stands for **Globally Harmonized System** for classifying and labeling chemicals.

GHS is a system that defines and classifies the hazards of chemical products and communicates health safety information on labels and Safety Data Sheets, or SDSs.

The goal is that the same set of rules for classifying hazards, and the same format and content for labels and safety data sheets (SDS) will be adopted and used around the world.



## What is GHS?

**G**lobally **H**armonized **S**ystem of Classification and Labeling of Chemicals – an initiative to improve employee safety by standardizing: chemical labels, Safety Data Sheets and pictograms.

## ☐ Training

- ✓ When hired
- ✓ When a new hazard has been introduced
- ✓ Annually

## ☐ Labeling

- ✓ Must contain required information and pictograms

## ☐ Safety Data Sheets

- ✓ Must meet standardized format
- ✓ Must be readily available to all employees and contractors

## HAZCOM





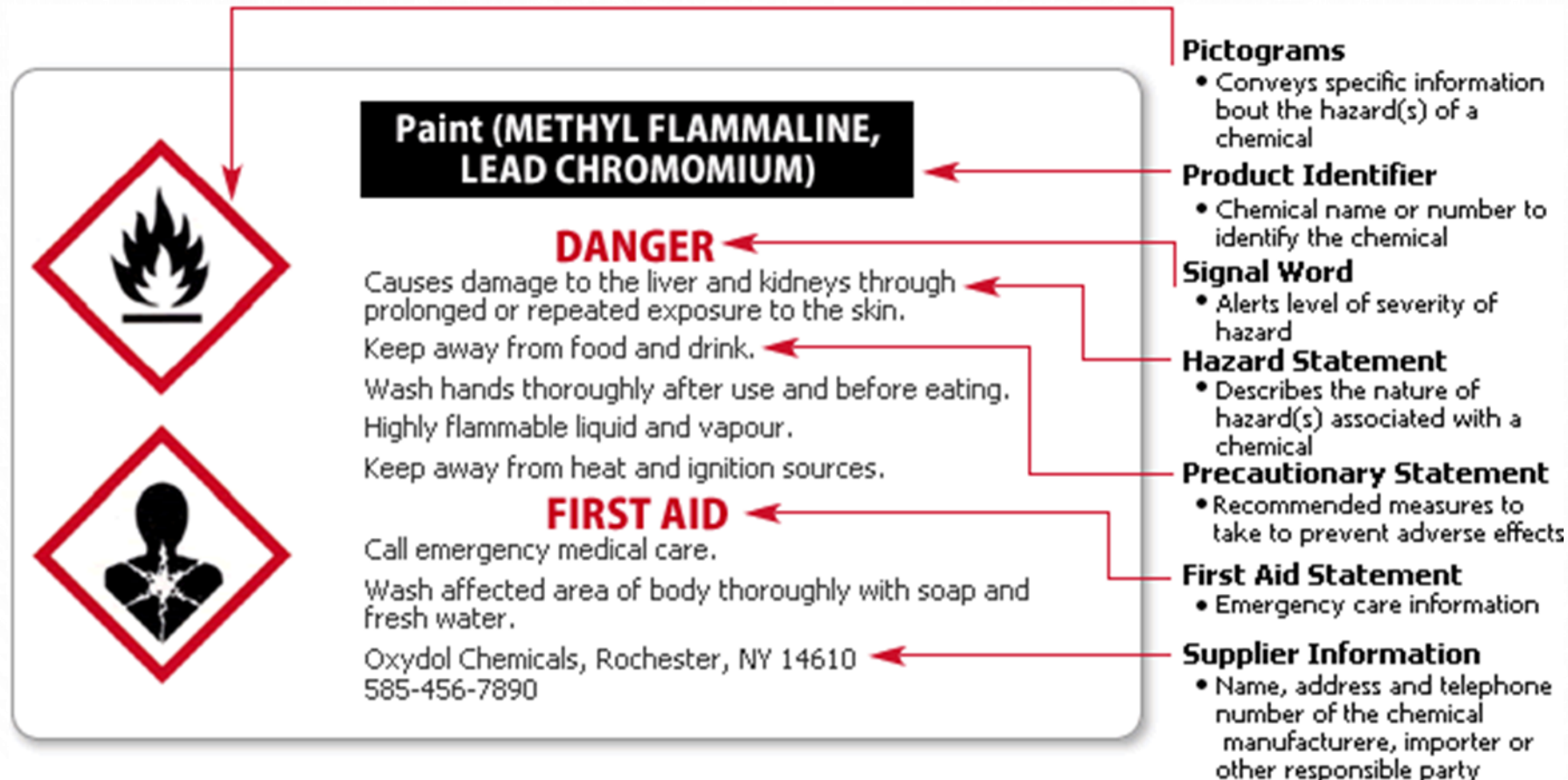
All employees must be trained, at hire, on the following:

- Requirements of OSHA Hazard Communication Standards
- Project Hazard Communication Program
- Labelling system and requirements
- Location and availability of SDS files
- PPE
- Non-routine tasks

Training must reoccur when a new hazard has been introduced to the workplace, and on an annual basis.



