

Hazard Communications

OSHA 10-Hour General Industry Outreach Training

Introduction

Lesson objectives:

1. Identify the employer's responsibilities under the HCS, including training requirements.
2. Identify components of a Hazard Communication program.
3. Describe requirements of the different types of Hazard Communication labels.
4. Locate pertinent information about chemicals on labels, including other forms of hazard communication, to ensure "right to understanding" provisions of GHS requirements.

Introduction

Case study



Source: OSHA

Introduction

HCS/GHS

- Save lives
 - Approximately 43 per year (deaths)
 - Approximately 585 per year injuries/illnesses
- Save \$
 - \$475.2M in increased productivity
 - \$32.2M in cost savings

Introduction

Seven major elements in the GHS-aligned Hazard Communication Standard



Source: OSHA

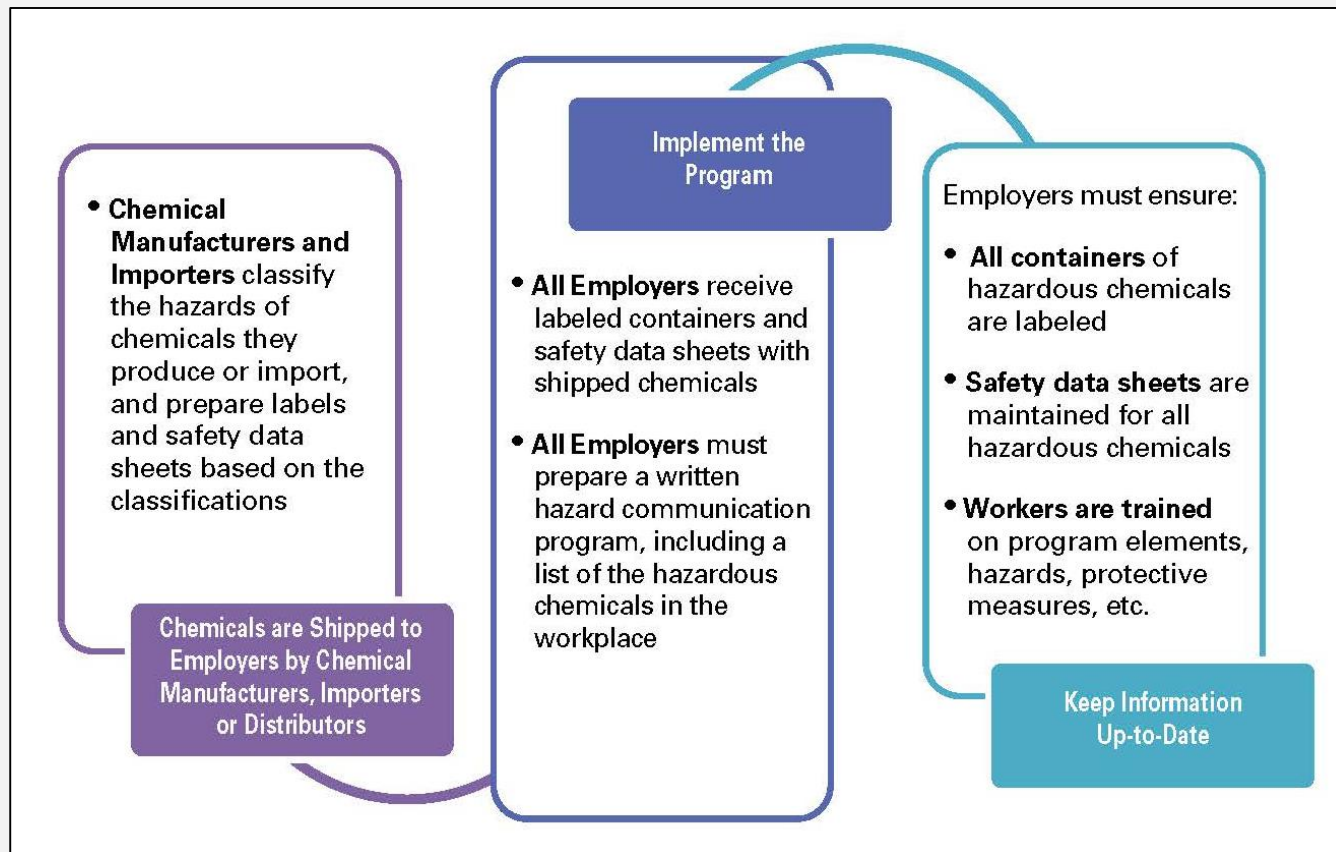
Employer Responsibilities

Employer responsibilities under the HCS:

