

Hazard Communication (HAZCOM) and the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)



HAZCOM is Changing!!!

- ❖ Changes to the Hazard Communication Standard (HCS) are bringing the US into alignment with the **Globally Harmonized System of Classification and Labeling of Chemicals (GHS)**
- ❖ The new HCS still requires manufacturers and importers to evaluate the chemicals they produce/import and provide hazard information to employers and workers via labels and safety data sheets.
- ❖ The modified standard provides a set of harmonized criteria for classifying chemicals and specifies elements for labeling and safety data sheets.

Things that you should learn from training:

- ❖ How to read container labels and understand the information that they contain
- ❖ How to read an SDS to identify chemical health hazards, routes of exposure, and measures to be taken for personal protection, first aid and special handling
- ❖ How to identify releases of hazardous chemicals in the workplace

Global Harmonization System (GHS)

Overview



Acronym for:



Globally

Harmonized










System of Classification and
Labeling of Chemicals

Major Changes - Labels

- Chemical manufacturers and importers must provide a label that includes a signal word, pictogram, hazard statement, and precautionary statement for each hazard class and category



GHS Pictograms

<p>Exploding bomb</p>  <p>Explosives; Self Reactive; Organic Peroxides</p>	<p>Skull and Crossbones</p>  <p>Acute toxicity (severe)</p>	<p>Flame</p>  <p>Flammables; Pyrophorics; Self-Heating; Emits Flammable Gas; Self Reactive; • Organic Peroxides</p>
<p>Gas Cylinder</p>  <p>Gases under pressure</p>	<p>Health Hazard</p>  <p>Carcinogen; Mutagenicity; Reproductive Toxicity; Respiratory Sensitizer; Target Organ Toxicity; Aspiration Toxicity</p>	<p>Flame over circle</p>  <p>Oxidizers</p>
<p>Corrosion</p>  <p>Corrosives</p>	<p>Exclamation mark</p>  <p>Irritant; Skin Sensitizer; Acute Toxicity (harmful); Narcotic effects; Respiratory Tract Irritant; Hazardous to Ozone Layer</p>	<p>Environmental</p>  <p>Aquatic Toxicity (OSHA did not propose this pictogram)</p>

Major Changes - Safety Data Sheets

Safety Data Sheets (*formerly Material Safety Data sheets*) include sixteen specific sections, ensuring consistency in presentation of important protection information.

Safety Data Sheet Content

Section 1: Identification

Section 2: Hazard Identification

Section 3: Composition

Section 4: First Aid Measures

Section 5: Fire Fighting Measures

Section 6: Release Measures

Section 7: Handling and Storage

**Section 8: Exposure Control/
Personal Protection**

**Section 9: Physical/Chemical
Properties**

Section 10: Stability/Reactivity

Section 11: Toxicological Info.

Section 12: Ecological Info.

Section 13: Disposal

Section 14: Transport Info.

Section 15: Regulatory Info.

Section 16: Other Information

How was GHS Developed?



- ❖ United Nations Organization (UN) initiative since 1992 to provide a system for the standard handling of chemicals
- ❖ The system used as reference several existing system from various countries. It is now available for adoption by competent authorities around the world.
- ❖ Revision 3 of the GHS is used by OSHA as the reference for the proposed Hazard Communication rule

- ❖ **Hazardous Wastes**
- ❖ **Articles**-item formed to a specific shape which has its end use (function) dependent upon its shape or design
- ❖ **Consumer Products**-where employer can show its end use in the workplace is no greater than exposures are than those experienced by consumers when used for its intended purpose