The original manufacturer's label includes: a product identifier, an appropriate signal word, hazard statement(s), pictogram(s), precautionary statement(s) and the name, address, and telephone number of the chemical manufacturer, importer, or other responsible party.



**Paint (METHYL FLAMMALINE, LEAD CHROMOMIUM)**

**DANGER**

Causes damage to the liver and kidneys through prolonged or repeated exposure to the skin.  
Keep away from food and drink.  
Wash hands thoroughly after use and before eating.  
Highly flammable liquid and vapour.  
Keep away from heat and ignition sources.

**FIRST AID**

Call emergency medical care.  
Wash affected area of body thoroughly with soap and fresh water.

Oxydol Chemicals, Rochester, NY 14610  
585-456-7890

**Pictograms**

- Conveys specific information about the hazard(s) of a chemical

**Product Identifier**

- Chemical name or number to identify the chemical

**Signal Word**

- Alerts level of severity of hazard

**Hazard Statement**

- Describes the nature of hazard(s) associated with a chemical

**Precautionary Statement**

- Recommended measures to take to prevent adverse effects

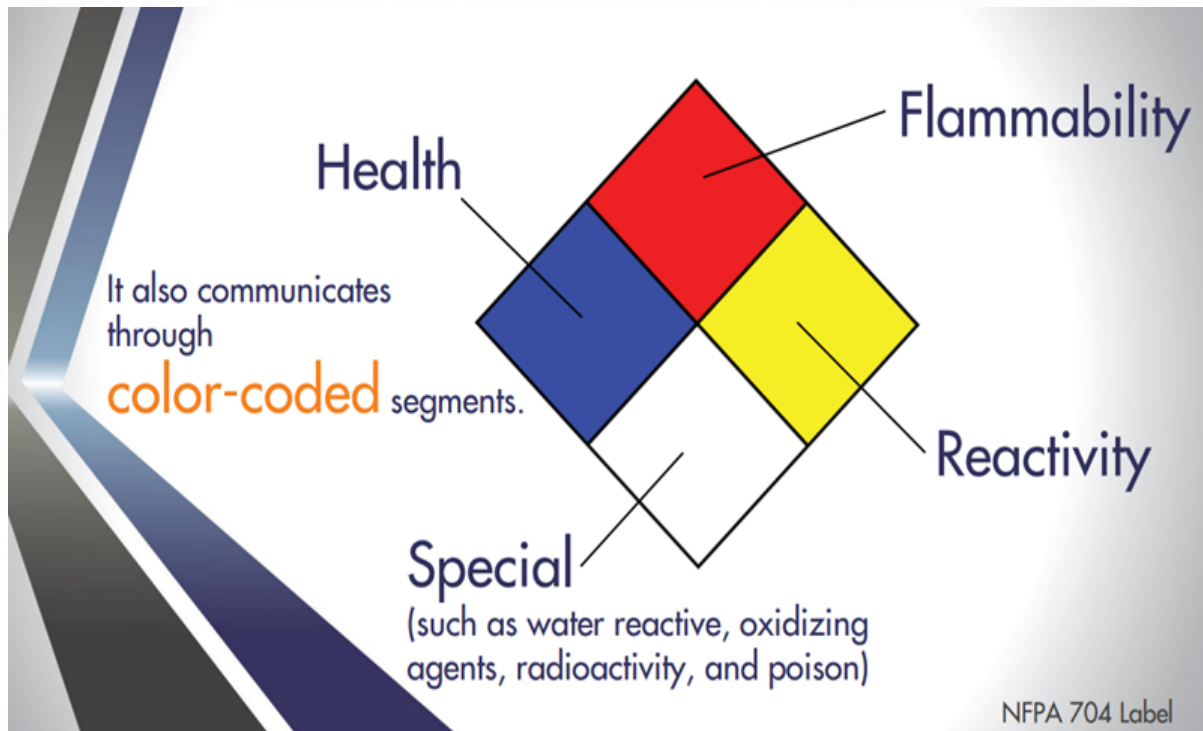
**First Aid Statement**

- Emergency care information

**Supplier Information**

- Name, address and telephone number of the chemical manufacturer, importer or other responsible party

The NFPA 704 label uses a **numerical rating of 0 to 4** to indicate the severity of a hazard. While 0 indicates no or minimal hazard, 4 indicates the most severe hazard!





The Hazardous Materials Identification System label, or HMIS, is another common labeling system.