- Ensure labels are on incoming labels and not defaced
- Maintain SDSs from shipments
- Obtain SDSs if not received
- Ensure SDSs are readily accessible
- Ensure chemicals in workplace are properly labeled, tagged, or marked
- Provide information and training to employees
- Provide information/access for employees in multi-employer workplaces
- Develop, implement, and maintain a written hazard communication program

Employer Responsibilities

How hazard communication works:



Source: OSHA

Hazard Communication Program

Requirements for a written program:

- Develop, implement, and maintain a written hazard communication program
- Main intent is to ensure compliance with standard in a systematic way that coordinates all elements

Hazard Communication Program

Components of written program:

- Lists of hazardous chemicals present at worksite
- Availability of SDSs to employees and downstream employers
- Labeling of chemical containers
- Training programs regarding hazards of chemicals and protective measures

Hazard Communication Program

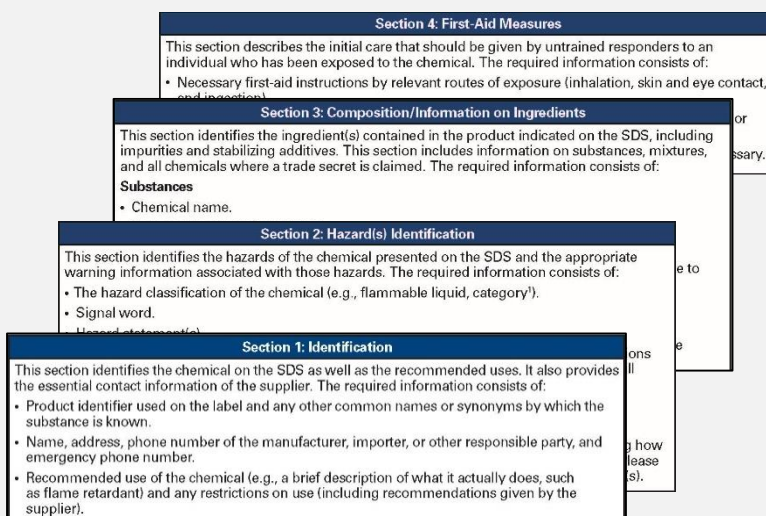
List of hazardous chemicals:

- Use product identifier
 - Product name, common name or chemical name
 - Same as name used on SDS and label
- Inventory of chemicals – employer must have available an SDS for each
- Covers all chemicals in all forms, whether contained or not
- Include chemicals in containers, pipes, and those generated by work operations

Hazard Communication Program

Safety data sheet (SDS):

- Available and accessible to workers
- Required for all hazardous chemical used
- Do not use hazardous chemicals if there is no SDS available
- 16-section format



Source: OSHA

Hazard Communication Program

SDS documentation:

- Designate person(s) responsible for obtaining and maintaining SDSs
- Describe how SDSs are maintained and how employees can access them
- Procedures if SDS is not received with first shipment
- Must have SDS for each chemical; train workers on SDS format and use

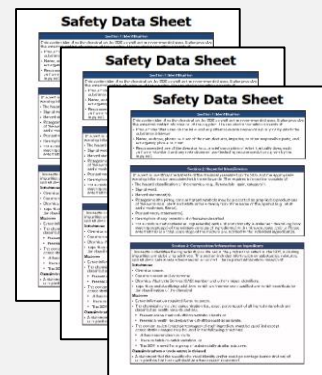


Source: OSHA

Hazard Communication Program

SDS 16-section format:


- Section 1: Identification
- Section 2: Hazard(s) identification
- Section 3: Composition/information on ingredients
- Section 4: First-aid measures
- Section 5: Fire-fighting measures
- Section 6: Accidental release measures
- Section 7: Handling and storage
- Section 8: Exposure control/personal protection



Source: OSHA

Hazard Communication Program

- 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



Not regulated
by OSHA

Hazard Communication Program

Example of New Format SDS

GHS System and Labels Down in Section 2

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Product XYZ
Synonyms :
SDS Number : 888100008809 **Version** : 1.1
Product Use Description : Fuel
Company :
Chemtrec (Emergency Contact) : (800) 424-9300

SECTION 2. HAZARDS IDENTIFICATION

Classifications : Flammable Liquid – Category 1 or 2 depending on formulation.
Aspiration Hazard – Category 1
Carcinogenicity – Category 2
Specific Target Organ Toxicity (Repeated Exposure) – Category 2
Specific Target Organ Toxicity (Single Exposure) – Category 3
Skin Irritation – Category 2
Eye Irritation – Category 2B
Chronic Aquatic Toxicity – Category 2

Pictograms :



Signal Word : **Danger**

Source: OSHA

Hazard Communication Program

Labeling:

- All containers of hazardous materials must be labeled
- Immediate warning
- Snapshot of hazards and protective information

Hazard Communication Program

Documentation for labeling:

- Designate person(s) responsible for labeling compliance
- Describe alternatives to labeling of stationary process containers
- Ensure all workplace containers are labeled appropriately
- Labels included in training (shipping and workplace containers)
- Procedures for reviewing/updating workplace label information

Hazard Communication Program

Requirements for **workplace labels**:

- Employers can create own labeling system that works for their workplace/employees
- Can choose same label required for shipped containers or alternative labels as long as they provide general information about hazards
- Train employees to understand

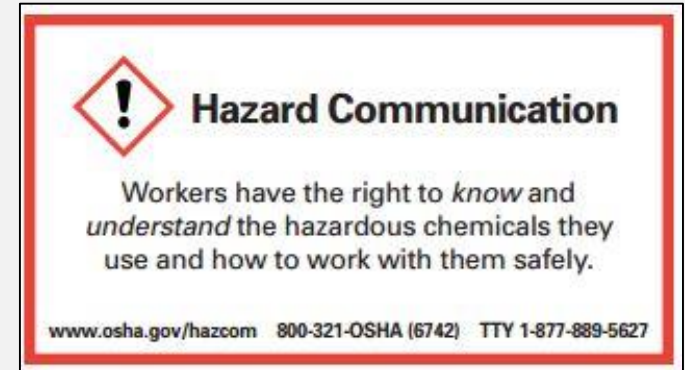


Source: OSHA

Hazard Communication Program

Training requirements:

- Train employees on hazardous chemicals in their work area
 - Before initial assignment
 - When new hazards are introduced
 - Nonroutine tasks
- Include in training
 - Methods/observations to determine presence/release of chemical in work area
 - Hazards of chemicals
 - Appropriate protective measures
 - Where and how to obtain additional information



Source: OSHA

Hazard Communication Labels

Types of labels:

- HCS shipping labels
- HCS workplace labels
- NFPA 704 labels
- HMIS labels
- DOT shipping labels, placarding, and markings




Source of graphics: OSHA

Hazard Communication Labels

Required elements for HCS shipping labels:

- Product identifier
- Signal word
- Hazard statement(s)
- Precautionary statement(s)
- Pictogram
- Name, address, telephone number

SAMPLE LABEL

<p style="text-align: center;">PRODUCT IDENTIFIER</p> <p>CODE Product Name</p> <p style="text-align: center;">SUPPLIER IDENTIFICATION</p> <p>Company Name Street Address City, State _____ Postal Code, Country _____ Emergency Phone Number _____</p> <p style="text-align: center;">PRECAUTIONARY STATEMENTS</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>In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO₂) fire extinguisher to extinguish.</p> <p>First Aid 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;">HAZARD PICTOGRAMS</p>  <p style="text-align: center;">SIGNAL WORD Danger</p> <p style="text-align: center;">HAZARD STATEMENT Highly flammable liquid and vapor. May cause liver and kidney damage.</p> <p style="text-align: center;">SUPPLEMENTAL INFORMATION</p> <p>Directions for use _____ _____ _____ Fill weight Lot Number _____ Gross weight Fill Date _____ Expiration Date _____</p>
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Source: OSHA

Hazard Communication Labels

Figure 5: Example of Required HCS Label Elements

How the hazardous chemical is identified

Product Identifier

Pictogram (Symbol in Red Frame)



Signal Word (Danger)

Hazard Statement(s) (Extremely flammable gas)

Pictogram Statement(s) (Keep away from heat and open flames. No smoking. Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. Store in well-ventilated place.)

