Central WHOLESALERS, INC. Presents

GHS – OSHA's Updated Hazard Communication Standard



Central WHOLESALERS, INC.

Hazard Communication and the Globally Harmonized System (GHS)

- Why OSHA adopted the GHS
- Overview of the changes to the HazCom Standard
- OSHA's Final Rule
- Business impact – US & globally
- Key deadlines for implementation

Central WHOLESALERS, INC.

Hazard Communication Standard – 2012

- Initially developed in 1983 to give employees a “right to know”
- Requires a comprehensive hazard evaluation and communication process
- Chemical manufacturers and importers must develop and provide a container label and a Safety Data Sheet (SDS)



Central WHOLESALERS, INC.

Hazard Communication Standard

- Employers with employees exposed to hazardous chemicals must develop a hazard communication program including:
  - ✓ Labels
  - ✓ Access to SDSs
  - ✓ Training on the workplace hazardous chemicals
- The previous HCS established requirements for minimum information that must be included on labels and SDSs, but did not provide specific language to convey the information or a format in which to provide it



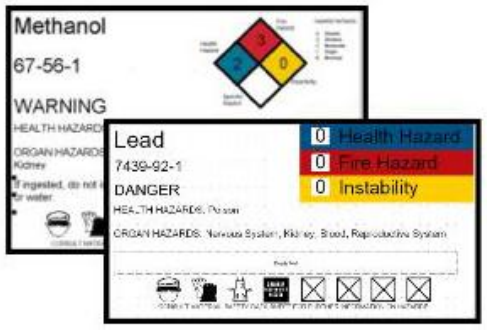
Central WHOLESALERS, INC.

Background of GHS

Why the need?

- Country-by-country, around the globe, hazard classification and communication laws are similar in purpose, but different enough to result in inconsistent hazard classification for similar products, and dissimilar looking labels and SDS
- To harmonize and improve safety information and facilitate international trade through compatible classification methods, SDS and labels

NFPA RTK – US



WHMIS Std – Canada

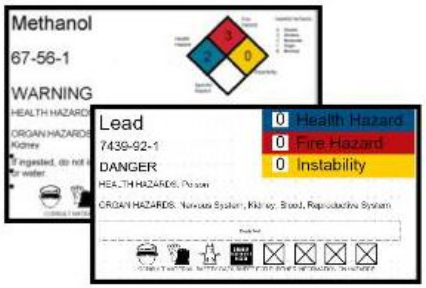


HSID Std – Europe



What is GHS?

NFPA RTK – US



WHMIS Std – Canada



HSID Std – Europe



Globally-Standardized GHS Std



Central WHOLESALERS, INC.

GHS Status in Americas

United States – Adopted by OSHA as of May 2012

Canada – Reviewing for development

- Health Canada Policy and Programme Services Office is national coordinator
- Currently reviewing GHS for incorporation into WHMIS
- Estimated changes to WHMIS occurring in Spring 2013

Mexico – Voluntary standard proclaimed

- The first NAFTA member to adopt the GHS as a basis for national health and safety regulations
- Proclaimed a new **voluntary** standard, NMX-R-019-SCFI-2011 (June 4, 2011)
- NOM-018-STPS-2000 remains in force
- Dual labeling and SDS's result
- Companies importing/exporting products to and from contries in Europe, Asia and South America are required to comply with both NOW 018-STPS-2000 and GHS
- ANIQ (Associacion Nacional de la Industria Quimica) requested authorization from the Labor Secretariat for an alternate procedure to comply with NOM 2000 through the GHS NMX-R

Brazil – Implemented for substances

- Pure substances (GHS classification, labeling and SDS) mandatory as of February 2011
- Mixtures mandatory as of June 1, 2015

GHS Status in Europe and Around the Globe

27 EU Countries – Implemented under Regulation 1272/2008

- CLP is mandatory for 4,500 **substances** as of December 1, 2010
- CLP will be mandatory for all **mixtures** on June 1, 2015
- 2nd technical adaptation; Regulation 286/2011

Australia – Implemented (December 2016 deadline)

China – Implemented

Japan – Implemented

67 Countries Globally – At least partially implemented

See UN website http://live.unece.org/trans/danger/publi/ghs/implementation_e.html

OSHA's Final Ruling on GHS

OSHA has updated its Hazard Communication Standard (HCS) to align with the United Nations' *Globally Harmonized System of Classification and Labeling of Chemicals (GHS)*. Modifications will reduce costs and burdens while protecting employers and employees.

Modifications include:

- Revised criteria for classification of chemical hazards
- Revised and standardized labeling requirements
- A specified format for safety data sheets
- Requirements for employee training on labels and safety data sheets



Central WHOLESALERS, INC.

Some Hazard Communication Standard Provisions Remain Unchanged

- The revised Hazard Communication Standard (HCS) is a modification to the existing standard
- Parts of the standard that did not relate to the GHS (such as the basic framework, scope and exemptions) remained largely unchanged



Central WHOLESALERS, INC.

Notable Changes

- Using a "specification" approach rather than a "performance-oriented" approach
  - "Hazard classification" rather than "hazard determination"
- Labels are more defined and will now require:
  - Product identifier
  - Pictogram
  - Signal word
  - Hazard statement(s)
  - Precautionary statement(s)
  - Name, address, and telephone number
- "Safety data sheet" (rather than "material safety data sheet") uses a 16-section format
- Guidance in the GHS (such as decision logics in criteria) has been removed to streamline provisions
  - May be provided as a separate document to assist compliance later

Global Word/Definition Changes

- The term “evaluated” is now “classified”
- The term “element” is now “substance”
- The term “specific chemical identity” is now “trade secret”

Trade secret means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Appendix E to §1910.1200—Definition of Trade Secret, sets out the criteria to be used in evaluating trade secrets.