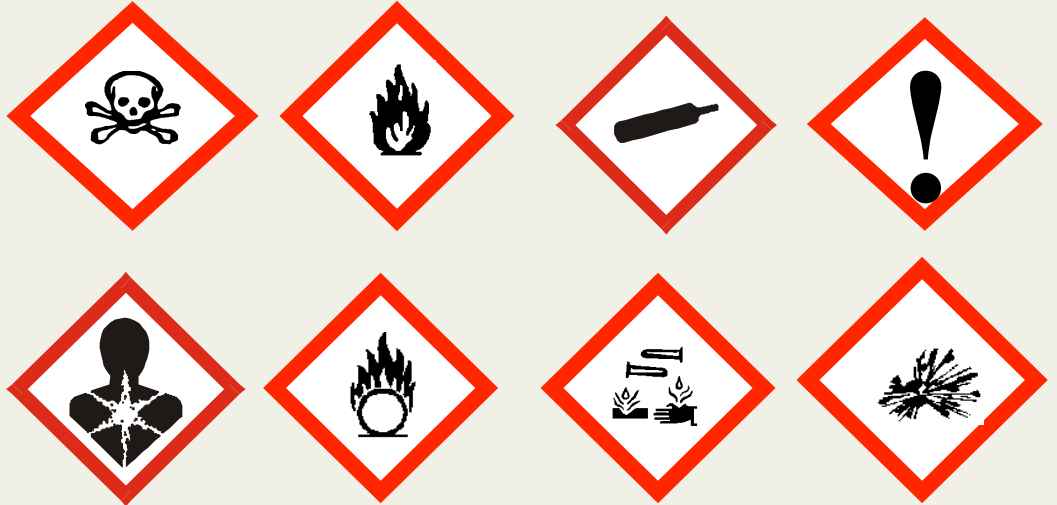
- ❖ 600 substances in the OSHA Standards and the ACGIH TLVs are the starting “floor” of candidates for evaluation

Major Changes - Hazard classification

❖ **Hazard Classification** - Under the new standard provides specific criteria to address health and physical hazards & classification of chemical mixtures.

Label Modifications

- **Pictograms**
- **Two Signal Words**
 - Danger
 - Warning
- Hazard statements
- Precautionary statements



- ❖ OSHA maintains the approach in the current HCS that allows employers to use workplace-specific labeling systems as long as they provide the required information and make sure the information is consistent with the new classifications. However workplace label system must be maintained up to date, be prominently displayed in English and other appropriate language

Major Changes - Safety Data Sheets

❖ ***Safety Data Sheets***

(formerly Material Safety Data sheets)

include sixteen specific sections, ensuring consistency in presentation of important protection information.

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GHS – Health Hazards





New Definitions...

GHS – Physical Hazards





Labels

GHS – Hazard Communication Tools

Label Components

- Product identifier
- Supplier identifier
- Chemical identity
- Hazard pictograms*
- Signal words*
- Hazard statements*
- Precautionary information - **mandatory**

*Standardized
Based on
Appendixes

GHS Label Elements

Product Name or Identifier
(Identify Hazardous Ingredients, where appropriate)



Signal Word

Physical, Health, Environmental Hazard Statements

Supplimental Information

Precautionary Measures & Pictograms



First Aid Statements

Name and Address of Company

Telephone Number of Company

SAMPLE LABEL

PRODUCT IDENTIFIER

CODE _____

Product Name _____

SUPPLIER IDENTIFICATION

Company Name _____

Street Address _____

City _____ State _____

Postal Code _____ Country _____

Emergency Phone Number _____

PRECAUTIONARY STATEMENTS

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.

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 (on hair): Take off immediately any contaminated clothing. Rinse skin with water.

HAZARD PICTOGRAMS



SIGNAL WORD

Danger

HAZARD STATEMENT

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

SUPPLEMENTAL INFORMATION

Directions for use

Fill weight: _____ Lot Number _____

Gross weight: _____ Fill Date: _____

Expiration Date: _____

Revised HCS Labeling

Product Identifier

- ❖ States the identity of the chemical, including all the ingredients that contribute to the hazard of the mixture.
- ❖ Unique means by which the chemical can be identified within the particular use setting.



Supplier Identification

- Name, address and telephone number of the manufacturer or supplier of the hazardous chemical.

