

Hazard Communication Outreach Program

Parts 42, 92, & 430
Act 154: Labeling/Posting & SDS

Presented By:
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Agenda

- Review updates to MIOSHA's Hazard Communication Standard (Haz Com) and Act 154
- Highlight notable Haz Com changes (1994 vs. 2012)
 - Labels
 - Safety Data Sheets (SDS)
 - Training
- Discuss other MIOSHA Standards affected
- Review available resources

Why the Change?

- To align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) adopted by 67 nations.
- To provide a common and coherent approach to classifying chemicals.



Why the Change? (continued)

- To improve the quality and consistency of hazard information in the workplace:
 - Reduce confusion & increase in hazard comprehension
 - Facilitate training
 - Help address literacy problems
- Other benefits:
 - Reducing international trade barriers and
 - Reduce cost for American businesses who manufacture, import or distribute hazardous chemicals globally.



Who is Affected?

- Manufacturers, Distributors, Importers
 - Change SDS information and format
 - Change container labeling
- Employers
 - Train employees on changes to:
 - SDS
 - Container labels
- Employees
 - Recognize and understand hazards based on:
 - Information in new SDS format
 - Pictograms on container labels
 - Precautionary and hazard statements



Overview of the Haz Com

Yellow text = Changes in 2012 revised rule

- | | |
|---|--------------------------------------|
| a) Purpose | g) Safety Data Sheets |
| b) Scope and Application | h) Employee Information and Training |
| c) Definitions | i) Trade Secrets |
| d) Hazard Classification | j) Effective Dates |
| e) Written Hazard Communication Program | Appendices A-F |
| f) Labels and Other Forms of Warning | |

Appendices

- Appendix A, Health Hazard Criteria (Mandatory) – NEW
- Appendix B, Physical Hazard Criteria (Mandatory) – NEW
- Appendix C, Allocation of Label Elements (Mandatory) – NEW
- Appendix D, Safety Data Sheets (Mandatory) – NEW
- Appendix E Definition of “Trade Secret” (Mandatory)
- Appendix F, Guidance for Hazard Classifications
Re: Carcinogenicity (Non-Mandatory) – NEW

1910.1200 (a) Purpose

Haz Com 1994

All hazards to be **determined**.

Comprehensive hazard communication program to transmit information.

Haz Com 2012

All hazards to be **classified**.

Other provisions the same except statement that rule is consistent with Revision 3 of the GHS.

Source: OSHA Side-by-Side

1910.1200 (c) Definitions

Haz Com 1994

- Includes specific definitions for terms used in the standard as well as all physical hazards.

Haz Com 2012

- **Relocated:** Physical hazard definitions from paragraph (c) and placed in new Appendix B (e.g. flashpoint, flammable).
- **Deleted:** Other terms (e.g. material safety data sheet).
- **Revised:** Some definitions revised to be GHS-consistent.
- New definitions added for classification.

c) New Definitions

- Classification
- Hazard Category
- Hazard Class
- Hazard Not Otherwise Classified (HNOC)
- Hazard Statement
- Label Elements
- Pictogram
- Precautionary Statement
- Product Identifier
- SDS
- Signal Word
- Simple Asphyxiant
- Substance

1910.1200(d) Hazard Classification

Haz Com 1994

Performance-orientated

- Definitions in paragraph (c), Appendices A and B.
- Appendix B – parameters for evaluating data.
- Minimum concentration of chemicals considered hazardous.

Haz Com 2012

Specific and detailed

- Concept of “classification” vs. “determination”.
- Each hazard class has detailed criteria to apply to data on the chemical.
- No minimum concentration
- Mixture rules are specific to each hazard class.

d) Hazard Classification

Chemical manufacturers and importers are required to perform a “**hazard classification**” of all chemicals they produce or import (Criteria in Appendices A and B).

- **Identify:** hazard class under health, physical and environmental* hazards.
- **Categorize:** hazard categories (degree of severity) are a sub-division of the hazard class.
- **Inform:** place hazard information for each hazard class and category on the label and in SDS.