Other Definitions

Explosive means a chemical that causes a sudden, almost instantaneous release of pressure, gas and heat when subjected to sudden shock, pressure or high temperature.

Central WHOLESALERS, INC.

Learning Checkpoint 1



1. How many sections of information are included on the Safety Data Sheets?

   a. 10 c. 16

   b. 12 d. Depends upon the type of chemical

2. "Explosive" means a chemical that causes a sudden, almost instantaneous release of pressure, gas and heat when subjected to sudden shock, _____ or high temperature.

Learning Checkpoint 1



3. Which of the following IS NOT required on a product label?
   a. Appropriate hazard warnings and Signal word;
   b. Hazard Statements
   c. Name and address of chemical manufacturer, importer or other responsible party
   d. Medical treatment information
   e. Pictograms

4. <u>True or False:</u>
   The chemical manufacturer, importer, or employer may withhold the specific chemical identity, including the chemical name, and other specific identification of a hazardous chemical, or the exact percentage (concentration) of the substance in a mixture, from the safety data sheet

How Hazard Communication Works



Central WHOLESALERS, INC.

5 Main Requirements for a Complete Hazard Communication Program

1. Written Hazard Communication Plan
2. Chemical Inventory
3. Labels & Warnings
4. Safety Data Sheet Documents
5. Employee Training

1. Written Hazard Communication Plan

The Starting Point – Your Current Plan

- Blueprint for implementation
- Written plan that identifies how all requirements will be met, including:
  - Labels and other forms of warning
  - Safety data sheets (SDS)
  - Employee information and training
- Review your current plan with the revised, published rule in-hand



OSHA Model Hazard Communication Plan:
http://www.osha.gov/Publications/osha3186.pdf

1. Written Hazard Communication Plan (continued)

Model Hazard Communication Program

1. Company policy
2. To ensure that information about the dangers of all hazardous chemicals used by (Name of Company) is known by all affected employees, the following hazardous information program has been established.
3. Container Labeling **– Revise and Train**
4. Safety Data Sheets (SDSs) **– Revisions. Obtain and Train**
5. Employee Training and Information **– Update**
6. Hazardous Non-routine Tasks
7. Informing Other Employers/Contractors
8. List of Hazardous Chemicals **– Update Your Inventory**
9. Chemicals in Unlabeled Pipes
10. Program Availability

A copy of this program will be made available, upon request, to employeeds and their representatives.

OSHA Model Hazard Communication Plan:
http://www.osha.gov/Publications/osha3186.pdf

2. Chemical Inventory

Review Your Chemical Inventory

**Your chemical inventory should be reviewed annually*

- Prepare list of chemicals
- Survey the workplace for chemicals
  - Solids
  - Liquids
  - Gases
  - Fumes
- Check both the hazardous nature and potential for exposure
- Check for updated SDS's
  - New chemical receipts
  - Chemical purging
  - SDS management for both
- Attach chemical list to written program



3. Labels & Warnings

- Update the labels and warnings section of written program
  - Process and execution for container labeling
  - Worn, missing and unreadable labels are replaced as needed
- Check secondary container labels for consistency with the:
  - Revised HazCom regulation
  - Revised labels on containers being received
- Label identities should link to the SDS & chemical inventories
- Check warning signs & labels for OSHA Subpart Z-Toxic & Hazardous Substances. Many may be revised; eg § 1910.1027 Cadmium

GHS Pictograms



Health Hazard
- Carcinogen
- Mutagenicity
- Reproductive Toxicity
- Respiratory Sensitizer
- Target Organ Toxicity
- Aspiration Toxicity



Flame
- Flammable
- Pyrophorics
- Self-Heating
- Emits Flammable Gas
- Self-Reactive
- Organic Peroxides



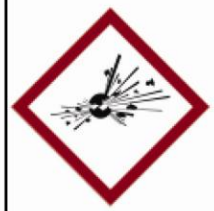
Exclamation Mark
- Irritant (skin or eye)
- Skin Sensitizer
- Acute Toxicity (harmful)
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer (non-mandatory)



Gas Cylinder
Gases Under Pressure



Corrosion
- Skin Corrosion/Burns
- Eye Damage
- Corrosive to Metals



Exploding Bomb
- Explosives
- Self-Reactives
- Organic Peroxides



Flame Over Circle
Oxidizers



Skull and Crossbones
Acute Toxicity
(Fatal or Toxic)



Environment (Non-Mandatory per OSHA)
Aquatic Toxicity

GHS Pictograms



Chemical Risks

1. Explosives
2. Flammables
3. Oxidizers
4. Gases Under Pressure



Health Risks

1. Severe Toxics
2. Acute Toxics
3. Health Dangers
4. Corrosives



Environmental Hazard Class*

*OSHA does not regulate the Environmental Hazard Class, however the EPA is expected to incorporate this element of GHS into their standards.