The image shows a chemical label for Acetone. At the top left is the logo for Marketing Chemicals Limited, which consists of a stylized atom symbol. To the right of the logo is the text "MARKETING CHEMICALS LIMITED". Further right is a "CAUTION" warning: "KEEP OUT OF REACH OF CHILDREN". Below this is the word "ACETONE" in large, bold, black letters. On the left side, there is a grey box with the following text: "DANGER GIVES OFF FLAMMABLE VAPOUR KEEP WELL AWAY FROM HEAT, SPARKS AND OPEN FLAME. KEEP CONTAINER CLOSED WHEN NOT IN USE." On the right side, there is a white box with a black border containing safety information: "WARNING: This product is volatile. Avoid breathing vapours. Use with adequate ventilation. Avoid contact with skin, eyes and clothing. USE: Predominant use as a solvent. LEAKS AND SPILLS: Wear solvent proof gloves, face shield, goggles and boots. Prevent spill liquid from entering surface water drains. Absorb spill liquid with sand or earth then remove it to a safe area for subsequent disposal. FIRE: Wear breathing apparatus. Use dry powder CO2 foam, water fog, sand or earth. STORAGE: Store container in a well ventilated area away from sources of heat. CONTAINERS: Empty containers can still be hazardous. Keep labelled until decontaminated, then remove or deface label. Empty uncleaned drums can still be dangerous. Keep labelled until decontaminated, then remove or deface the label. FIRST AID: In all cases of suspected poisoning, seek medical aid at once. In the interim, the following first aid measures are appropriate. INTERNAL: If swallowed, DO NOT induce vomiting. Give 250ml water to drink. DO NOT give anything by mouth to an unconscious person. If vapour has been inhaled, remove affected person to fresh air source and obtain medical attention in severe cases. EXTERNAL: If spilled on the skin, wash the area with soap and water. If splashed in the eyes, bathe immediately with running water. Obtain medical attention should irritation persist. Launder contaminated clothing before re use." Below the safety information is a table for container sizes: "5L", "20L", "200L", and a "CONTAINER SIZE TICKED" checkbox with a checkmark. At the bottom of the label is the contact information: "UNIT 7/343 CHURCH STREET PENROSE PO BOX 13881 ONEHUNGA. TELEPHONE (09) 634 3862. FAX (09) 634 3864".

MARKETING CHEMICALS LIMITED

CAUTION
KEEP OUT OF REACH OF CHILDREN

ACETONE

DANGER
GIVES OFF
FLAMMABLE
VAPOUR
KEEP WELL AWAY FROM HEAT,
SPARKS AND OPEN FLAME.
KEEP CONTAINER CLOSED
WHEN NOT IN USE.

WARNING: This product is volatile. Avoid breathing vapours. Use with adequate ventilation. Avoid contact with skin, eyes and clothing.
USE: Predominant use as a solvent.
LEAKS AND SPILLS: Wear solvent proof gloves, face shield, goggles and boots. Prevent spill liquid from entering surface water drains. Absorb spill liquid with sand or earth then remove it to a safe area for subsequent disposal.
FIRE: Wear breathing apparatus. Use dry powder CO₂ foam, water fog, sand or earth.
STORAGE: Store container in a well ventilated area away from sources of heat.
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EXTERNAL: If spilled on the skin, wash the area with soap and water. If splashed in the eyes, bathe immediately with running water. Obtain medical attention should irritation persist.
Launder contaminated clothing before re use.

5L	20L	200L	
CONTAINER SIZE TICKED <input checked="" type="checkbox"/>			

UNIT 7/343 CHURCH STREET PENROSE PO BOX 13881 ONEHUNGA. TELEPHONE (09) 634 3862. FAX (09) 634 3864

- ❖ A name that will uniquely identify a chemical.
- ❖ For Substances
 - Name as determined by IUPAC or CAS,
 - or technical name as determined by ISO.