*Not regulated by MIOSHA. Contact DEQ at (800) 662-9278 or deq-assist@michigan.gov for additional information

d) Hazard Classification: **Health**

Health Hazards				
Hazard Class	Hazard Category			
Acute toxicity	1	2	3	4
Skin Corrosion/Irritation	1A	1B	1C	2
Serious Eye Damage/Eye Irritation	1	2A	2B	
Respiratory or Skin Sensitization	1			
Germ Cell Mutagenicity	1A	1B	2	
Carcinogenicity	1A	1B	2	
Reproductive Toxicity	1A	1B	2	Lactation
Specific Target Organ Toxicity – Single Exposure	1	2	3	
Specific Target Organ Toxicity – Repeated Exposure	1	2		
Aspiration	1			
Simple Asphyxiants	Single Category			

d) Hazard Classification: Health Categories

Hazard Classes are divided into hazard categories.
Hazard Categories states severity within the class.

Example - Acute Toxicity Hazard Categories				
Exposure Route	Cat. 1	Cat. 2	Cat. 3	Cat. 4
Oral (mg/kg)	≤ 5	> 5 and ≤ 50	> 50 and ≤ 300	> 300 and ≤ 2000
Dermal (mg/kg)	≤ 5	> 50 and ≤ 200	> 200 and ≤ 1000	> 1000 and ≤ 2000
Inhalation – Gases (ppmV)	≤ 100	> 100 and ≤ 500	> 500 and ≤ 2500	> 2500 and ≤ 20000
Inhalation – Vapors (mg/l)	≤ 0.5	> 5 and ≤ 2.0	> 2.0 and ≤ 10.0	> 10.0 and ≤ 20.0
Inhalation – Dusts & Mists (mg/l)	≤ 0.05	> 0.05 and ≤ 0.5	> 0.5 and ≤ 1.0	> 1.0 and ≤ 5.0

Appendix F – Part D Table (Classifying Carcinogenicity)

Part D. Table Relating Approximate Equivalences among IARC, NTP RoC, and GHS Carcinogenicity Classifications

Approximate Equivalences Among Carcinogen Classification Schemes		
IARC	GHS	NTP RoC
Group 1	Category 1A	Known Reasonably Anticipated
Group 2A	Category 1B	
Group 2B	Category 2	

d) Hazard Classification:
2012 Haz Com and GHS Differences



➤ Classifications in GHS **not** in 2012 Haz Com

- Acute Toxicity Category 5
- Skin Corrosion/Irritation Category 3
- Aspiration Category 2

Note: Consumer products may include these categories in their classification requirements for labeling. May also appear in SDS.

➤ Unclassified Hazards (not in GHS, in 2012 Haz Com)

- Simple Asphyxiants (health hazard category)
- Pyrophoric Gases (physical hazard category)
- Combustible Dust (physical hazard category)
- Hazards Not Otherwise Classified (HNOC)

d) Hazard Classification: Physical

Physical Hazards							
Hazard Class	Hazard Category						
	Unstable Explosives	Div 1.1	Div 1.2	Div 1.3	Div 1.4	Div 1.5	Div 1.6
Explosives							
Flammable Gases	1	2					
Flammable Aerosols	1	2					
Oxidizing Gases	1						
Gases under Pressure							
Compressed gases							
Liquefied gases	1						
Refrigerated liquefied gases							
Dissolved gases							
Flammable Liquids	1	2	3	4			
Flammable Solids	1	2					
Self-Reactive Chemicals	Type A	Type B	Type C	Type D	Type E	Type F	Type G
Pyrophoric Liquids	1						
Pyrophoric Solids	1						
Pyrophoric Gases	Single Category						
Self-Heating Chemicals	1	2					
Chemicals in which contact with water emit flammable gases	1	2	3				
Oxidizing Liquids	1	2	3				
Oxidizing Solids	1	2	3				
Organic Peroxides	Type A	Type B	Type C	Type D	Type E	Type F	Type G
Corrosive to Metals	1						
Combustible Dust	Single Category						