Name, Address, and Telephone Number of Manufacturer, Importer, or Other Responsible Party










Contact information of Responsible Party

Source: OSHA

Hazard Communication Labels



Figure 3: HazCom 2012 Pictograms










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

Source: OSHA

Hazard Communication Labels

Figure 3: HazCom 2012 Pictograms



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Source: OSHA

Hazard Communication Labels

Figure 3: HazCom 2012 Pictograms



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Not regulated by OSHA

Source: OSHA

Hazard Communication Labels

GHS Label Elements

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

Product Identifier
Pictogram (Symbol in Red Frame)



Describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical, or improper storage or handling.

Signal Word (Danger)

Hazard Statement(s) (Extremely flammable gas)

Precautionary Statement(s) (Keep away from heat and open flames. No smoking. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. Store in well-ventilated place.)

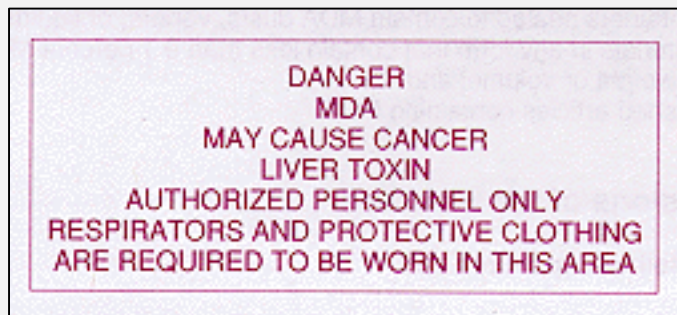
Name, Address, and telephone Number
of Manufacturer, Importer, or Other Responsible Party

Source: OSHA

Hazard Communication Program

Requirements for **workplace labels**:

- Same information as label from manufacturer or product identifier and words, pictures, symbols or combination thereof
- May include signs, placards, process sheets, batch tickets, operation procedures, other written materials



Source of graphics: OSHA



Hazard Communication Labels

- Alternative workplace labels:
 - Permitted for workplace labels
 - Must provide at least general information regarding hazards of chemicals
 - Hazard warnings or pictograms that conflict with HCS label elements cannot be used
 - Examples: NFPA 704 and HMIS