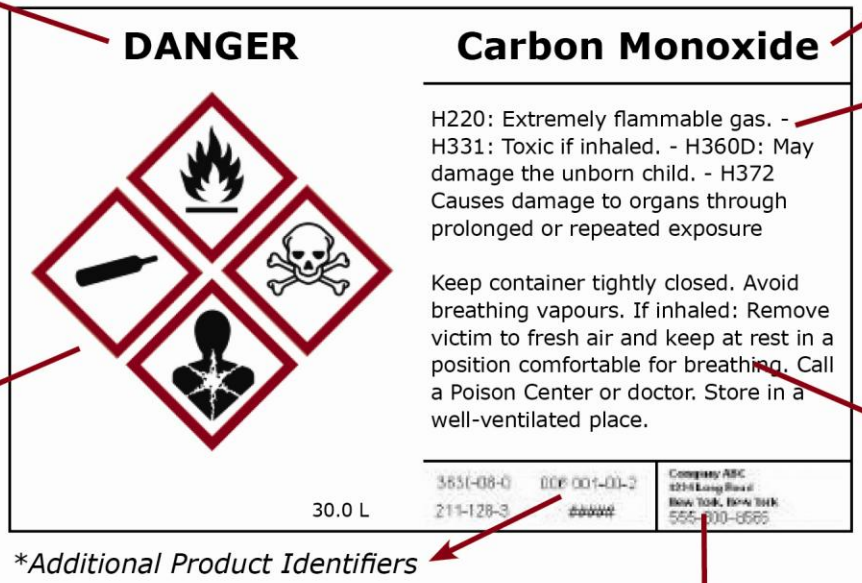
Central WHOLESALERS, INC.

Changes to the HazCom Label

Six Elements of the GHS Label Format

1. Signal Word
Indicates relative level of hazard. "Danger" is used for most severe instances, while "Warning" is less severe.

2. Symbols (Hazard Pictograms)
Convey health, physical and environmental hazard information with red diamond pictograms. May use a combination of one to five pictograms.



3. Product Name or Identifiers*

4. Hazard Statements
Phrases that describe the nature of hazardous products and oftentimes the degree of hazard.

5. Precautionary Statements
Phrases associated with each hazard statement that describe general preventative, response, storage or disposal precautions.

6. Manufacturer Information
Company name, address and telephone number.

Central WHOLESALERS, INC.

Hazard & Precautionary Statements

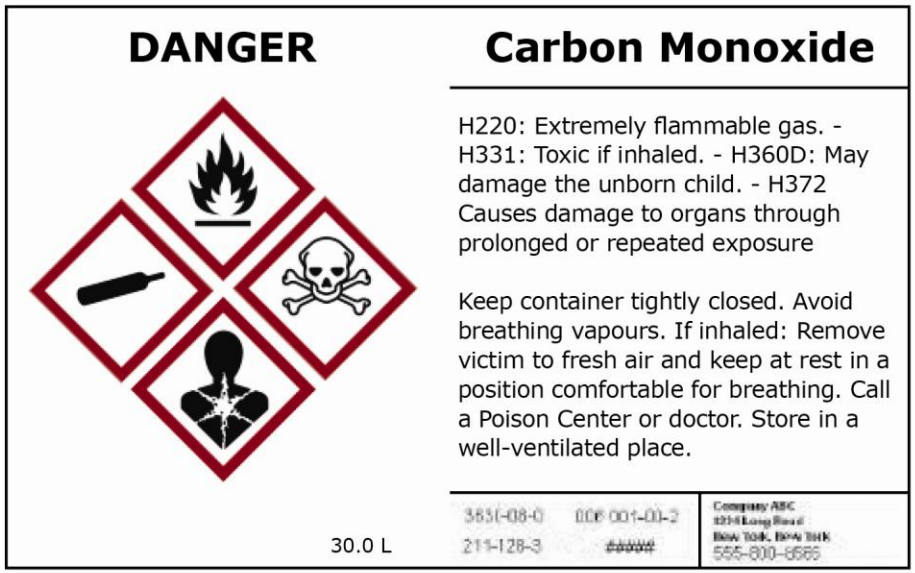
Hazard Statements

- Physical (H200 series codification) – Appendix B
  - H200 unstable explosive
  - H221 flammable gas
- Health (H300) – Appendix A
  - H300 fatal if swallowed
  - H301 toxic if swallowed
- Environmental (H400) – EPA
  - H400 Very toxic to aquatic life

Precautionary Statements

- General (P100) – P102 Keep out of reach of children
- Prevention (P200) – P235 Keep cool
- Response (P300) – P380 Evacuate area
- Storage (P400) – P403 Store in a well-ventilated place
- Disposal (P500) –P502 Refer to manufacturer for information on recycling