The HMIS includes a rectangle that is divided by color segments – red, blue, orange and white.

The HMIS label differs from the NFPA 704 label that includes the type of **PPE** needed in the white segment and must be decoded using a reference chart.
















# Hazard Communication Reference Chart

- NFPA/HMIS systems and the GHS system are inverse
- NFPA/HMIS recognizes 0 as a minimal hazard up to 4 for severe hazard
- Under the GHS classification 5 is considered a minimal hazard, category 1 is a severe hazard
- No 0 category under GHS
- GHS hazard category rating are not typically shown on a label and will be only seen on the Safety Data Sheet
- All containers must be labeled, including secondary containers

HMIS Hazard Ratings			GHS Hazard Ratings	
0	Minimal Hazard	ORDER REVERSES ↓ ↑	1	Severe Hazard
1	Slight Hazard		2	Serious Hazard
2	Moderate Hazard		3	Moderate Hazard
3	Serious Hazard		4	Slight Hazard
4	Severe Hazard		5	Minimal Hazard

# Hazard Communication Labeling & Pictograms

- Convey health, physical and environmental hazard information, assigned to a GHS hazard class and category.
- The GHS symbols have been incorporated into pictograms for use on the GHS label.
- Pictograms will have a black symbol on a white background with a red diamond frame.

<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>Corrosive</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 and Crossbones</b></p>  <ul style="list-style-type: none"> <li>• Acute Toxicity (Fatal or Toxic)</li> </ul>



# Hazard Communication Labeling & Pictograms

Signal words indicate the level of severity of a hazard and alert workers to a potential hazard


Labels will have one or two signal words – “Danger” or “Warning”



## GHS LABELING

United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

GHS Label Elements





**PENTANE**  
CAS 109-66-0  
**DANGER**  
Extremely flammable gas. Corrosive gas under pressure. May explode if heated. Gas may reduce oxygen in confined spaces.  
Keep away from heat/spark/open flame/hot surfaces. No smoking. Protect from sunlight. Store in a well-ventilated place. Leaking gas fix: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.  
Eye contact: For liquefied gas, flush eyes with lukewarm water. Seek immediate attention.  
Skin contact: Liquefied gases may cause cryogenic burns. Heat burned or irritated skin by flushing or removing the affected article in lukewarm water. Do not rub affected area.  
Inhalation: If respiratory system develops, move victim away from source of exposure and into fresh air. Seek medical attention.  
Company XYZ | 7131 SW Warren Ave., Bangor ME 04401 | (207) 212-4815


GHS Pictograms


- 1 Product Identifier**  
Name or number used for a hazardous product on a label or in the SDS
- 2 Signal Words**  
“Danger” or “Warning” are used to emphasize hazards and indicate the relative level of severity of the hazard assigned to a GHS hazard class and category
- 3 Hazard Statements**  
Standard phrases assigned to a hazard class and category that describe the nature of the hazard
- 4 Precautionary Statements**  
Measures to minimize or prevent adverse effects
- 5 GHS Pictograms**  
Standardized set of symbols which convey health, physical, and environmental hazard information
- 6 Supplier Identification**  
Company name, address, and phone number should be listed on the label


The prescribed symbols, signal words, and hazard statements can be readily selected from Annex 1 of the GHS Purple Book. These standardized elements are not subject to variation, and should appear on the GHS label as indicated in the GHS for each hazard category or class in the system. The use of symbols, signal words, or hazard statements other than those that have been assigned to each of the GHS hazards would be contrary to harmonization.


  
Flame Over Circle  
Oxidizers


  
Flame  
Flammables


  
Gas Cylinder  
Gases Under Pressure


  
Explosion  
Explosives


  
Health Hazard  
Specific Toxicity Hazards


  
Exclamation Mark  
Irritant, Sensitizer, Other


  
Environment  
Environmental Toxicity


  
Corrosion  
Corrosives


  
Skull + Crossbones  
Acute Toxicity (Severe)


  
Explosives- Div. 1.1-1.3


  
Non-Flam., Non-Toxic Gases


  
Flammable Solids\*


  
Oxidizing Substances


  
Corrosive Substances


  
Explosives- Div. 1.4-1.6


  
Toxic Gases


  
Spontaneous Combustion

  
Organic Peroxides

  
Flammable Gases

  
Flammable Liquids

  
Can Emit Flam. Gases w/H2O

  
Toxic Substances

\* Also: self-reactive substances and solid desensitized explosives

1. Explosives
2. Flammable Gases
3. Flammable Aerosols
4. Oxidizing Gases
5. Gases Under Pressure
6. Flammable Liquids
7. Flammable Solids
8. Substances which, in contact with water emit flammable gases