Source: OSHA

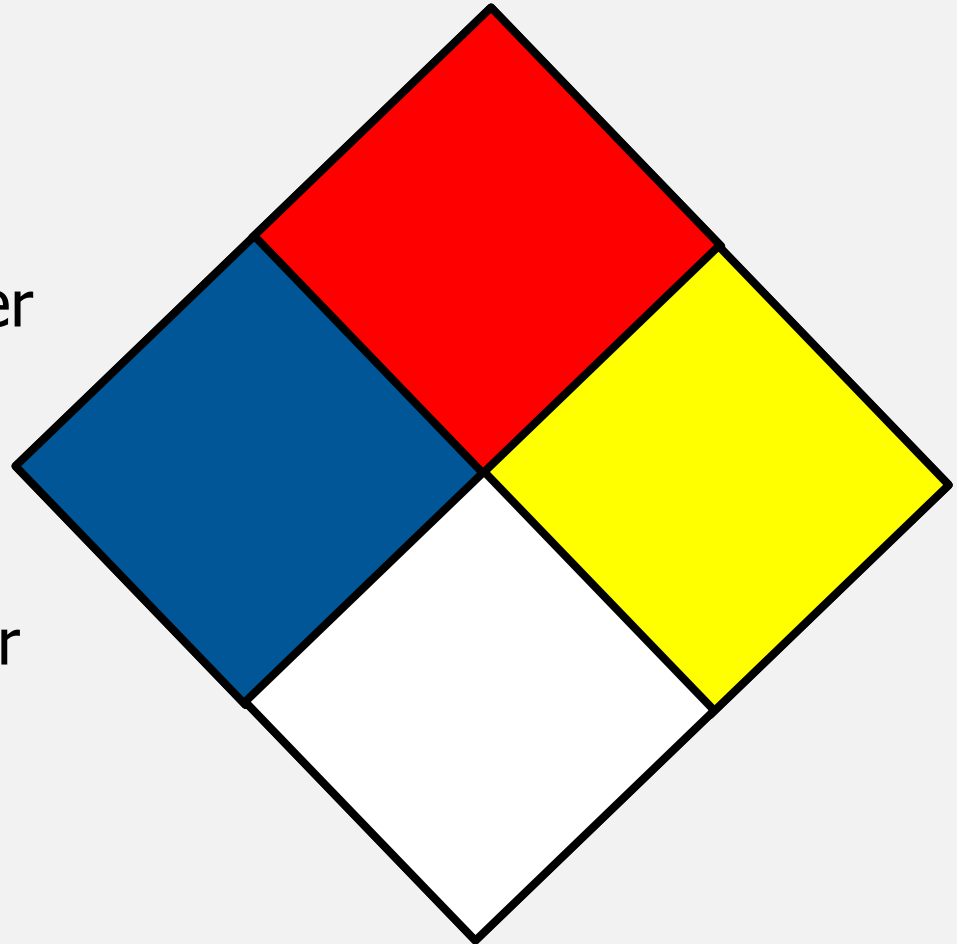


Source: TEEEX

Hazard Communication Labels

Other labels:

- NFPA 704
 - Overall diamond shape made up of four smaller diamonds
 - Each smaller diamond is a different color
 - Numbers within smaller diamonds represent severity of hazard



Source: OTIEC

Hazard Communication Labels

– NFPA 704 – hazards and severity ratings

White = Other Special Hazards

W = reactivity to water

OX = oxidizer

SA = simple asphyxiant

1 = slight hazard

2 = moderate hazard

3 = extreme hazard

4 = deadly hazard

Flammability Hazard

Blue = Health Hazards

0 = normal material that poses no health

Red = Flammability Hazards

0 = will not burn

1 = flashpoint above 200°F

2 = flashpoint between 100 – 200°F

3 = flashpoint below 100°F

4 = flashpoint less than 73°F

Other Special Hazard

Source: OTIEC

Hazard Communication Labels



Hazard Communication Labels

- HMIS label
 - Intended for “In-plant” (workplace) labeling compliance
 - Color-coded bars
 - Numerical scale, 0-4, with 0 as lowest hazard and 4 as highest hazard
 - 0 = minimal hazard
 - 1 = slight hazard
 - 2 = moderate hazard
 - 3 = serious hazard
 - 4 = severe hazard

<i>(Product identifier)</i>	
HEALTH	<input type="text"/> <input type="text"/>
FLAMMABILITY	<input type="text"/>
PHYSICAL HAZARD	<input type="text"/>
PERSONAL PROTECTION	<input type="text"/>

Source: OTIEC

Hazard Communication Labels

- HMIS hazard indicators

<i>(Product identifier)</i>	
HEALTH	<input type="checkbox"/> <input type="checkbox"/>
FLAMMABILITY	<input type="checkbox"/>
PHYSICAL HAZARD	<input type="checkbox"/>
PERSONAL PROTECTION	<input type="checkbox"/>

Source: OTIEC

PPE Index:

A = safety glasses

B = safety glasses + gloves

C = safety glasses + gloves + apron

D = face shield + gloves + apron

E = safety glasses + gloves + dust respirator

F = safety glasses + gloves + apron + dust respirator

G = safety glasses + gloves + vapor respirator

H = splash goggles + gloves + apron + vapor respirator

I = safety glasses + gloves + dust and vapor respirator

J = splash goggles + gloves + apron + dust and vapor respirator

K = air-line hood or mask + gloves + full suit + boots

X = ask supervisor or safety specialist

Hazard Communication Labels

Ammonium Hydroxide		
HEALTH	*	2
FLAMMABILITY		0
PHYSICAL HAZARD		0
PERSONAL PROTECTION		J