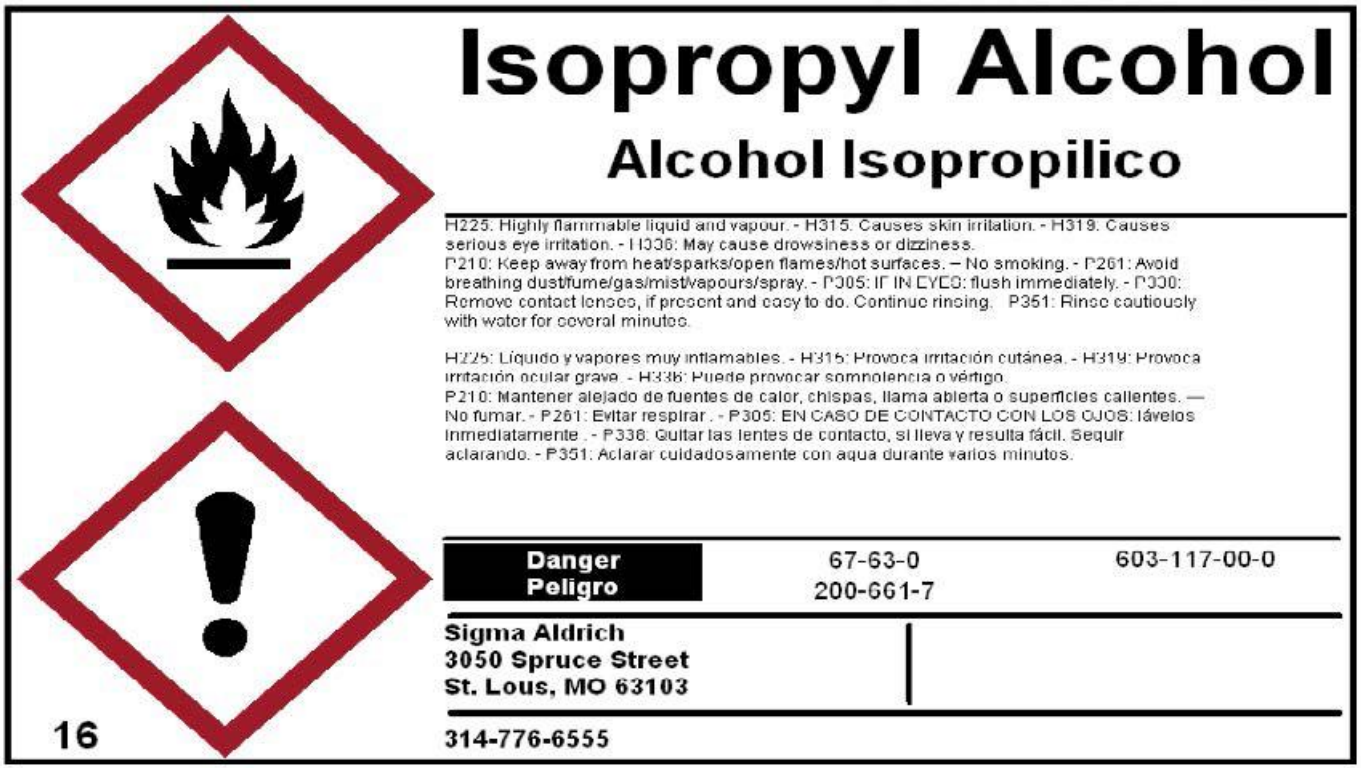
Benefits of a GHS-formatted Label



- Provides immediate visual reminders of hazards
- Past labels were inconsistent in terminology and visuals
- Standardized signal word, visuals and hazard statements are in place
- Pictograms reinforce message presented in the text while enhancing communication for low-literacy users
- Precautionary statements provide useful steps to protect and prevent from chemical related injuries

Central WHOLESALERS, INC.