9. Self-Reactive Substances
10. Pyrophoric Liquids
11. Pyrophoric Solids
12. Self-Heating Substances
13. Oxidizing Liquids
14. Oxidizing Solids
15. Organic Peroxides
16. Corrosive to Metals





- Acute Toxicity
- Skin Corrosion/Irritation
- Serious Eye Damage/Eye Irritation
- Respiratory or Skin Sensitization
- Germ Cell Mutagenicity
- Carcinogenicity
- Reproductive Toxicology
- Target Organ Systemic Toxicity
  - Single Exposure
  - Repeated Exposure
- Aspiration Toxicity



**Skin  
Corrosion**

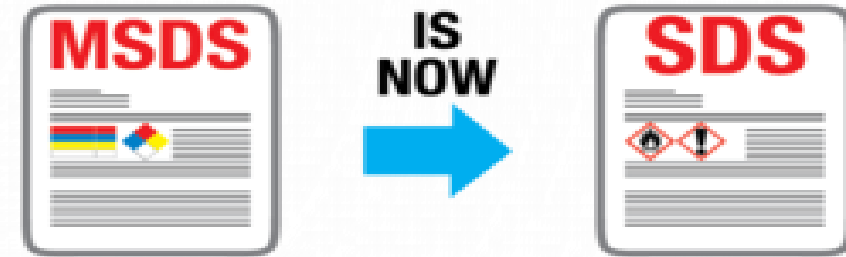
Substances that are hazardous to either the aquatic environment or to the ozone layer.

- Hazardous to the Aquatic Environment or to the O-zone layer
- Acute aquatic toxicity
- Chronic aquatic toxicity
  - Bioaccumulation potential
  - Rapid degradability



# Hazard Communication Safety Data Sheets (SDS)

- SDS's provide critical information for use in workplace chemical management
- Source of information about hazard to obtain advice of safety precautions
- Source of information for transporting dangerous goods
- Enables employers to develop active programs for workers protection measures
- 16 Section format provides clarity of data used to identify the hazards



The SDS's shall be readily available to all employees during their work shifts.





# 16 Elements to a Safety Data Sheet

- 1. Identification:** Includes product identifier, manufacturer or distributor name, address, phone number, emergency phone number, recommended use, restrictions on use.
- 2. Composition/Ingredient:** Information on chemical ingredients, trade secret claims.
- 3. First-Aid Measures:** Includes important symptoms/effect, acute delayed, required treatment.
- 4. Fire-Fighting Measures:** Lists suitable extinguishing techniques, equipment; chemical hazards from fire.
- 5. Accidental Release Measures:** lists emergency procedures, protective equipment, proper methods of containment and clean up.
- 6. Handling and Storage:** lists precautions for safe handling and storage, including incompatibilities.
- 7. Exposure Control/Personal Protection:** lists OSHA's Permissible Exposure Limits (PELs), Threshold Limit Values (TLVs), appropriate engineering controls, personal protective equipment (PPE).



# 16 Elements to a Safety Data Sheet

- 9. Physical and Chemical Properties:** Lists the chemical characteristics.
- 10. Stability and Reactivity:** Lists chemical stability and possibility of chemical reactions.
- 11. Toxicological Information:** Includes routes of exposure, related symptoms, acute and chronic effects, numerical measures of toxicity.
- 12. Ecological Information:** Includes ecotoxicity, persistence and degradability, bio accumulative potential and mobility in the soil.
- 13. Disposal and Consideration:** Describes waste residues and information on their safe handling and methods of disposal, including disposal of contaminated packaging.
- 14. Transport Information:** Included UN number and proper shipping name, transport hazard class(s), packaging group, environment hazards.
- 15. Regulatory Information:** Includes safety, health and environmental regulations specific to the product.
- 16. Other Information:** as needed.

Always follow the Hazard Communication policy specific to the client site you are working at. The SDS information made available to you will be based on the recognized hazards at that site.

A chemical's pH, vapor density, and specific gravity determine how chemicals will "behave" or react with other chemicals and their surroundings. These properties are helpful during hazardous waste and emergency response operations, such as when workers attempt to clean up an oil spill.

Permissible exposure limits, or PELs, and threshold limit values over a time-weighted average, or TLV-TWAs, indicate the average amount you can be safely exposed to a hazard for 8 hours a day, 5 days a week.

Communication and preparation is vital in today's diversified workforce. Knowing the hazards, you may be exposed to and how to protect yourself from them will allow you and your coworkers to get back to what matters most, staying safe!



## Training Roster

Please complete the training roster by either, scanning the QR code on your cellphone or clicking the link below. Thank you for your time and stay safe!

<https://forms.office.com/Pages/ResponsePage.aspx?id=-8h9YWiPvEqU-Hwlfqicf-aZYot3noVOrngpiHPPQkFURFRNODhHMFkzMlhYVUdXU0hGT0NEWkdTVC4u>





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