Source: OTIEC

Hazard Communication Labels

- DOT shipping containers – marking, labeling, and placarding
 - Uses graphic elements on square-on-point placards or labels to identify shipments of hazardous materials
 - Square-on-points have backgrounds of various colors
 - Where shipping container is also container used in workplace, workers must be made aware of DOT pictograms
 - DOT Classification – groups hazardous materials based on dangers posed in transportation; 9 classes

Hazard Communication Labels

- Labels
- Placards
- Markings



Source: OSHA



Source: TEEEX









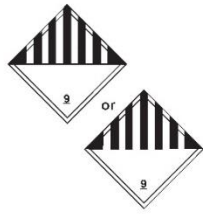




Source: DOT - PHMSA

Hazard Communication Labels

DOT Warning Labels

Hazardous Materials Warning Labels
Actual label size: at least 100 mm (3.9 inches) on all sides

<p>CLASS 1 Explosives: Divisions 1.1, 1.2, 1.3, 1.4, 1.5, 1.6</p>  <p style="text-align: center;">§172.411</p>	<p>CLASS 2 Gases: Divisions 2.1, 2.2, 2.3</p>  <p style="text-align: center;">§172.405(a), §172.415, §172.416, §172.417</p>	<p>CLASS 3 Flammable Liquid</p>  <p style="text-align: center;">§172.419</p>	<p>CLASS 4 Flammable Solid, Spontaneously Combustible, and Dangerous When Wet: Divisions 4.1, 4.2, 4.3</p>  <p style="text-align: center;">§172.420, §172.422, §172.423</p>	<p>CLASS 5 Oxidizer, Organic Peroxide: Divisions 5.1 and 5.2</p>  <p style="text-align: center;">§172.426, §172.427</p>
<p>* Include compatibility group letter. ** Include division number and compatibility group letter.</p>				
<p>CLASS 6 Poison (Toxic), Poison Inhalation Hazard, Infectious Substance: Divisions 6.1 and 6.2</p>  <p style="text-align: center;">§172.323, §172.405(c), §172.429, §172.430, §172.432</p>	<p>CLASS 7 Radioactive</p>  <p style="text-align: center;">§172.436, §172.438, §172.440, §172.441</p>	<p>CLASS 8 Corrosive</p>  <p style="text-align: center;">§172.442</p>	<p>CLASS 9 Miscellaneous Hazardous Material</p>  <p style="text-align: center;">§172.446</p>	<p>Cargo Aircraft Only</p>  <p style="text-align: center;">§172.448</p> <p>Empty Label</p>  <p style="text-align: center;">§172.450</p>

For Regulated Medical Waste (RMW), an Infectious Substance label is not required on an outer packaging if the OSHA Biohazard marking is used as prescribed in 29 CFR 1910.1030(g). A bulk package of RMW must display a BIOHAZARD marking.