d) Hazard Classification:
Physical Categories

Example – Flammable Liquids Hazard Categories	
Category	Criteria
1	Flash point < 73 F (23°C) and initial boiling point ≤ 95°F (35°C)
2	Flash point < 73 F (23°C) and initial boiling point > 95°F (35°C)
3	Flash point ≥ 73 F (23°C) and ≤ 140°F (60°C)
4	Flash point >140°F (60°C) and ≤ 200°F (93°C)

d) Hazard Classification - Mixtures

- 1994 – Mixture health hazards included if:
 - 0.1% for carcinogens.
 - 1% for all other effects.
- 2012 -GHS uses tiered approach within each hazard class
 - Step 1: Use available test data on the mixture as a whole to classify the mixture based on the substance criteria.
 - Step 2: Use bridging principles to extrapolate from other data (e.g. dilution principle for acute toxicity).
 - Step 3: Estimate hazards based on known information regarding ingredients of the mixture (cut-offs may be applied) exception for chronic hazards.
- Chemical manufactures and importers may rely on the information provided in ingredient SDSs; unless they believe it is inaccurate.

1910.1200 (e) Written Hazard Communication Program

Haz Com 1994

- Employers must have a written program:
 - Labels
 - MSDSs
 - Information and training
 - List of Chemicals
 - Non-Routine Tasks
 - Multi-Employer Worksites
 - Available to employees

Haz Com 2012

- No major changes
 - MSDS to SDS
 - Ensure employee training on new SDSs and label elements is conducted

1910.1200 (f) Labels and other forms of warning

Haz Com 1994

- Shipped containers to be labeled with:
 - Identity
 - Hazard warning(s)
 - Responsible party
- Performance-orientated with specifics left to discretion of chemical manufacturer or importer

Haz Com 2012

- Shipped containers to be labeled with:
 - Product identifier
 - Signal word
 - Hazard Statement
 - Pictograms
 - Precautionary Statements
 - Responsible party

(f) Labels and other forms of warning-
Signal Words

- Word used to indicate the severity of the hazard and alert the reader to the potential hazard.
 - “**DANGER**” (more severe hazard)
 - “**WARNING**” (less severe hazard)
- Appendix C
 - Specifies what is required to be on the label (Cookbook for labeling)
 - Lists label elements required based on:
 - Hazard Class
 - Hazard Category

(f) Labels and other forms of warning -
Hazard Statements

Hazard statements describe the hazards associated with a chemical.

Examples:

- Flammable liquid and vapor
- Causes skin irritation
- May cause cancer



(f) Labels and other forms of warning – **Precautionary Statements**

- *Precautionary statements* describe recommended measures related to:
 - Prevention
 - Response
 - Storage
 - Disposal
- Examples:
 - Wear respiratory protection
 - Wash with soap and water
 - Store in a well ventilated place
- Not a mandate for employers/employees to follow.



(f) Labels and other forms of warning -
Pictograms

- A symbol plus other graphic elements intended to convey hazards.
- In the final rule, MIOASHA adopted 8 of 9 pictograms.
- All pictograms have red borders.
- All red diamonds (square on point) printed on a label or SDS must have a pictogram inside (no blank diamonds for label).

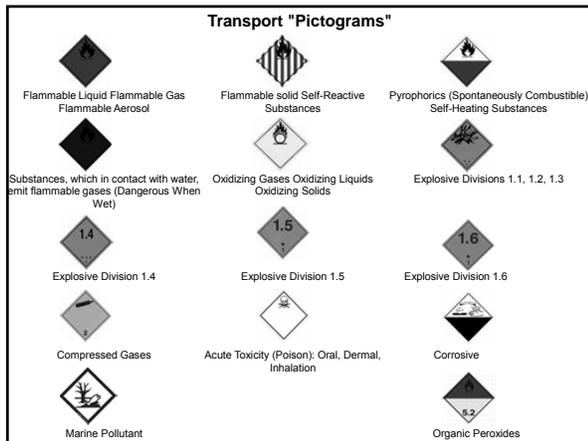


(f) Labels and other forms of warning -
Pictograms Defined

Physical Hazard				
Oxidizers	Flammables Self Reactives Pyrophorics Self-Heating Emits Flammable Gas Organic Peroxides	Explosives Self Reactives Organic Peroxides	Corrosive to Metal	Gases Under Pressure
Health Hazard				Environmental Hazard
Acute toxicity (severe)	Irritant (skin and eye) Dermal Sensitizer Acute toxicity (harmful) Narcotic Effects Respiratory Tract Irritation Ozone Depleting (EPA)	Carcinogen Respiratory Sensitizer Reproductive Toxicity Target Organ Toxicity Mutagenicity Aspiration Toxicity	Skin Corrosion/Burns Serious Eye Damage	Environmental Toxicity (acute and chronic)