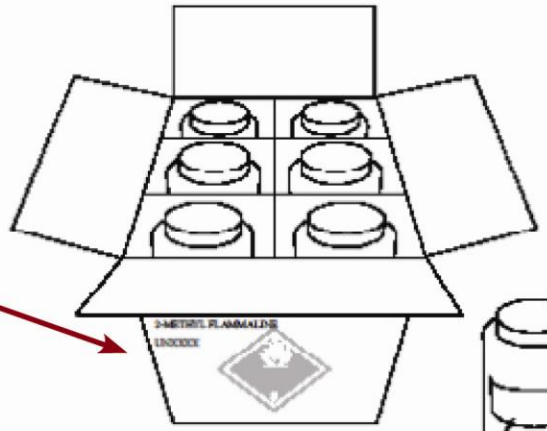
Example of Multi-Language Label

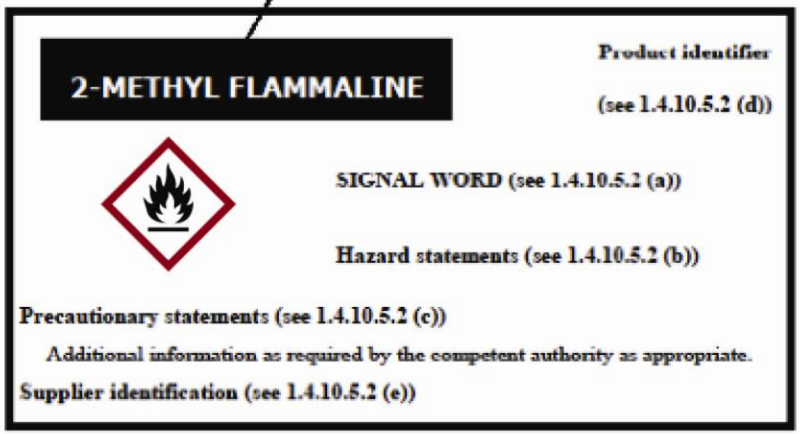


GHS Label Layouts on Packaging

Outer Packaging
Box with a flammable liquid transport label*

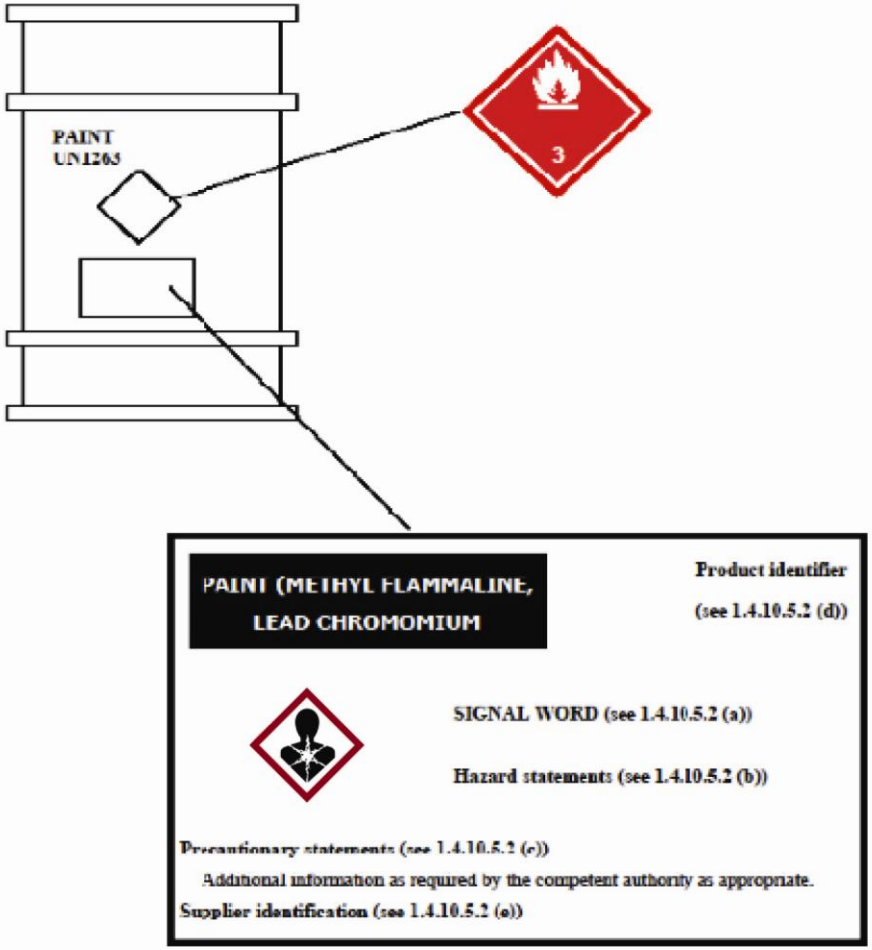
Inner Packaging
Plastic bottle with GHS hazard warning label





From GHS Purple Book
**Only the UN transport markings and labels are required for outer packaging.*

GHS Label Layouts on Packaging



From GHS Purple Book

Secondary Container Labeling

What is it?

"Secondary container" is defined as any container being used beyond the original manufacturer's bottle that the chemical was shipped in. This may include:

- Portable or working containers
- Storage bottles that are created for distribution of smaller amounts of the chemical



Do I need to label it? What does it need to say?

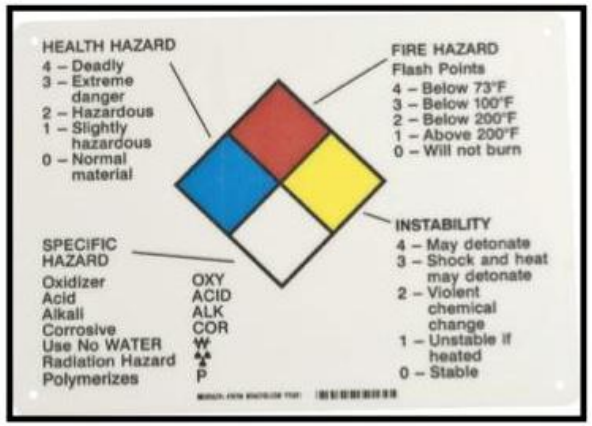
Portable/Working Containers

YES! The only time it does not need to be labeled is if the container is intended only for the immediate use of the employee who performs the transfer. The label needs to:

- Identity of the hazardous chemical
- Identify appropriate hazard warnings (words, pictures, symbols or a combination)
- Provide the employees with the specific information regarding the physical and health hazards of the hazardous chemicals

NFPA 704 and HMIS Systems

- There are currently **no plans to change the existing NFPA 704 and HMIS Systems and Classification.**
- These systems will still be used primarily to convey hazardous information to emergency first responders .





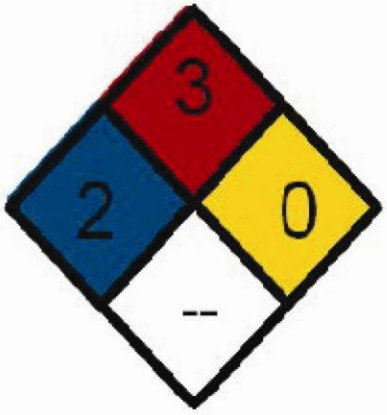
Central WHOLESALERS, INC.

FLAMMABLE LIQUIDS
(Classified in Accordance with Appendix B.6)

Hazard Category	Signal Word	Hazard Statement	Pictogram
1	Danger	Extremely Flammable Liquid and Vapor	Flame 
2	Danger	Highly Flammable Liquid and Vapor	
3	Warning	Flammable Liquid and Vapor	
Hazard Category	**Signal Word**	**Hazard Statement**	**Pictogram**
4	Warning	Combustible Liquid	No Pictogram

Central WHOLESALERS, INC.

Sample Chemical Label in Both Systems



Chemical name

Butanone

Common name

Methyl ethyl ketone
MEK

Manufacturer
Sigma Aldrich

Date
02/06/2013

Consult MSDS for further hazard information and instructions.

Sample Chemical Label in Both Systems





32 oz

Butanone

H225: Highly flammable liquid and vapour. - H302: Harmful if swallowed. - H315: Causes skin irritation. - H319: Causes serious eye irritation. - H332: Harmful if inhaled. - H336: May cause drowsiness or dizziness.
P210: Keey away from heat/sparks/open flames/hot surfaces. - No smoking. - P261: Avoid breathing dust/fume/gas/mist/ vapours/spray. - P305: IF IN EYES: Rinse cautiously with water for several minutes. - P338: Remove contact lenses, if present and easy to do. Continue rinsing. - P351: Rinse cautiously with water for several minutes.