ACETONE
(DIMETHYLKETONE, 2-PROPANONE)
DANGER!
CAS# 67641

UN1090 TARGET ORGANS: SKIN, EYES, RESPIRATORY SYSTEM, MUCOUS MEMBRANES

PRECAUTIONARY MEASURES: EXTREMELY FLAMMABLE, HARMFUL IF SWALLOWED OR INHALED, CAUSES IRRITATION. Keep away from heat, sparks, flames. Keep in tightly closed container. Avoid breathing vapor. Avoid contact with eyes, skin, clothing. Use adequate ventilation. Wash thoroughly after handling. In case of fire, use water spray, alcohol foam, dry chemical, or carbon dioxide extinguisher. Use appropriate personal protective equipment.

SYMPTOMS OF EXPOSURE: Prolonged or repeated skin contact may cause irritation, dryness. Breathing vapors may produce headache, fatigue, bronchial irritation, and in large amounts, unconsciousness. Serious eyeburning sore.

INSTRUCTIONS FOR IMMEDIATE AID IN CASE OF EXPOSURE: Call a Physician. If swallowed, and conscious, immediately induce vomiting. If inhaled, remove to fresh air. If not breathing, give artificial respiration, if breathing is difficult, give oxygen. In case of contact, immediately flush affected area with running water for at least 15 minutes. Medical intervention: Treat symptoms of exposure.

SPILL RESPONSE PROCEDURES: Only appropriately trained personnel should respond to spills. Use proper response procedures and maintain appropriate level of fire protection. Dispose of as required by federal, state, and local regulations.

CONTAINER HANDLING AND STORAGE: Use labeled flammable solvent container. Avoid contact with oxidizers and any other incompatible materials. Electrostatically ground container where necessary.

MSDS REFERENCE: Refer to Material Safety Data Sheet for more information about chemical.

MANUFACTURER: PHONE NUMBER: MSDS LOCATION: HC-200

These are new...

GHS - Pictograms



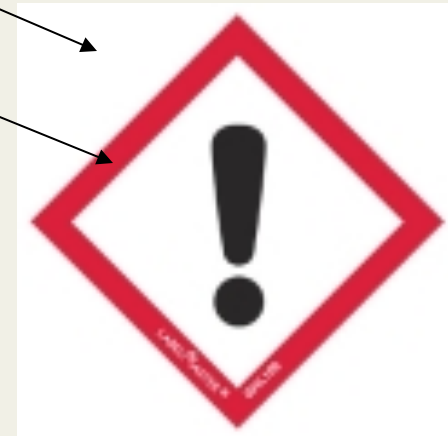
❖ Display health, physical and environmental hazard information.

❖ New health hazard symbol.












- ✓ Pictograms feature a white background with a red border instead of a solid orange background.

- ✓ Harmful chemicals are marked with an exclamation mark.



GHS Pictograms

<p>Exploding bomb</p>  <p>Explosives; Self Reactive; Organic Peroxides</p>	<p>Skull and Crossbones</p>  <p>Acute toxicity (severe)</p>	<p>Flame</p>  <p>Flammables; Pyrophorics; Self-Heating; Emits Flammable Gas; Self Reactive; Organic Peroxides</p>
<p>Gas Cylinder</p>  <p>Gases under pressure</p>	<p>Health Hazard</p>  <p>Carcinogen; Mutagenicity; Reproductive Toxicity; Respiratory Sensitizer; Target Organ Toxicity; Aspiration Toxicity</p>	<p>Flame over circle</p>  <p>Oxidizers</p>
<p>Corrosion</p>  <p>Corrosives</p>	<p>Exclamation mark</p>  <p>Irritant; Skin Sensitizer; Acute Toxicity (harmful); Narcotic effects; Respiratory Tract Irritant; Hazardous to Ozone Layer</p>	<p>Environmental</p>  <p>Aquatic Toxicity (OSHA did not propose this pictogram)</p>

Pictogram Shape & Colour

- ❖ For transport, pictograms will not change
- ❖ For other sectors, pictograms will have a black symbol on a white background with a red diamond frame.
- ❖ For the same hazard, where a transport pictogram appears, the GHS pictogram should not appear.