(f) Labels and other forms of warning -
Pictograms Defined (continued)

Example: Label Information (Acute Oral Toxicity)				
	Category 1	Category 2	Category 3	Category 4
LD₅₀	≤ 5 mg/kg	> 5 < 50 mg/kg	50 < 300 mg/kg	300 < 2000 mg/kg
Pictogram				
Signal word	Danger	Danger	Danger	Warning
Hazard statement	Fatal if swallowed	Fatal if swallowed	Toxic if swallowed	Harmful if swallowed



DOT and MIOSHA Labels

- DOT labels may take precedence over similar GHS pictograms for shipping containers.
- DOT does not have labels that correspond to the "Health Hazard" or the "Acute Toxicity" (less severe = exclamation mark).

(f) Secondary Container Labels

Excerpt from the Hazard Communication Standard:

- (6) Workplace labeling. Except as provided in paragraphs (f)(7) and (f)(8) of this section, the employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with **either**:
- (i) The information specified under paragraphs (f)(1)(i) through (v) of this section for labels on shipped containers [GHS Label]; **or**,
- (ii) Product identifier **and** words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical [e.g. HMIS, NFPA or other label system].

(f) Labels and Other Forms of Warning - Workplace Labeling for Secondary Containers

- Secondary labeling systems are still required.
- Must be consistent with 2012 revised Standard
- No conflicting hazard warnings or pictograms.
- May use written materials (e.g., signs, placards, etc.) in lieu of affixing labels to individual stationary process containers.
- Employer can use GHS labels (same as manufacturer label).

HMIS Label

HEALTH	<input type="checkbox"/>
FIRE	<input type="checkbox"/>
Physical Haz	<input type="checkbox"/>
PPE	<input type="checkbox"/>



For NFPA, must include notation of chronic health effects



GHS vs. HMIS / NFPA 704

HEALTH	<input type="checkbox"/>
FIRE	<input type="checkbox"/>
Physical Haz	<input type="checkbox"/>
PPE	<input type="checkbox"/>

NFPA & HMIS systems number "4" indicates a severe hazard. Under GHS Haz Com standard, a "4" will mean the least severe and "1" will mean the most severe. GHS category noted in SDS; NOT on container label.

Flammability Criteria	GHS Category	NFPA 704 Rating	HMIS Rating
Flash point < 73°F(23°C) and initial boiling point 90°F	1	4	4
Flash point < 73 F (23°C) and initial boiling point 130°F	2	3	3
Flash point ≥ 100°F(37.8°C) and < 200°F (93.4°C)	3 or 4	2	2
Flash point > 200°F(93.4°C) and will burn in air when exposed to a temperature of 1500°F(815.5°C) for a period of 5 min.	None	1	1

(f) Labels and other forms of warning - Hazards Not Otherwise Classified

- MIOSHA/OSHA has included a "Hazards not otherwise Classified" (HNOC) hazard class.
- Warnings must be provided for those hazards that are not included in GHS.
 - Combustible dust
 - Simple asphyxiants
 - Pyrophoric gas
 - Misc. HNOCs



1910.1200 (g) Safety Data Sheets (SDSs)

- Haz Com 1994
- Specifies what information is required but format not specified.
- Haz Com 2012
- Mandates:
 - 16-section SDS
 - Headings
 - Order of information
 - What is included under headings
- MIOSHA will not enforce sections 12-15 (outside of jurisdiction – DEQ, etc.).