Danger	78-93-3 201-159-0	606-002-00-3

Sigma Aldrich
3050 Spruce Street
St. Lous, MO 63103

314-776-6555

Central WHOLESALERS, INC.

Butanone Chemical Hazard Information in SDS

HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards: Flammable Liquid, Target Organ Effect, Irritant

Target Organs: Central Nervous System

GHS Classification

Flammable Liquids (Category 2) ← **Flammability Category 2**

Acute Toxicity, Oral (Category 5)

Acute Toxicity, Inhalation (Category 5)

Skin Irritation (Category 2)

Eye Irritation (Category 2A)

Specific Target Organ Toxicity – Single Exposure (Category 3)

HMIS Classification

Health Hazard:	**2**
Chronic Health Hazard:	*****
Flammability:	**3** ← **Flammability Category 3**
Physical Hazards:	**0**

HMIS Classification

Health Hazard:	**2**
Fire:	**3**
Reactivity Hazard:	**0**

*Information excerpted from Sigma Aldrich Butanone MSDS, revised 05/08/2012

Central WHOLESALERS, INC.

Secondary Container Labeling





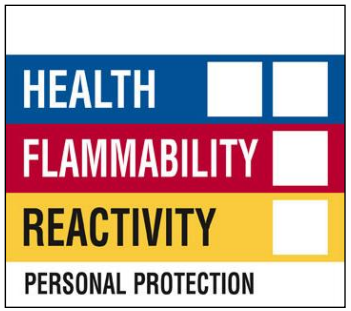
- **Best Practice:** Label your secondary container chemicals with the same GHS format as the way they came into the facility
- **Best Practice:** Use a dual-labeled approach to where you show both your NFPA/HMIS label alongside the GHS label
- Employers may choose to label workplace containers with the same GHS label that is used to ship containers under the revised rule
  - With label alternatives that meet the requirements for the standard
- National Fire Protection Association (NFPA) 704 Hazard Rating and the Hazardous Material Information System (HMIS) for labeling are considered acceptable for workplace containers
  - Information supplied on these labels must be consistent with the revised HCS (e.g. no conflicting hazard warnings or pictograms)

Central WHOLESALERS, INC.

Conflict with NFPA/HMIS?

NFPA made the following comments in December 2009:

- *"NFPA believes that the numbered hazard categories resulting from implementation of GHS will cause confusion among traditional users of the NFPA hazard rating and labeling systems. The NFPA 704 hazard rating system has been in effect since the 1950's and has become a key element of MSDS information over the past 20 years."*
- *"Adoption of the NFPA704 rating and labeling system through building or fire codes throughout the United States means that the recognized symbol and forms are prominently displayed and their posting is an important safety training topic for employers and employees. Additionally, the system is intended to advise the emergency responders in a readily recognizable manner of the immediate hazards associated with a facility."*





Central WHOLESALERS, INC.

OSHA's Response

OSHA responded to this and other public comments regarding perceived confusion of the GHS by stating:

"OSHA recognizes that the approach to numbering hazard categories in the GHS differs from that used in the HMIS and NFPA systems. However, the Agency does not believe that this will result in confusion. GHS category/numbers determine the label elements that would be required for a chemical, but the category numbers themselves would not appear on labels. Where GHS category numbers would appear on the SDS (Section 2–Hazards identification), they would be accompanied by the label elements for the chemical, which would clearly indicate the degree of hazard. OSHA, therefore, does not anticipate that this information will cause employees to become confused. Moreover, the approach taken in the GHS (i.e., assigning higher category numbers to denote less serious hazards) is consistent with the approach used in the DOT transport regulations for many years."

Learning Checkpoint 2



1. <u>True or False:</u>
   Blank red diamonds are permitted on a label to improve the likelihood that users will notice and react to the warning on the label

2. What are the signal words used to indicate relative level of severity of hazard on labels? (circle all that apply)

   a. Warning
   b. Caution
   c. Explosive
   d. Danger

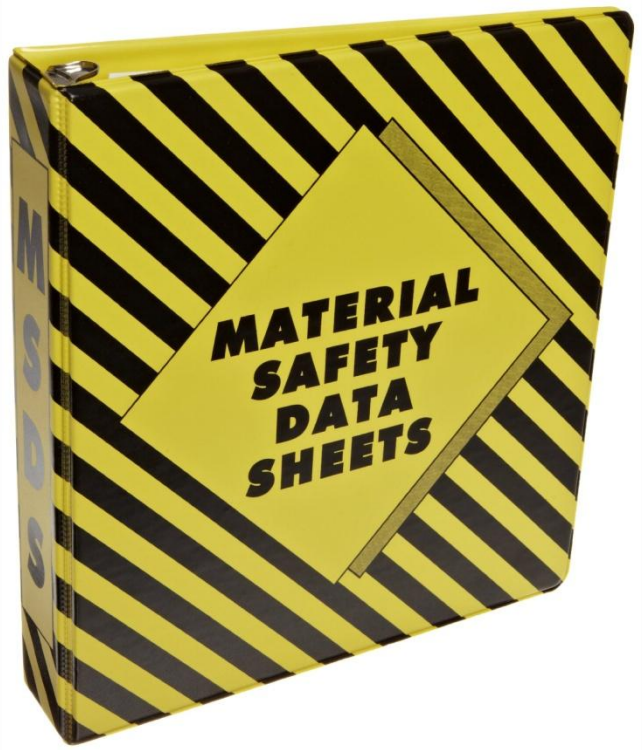
3. What does the pictogram with the exclamation point represent?

   a. Irritant
   b. Skin sensitizer
   c. Acute Toxicity
   d. Narcotic Effects
   e. All of the above
   f. None of the above



MSDS Vs. SDS

- In the past, OSHA's Hazard Communication Standard (HCS) specifies certain information that must be included on MSDSs, but does not require that any particular format be followed in presenting this information.
- In order to promote consistent presentation of information, OSHA recommended that MSDSs follow the 16-section format established by the American National Standards Institute (ANSI) standard for preparation of MSDSs (Z400.1).