Transport Pictograms



Explosives

(class 1)



Gases

(class 2)



Toxic

(class 6)

Flammables

(class 3, 4)



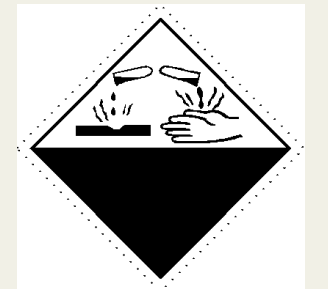
Oxidizers

(class 5)



Corrosives

(class 8)



Signal Words

- ❖ These words are used to alert the reader of health, physical, and environmental hazards, and the hazard's level of severity
- ❖ “Danger” and “Warning” are the only two signal words used.



GHS: Environmental Hazards

❖ Hazardous to the Aquatic Environment

- Acute – injury after short term exposure
- Chronic – injury during the organism life cycle
- Includes fish, crustaceans, and algae or other aquatic plants



- ❖ The environmental hazards are not covered by OSHA. The competent authority for those would be EPA



... On the labels

GHS - Hazard statements

Hazard Statements

- ❖ GHS label should include appropriate hazard and precautionary information.
- ❖ A hazard statement is a phrase assigned to a hazard class that describes the nature of the hazard, and its level of severity.
 - “Highly Flammable,” “Unstable Explosive,” “Toxic if Inhaled”.
- ❖ There are three types: Physical, Health and Environmental

Toxic to the skin

Fatal if inhaled 1,2

Harmful if inhaled 4

Precedence

2  **1 Sulfuric Acid** **2** 

3 Danger! May be harmful if swallowed. Causes sever skin burns and eye damage. **4** Fatal if inhaled. Harmful to aquatic life.

Do not breathe dust/fume/gas/mist/vapors/spray. Wear protective gloves/protective clothing/eye protection/face protection. Wear respiratory protection.

5 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

In case of fire Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

See Material Safety Data Sheet for further details regarding safe use of this product.

6 Sigma-Aldrich 3050 Spruce Street SAINT LOUIS MO 63103 USA Telephone : +18003255832

- | | |
|---------------------------------|-----------------------------------|
| 1 Product Identifier | 4 Hazard Statements |
| 2 Pictograms | 5 Precautionary Statements |
| 3 Signal word, "Danger!" | 6 Supplier Information |

- ❖ Where a chemical is classified for a number of hazards, and the precautionary statements are similar, the most stringent shall be included on the label (this will be applicable mainly as preventive measures).
- ❖ An order of precedence may be imposed by the manufacturer, importer or responsible party in situations where phrases concern "Response."



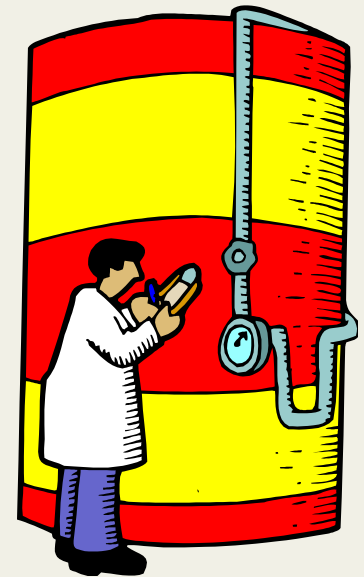
From MSDS to SDS

GHS – Hazard Communication Tools: Safety Data Sheets

Role of the SDS in the GHS

❖ Primary Use of SDS: The Workplace

- Employers and workers use them as an information source about potential hazards of a chemical substance or mixture and to obtain guidance on safety precautions.
- SDS information can be used by those involved in the transport of dangerous goods and emergency responders.



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OSHA HAZCOM STANDARD CHANGES ARE HERE

- ❖ NEW MANDATED CRITERIA
- ❖ NEW LABELING INFORMATION
- ❖ NEW SDS MSDS BEING REPLACED
- ❖ TRAINING
 - pictograms, hazard statements, signal words, precautionary statements