Source: DOT - PHMSA

Hazard Communication Labels

DOT Warning Placards

Hazardous Materials Warning Placards

Actual placard size: at least 250 mm (9.84 inches) on all sides

CLASS 1 Explosives	CLASS 2 Gases	CLASS 3 Flammable Liquid and Combustible Liquid	CLASS 4 Flammable Solid, Spontaneously Combustible, and Dangerous When Wet		
<p>§172.522 §172.523 §172.524 §172.525</p> <p>* For Divisions 1.1, 1.2, or 1.3, enter division number and compatibility group letter, when required; placard any quantity. For Divisions 1.4, 1.5, and 1.6, enter compatibility group letter, when required; placard 454 kg (1,001 lbs) or more.</p>	<p>§172.528 §172.530 §172.532 §172.540</p> <p>For NON-FLAMMABLE GAS, OXYGEN (compressed gas or refrigerated liquid), and FLAMMABLE GAS, placard 454 kg (1,001 lbs) or more gross weight. For POISON GAS (Division 2.3), placard any quantity.</p>	<p>§172.542 §172.544</p> <p>For FLAMMABLE, placard 454 kg (1,001 lbs) or more. GASOLINE may be used in place of FLAMMABLE placard displayed on a cargo tank or portable tank transporting gasoline by highway. Placard combustible liquid transported in bulk. See §172.504(f)(2) for use of FLAMMABLE placard in place of COMBUSTIBLE. FUEL OIL may be used in place of COMBUSTIBLE on a cargo or portable tank transporting fuel oil not classed as a flammable liquid by highway.</p>	<p>§172.546, §172.547, §172.548</p> <p>For FLAMMABLE SOLID and SPONTANEOUSLY COMBUSTIBLE, placard 454 kg (1,001 lbs) or more. For DANGEROUS WHEN WET (Division 4.3), placard any quantity.</p>		
CLASS 5 Oxidizer & Organic Peroxide	CLASS 6 Poison (Toxic) and Poison Inhalation Hazard	CLASS 7 Radioactive	CLASS 8 Corrosive	CLASS 9 Miscellaneous	Dangerous
<p>Organic Peroxide, Transition-2011 (rail, vessel, and aircraft) 2014 (highway)</p> <p>§172.550, §172.552</p> <p>For OXIDIZER and ORGANIC PEROXIDE (other than TYPE B, temperature controlled), placard 454 kg (1,001 lbs) or more. For ORGANIC PEROXIDE (Division 5.2), Type B, temperature controlled, placard any quantity.</p>	<p>§172.504(f)(10), §172.554, §172.555</p> <p>For POISON (PGI or PGII), other than inhalation hazard and POISON (PGIII), placard 454 kg (1,001 lbs) or more. For POISON-INHALATION HAZARD (Division 6.1), inhalation hazard only, placard any quantity.</p>	<p>§172.556</p> <p>Placard any quantity - packages bearing RADIOACTIVE YELLOW-III labels only. Certain low specific activity radioactive materials in "exclusive use" will not bear the label, but the radioactive placard is required for exclusive use shipments of low specific activity material and surface contaminated objects transported in accordance with §172.504(e) Table 1 and §173.427(a)(6).</p>	<p>§172.558</p> <p>For CORROSIVE, placard 454 kg (1,001 lbs) or more.</p>	<p>§172.560</p> <p>Not required for domestic transportation. A bulk packaging containing a Class 9 material must be marked with the appropriate ID number displayed on a Class 9 placard, an orange panel, or a white square-on-point display.</p>	<p>§172.521</p> <p>A freight container, unit load device, transport vehicle, or rail car which contains non-bulk packages with two or more categories of hazardous materials that require different placards specified in Table 2 §172.504(e) may be placarded with DANGEROUS placards instead of the specific placards required for each of the materials in Table 2. However, when 1,000 kg (2,205 lbs) or more of one category of material is loaded at one loading facility, the placard specified in Table 2 must be applied.</p>
					<p>§172.315(a)(2) (Vessel transport only).</p>






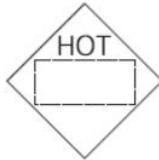
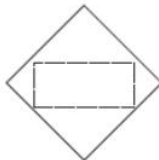

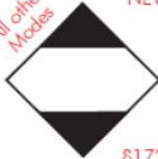

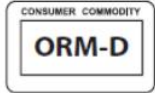


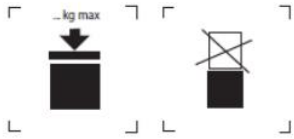

Safety begins with communication!