ANSI Z 400

Section 1: Chemical Product and Company Identification

Section 2: Composition, Information or Ingredients

Section 3: Hazard Identification

Section 4: First Aid Measures

Section 5: Fire-Fighting Measures

Section 6: Accidental Release Measures

Section 7: Handling and Storage

Section 8: Exposure Controls and Personal Protection

Section 9: Physical and Chemical Properties

Section 10: Stability and Reactivity

Section 11: Toxicological Information

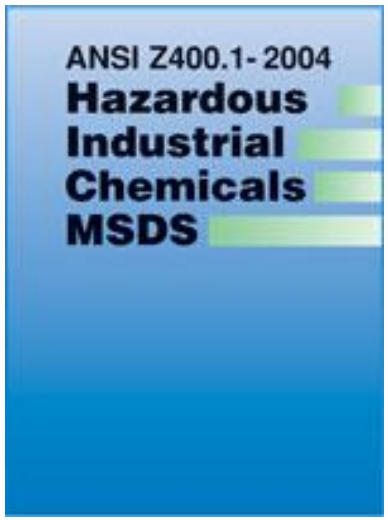
Section 12: Ecological Information

Section 13: Disposal Considerations

Section 14: Transport Information

Section 15: Regulatory Information

Section 16: Other Information



4. Safety Data Sheet Documents

- Check your safety data sheets (SDSs) against your chemical inventory
  - Do you have an SDS for each chemical in your inventory?
  - Do you have SDSs for other chemicals?
  - Have duplicates and obsolete SDSs been removed?
- Contact chemical suppliers to receive or learn when they will begin supplying SDSs according to the new format
- Are the SDSs readily accessible to employees?



Central WHOLESALERS, INC.

Safety Data Sheet Changes

New SDS Order and Elements

1. Identification of the substance or mixture and of the supplier
2. Hazards identification
3. Composition/information on ingredients
4. First aid measures
5. Firefighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure controls/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 including information on preparation and revision of the SDS

- GHS harmonization will standardize the order of SDS information for ease of use for employees along with improved accuracy of the information presented.
- Previously known as Material Data Safety Sheets (MSDS), it is now referred to as Safety Data Sheets (SDS).
- The number of sections has been increased from a nine section format to 16 sections.

**Sections are not required in final rule, but suggested by original U.N. GHS publication and may be added by employers

So Who's Responsible?

Hazard Classification

- Chemical manufacturers analyze existing formulations and re-classify products to new GHS standards

Chemical Labels

- Chemical manufacturers update primary container product labels to meet GHS standards and distribute upon purchase
- Employers update secondary container labels and ensure all chemicals in the facility are clearly labeled and marked
- **Safety Data Sheets (SDS)**
- Chemical manufacturers update all SDS to new 16-section format and distribute to customers
- Employers ensure updated SDS are made available to all employees on-site

5. Employee Training

OSHA has not proposed to change training provisions under the HCS other than to initially train employees on new GHS elements.

Minor revisions to the HCS on training:

- Labels and SDSs must be adequately explained to employees.
- Employees must understand standardized headings and sequence of SDS information.
- Training on the standardized label elements must also be given.

HCS training is meant to explain and reinforce information to the employees on areas of labels, SDSs, protective measures to be taken and the understanding of chemical hazards in their workplace.

Training is crucial! A study found employees did not understand **1/3 of the safety and health information** with MSDSs, while **40% of individuals** reading an MSDS had overall difficulty understanding.