Source: DOT - PHMSA

Hazard Communication Labels

DOT Markings

HAZARDOUS MATERIALS MARKINGS

<p>Package Orientation (Red or Black)</p>  <p>§172.312(a)</p>	<p>Keep Away from Heat</p>  <p>§172.317</p>	<p>OVERPACK</p>  <p>§173.25(a)(4)</p>	<p>Fumigant Marking (Red or Black)</p>  <p>§172.302(g) and §173.9</p>	<p>INHALATION HAZARD</p>  <p>§172.313(a)</p>	<p>HOT</p>  <p>§172.325</p>	<p>Biological Substances, Category B</p>  <p>§172.332(a)</p>	<p>UN3373</p>  <p>§173.199 (a)(5)</p>
<p>All other Modes</p>  <p>§172.315</p>	<p>Air Only</p>  <p>§172.315</p>	<p>ORM-D, Transition December 31, 2020</p>  <p>§172.316</p>	<p>UN1755</p>  <p>§172.316</p>	<p>Excepted Quantity</p>  <p>§173.4a(g)</p>	<p>Marking of IBCs</p>  <p>§178.703(b)(7)(i)</p>	<p>Marine Pollutant</p>  <p>§172.322</p>	

* The new limited quantity marking designates hazardous material packages prepared for air transport (Y) and packages not prepared for air transport (all other modes). The ORM-D classification and the use of packagings marked "Consumer commodity, ORM-D" is authorized until December 31, 2020, for domestic highway, rail, and vessel transportation. Transitional exception—Square-on-point with Identification Number: except for transportation by aircraft and until December 31, 2014, a package containing a limited quantity may be marked with identification number, preceded by the letters "UN" or "NA".

Source: DOT - PHMSA

Locating Information

Example 1: HS85 Label

HS85
Batch number: 85L6543



Warning
Harmful if swallowed

Wash hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. Dispose of contents/container in accordance with local, state and federal regulations.

First aid:

If swallowed: Call a doctor if you feel unwell. Rinse mouth.

GHS Example Company, 123 Global Circle, Anyville, NY 130XX

Telephone (888) 888-8888

Source: OSHA

Locating Information

Identifier: NOMIXUP 7042012



DANGER!

Hazard Statements:

Extremely Flammable Gas
May Cause Cancer
May Cause Respiratory Irritation
In Contact with Water Releases Flammable Gas

Precautionary Statements:

Keep away from heat/sparks/open flames/hot surfaces.-No Smoking
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing vapors and mists.
Wear protective gloves and eye protection.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
Call poison center/doctor if you feel unwell.
Leaking Gas Fire: Do not extinguish unless leak can be stopped safely.
Eliminate all ignition sources if safe to do so.
Store in tightly closed container in a well-ventilated place, locked up.
Use outdoors or use in a well-ventilated place.
Dispose of contents in accordance with local/regional/national regulations.

XYZ Chemical Company 123 Main St. Anywhere , NY, USA 1-800-000-1111

Source: OSHA

Locating Information



Source: OSHA

Locating Information

In which section of an SDS would you find the following information:

1. Hazard identification such as hazard classification, signal word, and precautionary statements

Section 2: Hazard(s) Identification

2. Initial care instructions for untrained responders attending to an individual who has been exposed to the chemical

Section 4: First-Aid Measures

3. Recommendations for PPE

Section 8: Exposure Controls/Personal Protection

Summary

In this module we discussed:

- Employer's responsibilities under HCS
- Components of a Hazard Communication Program
- Requirements of different types of Hazard Communication labels
- How to locate pertinent information

Knowledge Check

1. A hazard communication program requires which of the following components?
 - a. Written program
 - b. SDS/Labeling
 - c. Training
 - d. All of the Above

Answer: d. All of the above

Knowledge Check

2. How many sections are required on an SDS?
- a. 11 sections
 - b. 16 sections
 - c. 4 sections
 - d. As many as necessary to convey understanding

Answer: b. 16 sections

Knowledge Check

3. Which of the following statements is true of the pictograms on HCS labels?
- a. Pictograms on HCS labels are identical to those used on DOT transport labels and may have various background colors.
 - b. Consist of four bars that are color-coded as blue, red, yellow, and white to match hazard.
 - c. HCS pictograms are required and standardized red square-on-points with black hazard symbols and white backgrounds.
 - d. All of the Above

Answer: c. HCS pictograms are required and standardized red square-on-points with black hazard symbols and white backgrounds.

Knowledge Check

4. Your right to understand is _____.
- a. not simply shown or told
 - b. not simply given an SDS
 - c. required at initial assignment/when thing change
 - d. all of the above

Answer: d. all of the above