General Elements of HazCom/GHS Training

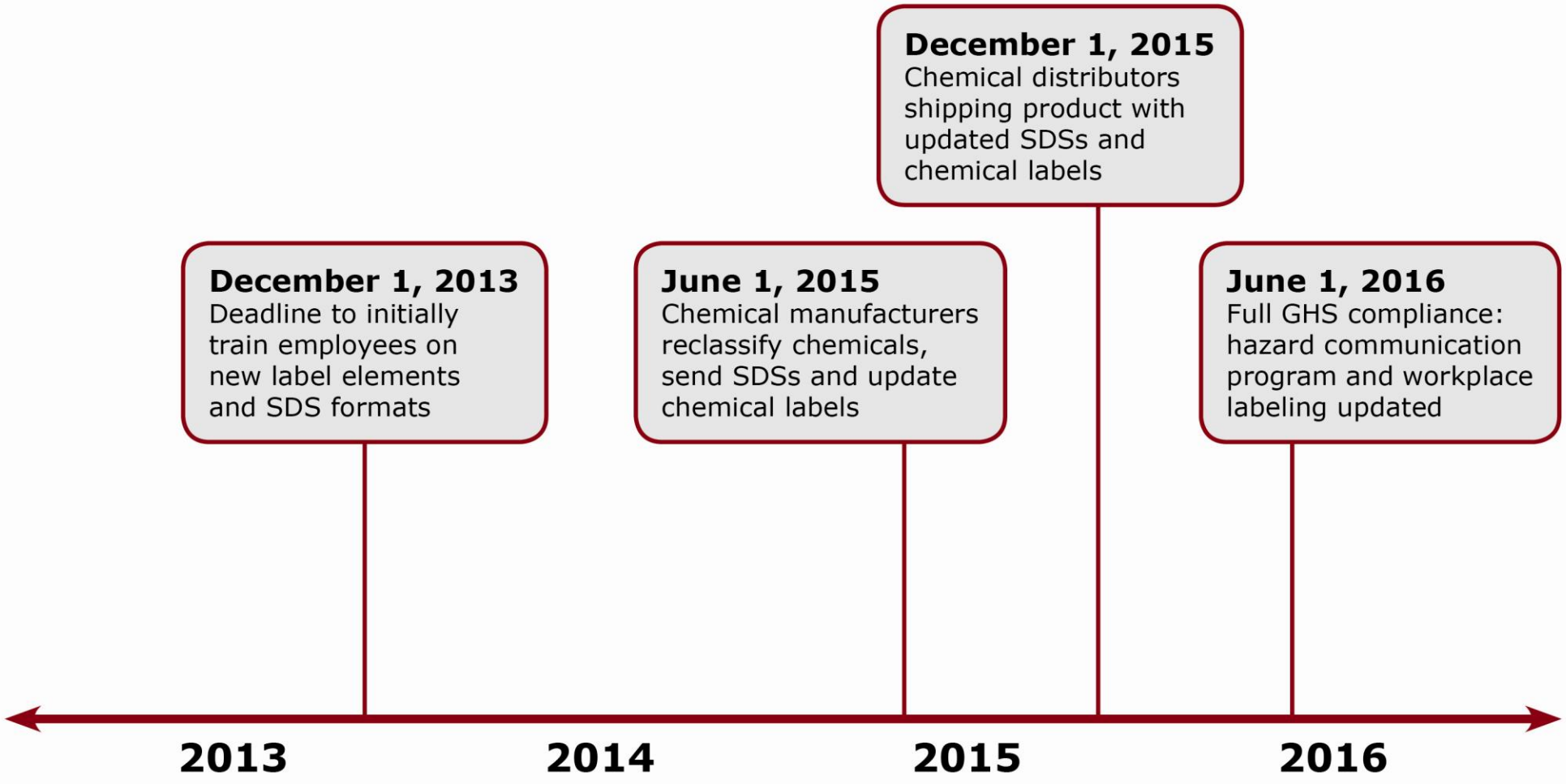
1. Understanding the new Hazard Communication Standard
2. Understanding the Safety Data Sheet
3. Understanding labels
   - Pictograms
   - Signal words
   - Hazard statements
   - Precautionary statements
4. Understanding relationship of SDS and label
5. Understanding health information



OSHA Draft Model for HazComTraining:
http://www.osha.gov/dsg/hazcom/MTP101703.html

Central WHOLESALERS, INC.

GHS Transition Timeframe



Central WHOLESALERS, INC.

Effective Dates

Effective Completion Date	Requirements	Who
December 1, 2013	Train employees on the new label elements and safety data sheet (SDS) format.	Employers
June 1, 2015* December 1, 2015	Compliance with all modified provisions of this final rule, except: The Distributor shall not ship containers labeled by the chemical manufacturer or importer unless it is a GHS label	Chemical manufacturers, importers, distributors and employers
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.	Employers
Transition period to the effective completion dates noted above	May comply with either 29 CFR 1910.1200 (the final standard), or the current stan-dard, or both	Chemical manufacturers, importers, distributors, and employers

Learning Checkpoint 3



1. <u>True or False:</u>
   Employers shall train employees regarding the new label elements and safety data sheets format by December 1, 2013.

2. <u>True or False:</u>
   All organizations must comply with the updated HAZCOM-GHS requirements by January 2014.

3. <u>True or False:</u>
   It is acceptable from a compliance standpoint to use either or both of the HAZCOM versions (1994 vs2012) during the transition period.

Getting Ready for GHS

Take immediate action on:

1. Staying alert for newly formatted SHS's and capture them on file
2. Updating your chemical inventory
3. Talking to chemical suppliers about their transition plans
4. Chemical manufacturers and importers should begin preparing for/authoring GHS compliant SDS's and labeling

Coming up you will need to:

1. Be informed on regulation guidelines by December 1, 2013
2. Begin implementing GHS by the specified timeframe by December 1, 2013
3. Train your employees on GHS by December 1, 2013

In the future be prepared to:

1. Confirm that your secondary labeling system is GHS compliant. Use updated (GHS) labeling software to create and produce your labels by June 1, 2016

Central WHOLESALERS, INC.

Impact on Safety and IH Professionals

- Become familiar with the new system
- Collect new SDSs as provided by suppliers and incorporate them into the existing SDS system (or use a commercial service)
- Get new GHS labels for "shipped containers"
  - Employers can use other systems for workplace labeling
- Train employees about new labels and SDS



Central WHOLESALERS, INC.

Safe Work Practices

- Always **read** the container labels of the substances you handle so you are aware of their potential hazards.
- **Use** the Safety Data Sheets for more detailed information.
- **Follow** the established work procedures at your facility at all times.
- **Use** the proper Engineering Controls.
- **Use** personal protective equipment (PPE) when handling hazardous substances.

Guidance and Outreach

- Press Release: US Department of Labor's OSHA publishes final rule to update the Hazard Communication Standard (HCS)
- Guidance
  - OSHA briefs
  - Fact sheet
  - Quick cards



Central WHOLESALERS, INC.

Post Course Quiz



1. The Pictogram in the upper right is for _____.
2. Training in the hazards of the chemical is initially and when _____.
3. _____ use containers would not require a label.

Central WHOLESALERS, INC.