(g) Safety Data Sheets (SDSs)

New 16-section standardized SDS format required (ANSI Z400.1)

- | | |
|--|---|
| Section 1 – Identification | Section 10 – Stability and Reactivity |
| Section 2 – Hazard(s) identification | Section 11 – Toxicological Information |
| Section 3 – Composition / Information on Ingredients | Section 12 – Ecological Information* |
| Section 4 – First-aid Measures | Section 13 – Disposal Consideration* |
| Section 5 – Fire-fighting Measures | Section 14 – Transport Information* |
| Section 6 – Accidental Release Measures | Section 15 – Regulatory Information* |
| Section 7 – Handling and Storage | Section 16 – Other information including date of preparation of last revision |
| Section 8 – Exposure Controls / Personal Protection | |
| Section 9 – Physical and Chemical Properties | |
- *Sections outside of MIOSHA jurisdiction but inclusion of these sections is necessary for a GHS compliant SDS

Methanol SDS (Sigma Aldrich)

2. HAZARDS IDENTIFICATION Emergency Overview OSHA Hazards Flammable liquid, Target Organ Effect, Toxic by ingestion, Toxic by skin absorption, Irritant Target Organs Eyes, Kidney, Liver, Heart, Central nervous system; Eyes, Kidney, Liver, Heart, Central nervous system GHS Classification Flammable liquids (Category 2) Acute toxicity, Oral (Category 3) Acute toxicity, Dermal (Category 3) Skin irritation (Category 2) Eye irritation (Category 2A) Specific target organ toxicity - single exposure (Category 1) GHS Label elements, including precautionary statements Pictogram Signal word Danger Hazard statement(s) H225 Highly flammable liquid and vapour. H302 + H311 Toxic if swallowed or in contact with skin. H315 Causes skin irritation. H319 Causes serious eye irritation. H370 Causes damage to organs. Precautionary statement(s) P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P280 Do not breathe dust/fume/gas/mist/vapour/spray. P280 Wear protective gloves/protective clothing. P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P302 + P352 IF ON EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if		Secondary Container Labeling (Section 2 continued) HMS Classification Health hazard: 2 Chronic Health Hazard: * Flammability: 3 Physical hazards: 0 NFPA Rating Health hazard: 2 Fire: 3 Reactivity Hazard: 0
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1910.1200 (i) Trade Secrets

- No major changes to the definition and process.
- Trade secret status can now be claimed for percentage composition.
- Where a trade secret is claimed, a statement that the specific chemical identity and percentage of composition has been withheld as a trade secret is required.

Other Standards Affected – Health (signage requirements)

- Asbestos
- Carcinogens
- Vinyl Chloride
- Inorganic Arsenic
- Lead
- Cadmium
- Benzene
- Coke Oven Emissions
- Acrylonitrile
- Ethylene Oxide
- Formaldehyde
- Methylenedianiline



Other Standards Affected

- Flammable and Combustible Liquids
- Spray Finishing using Flammable and Combustible Materials
- Process Safety Management of Highly Hazardous Chemicals (PSM)
- Hazardous Waste Operations and Emergency Response (HAZWOPER)
- Hazardous Work In Laboratories
- Dipping and Coating Operations
- Welding, Cutting and Brazing
- Employee Medical Records and Trade Secrets



Effective Dates and Requirements

Effective Completion Date	Requirement(s)	Responsible Party
December 1, 2013	Train employees on the new label elements and SDS format	Employers
June 1, 2015	Compliance with all modified provisions of the final rule except:	Chemical manufacturers, importers, distributors, and employers
December 1, 2015	The distributor shall not ship containers labeled by the chemical manufacturer or importer unless it is a GHS label	Distributor
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified hazards [and affected vertical standard specific signage]	Employer
Transition Period: December 21, 2012 to the effective completion dates noted above	May comply with either MIOSHA Part 42, 92 and 430 (final standard), or the current standard, or both	Chemical manufacturers, importers, distributors, and employers

Additional Information:

Chemical Manufacturers, Importers and Distributers

- June 1, 2015 – Must have new SDS and labels sent to end users (Dec. 1, 2015 for distributers).
- Do not wait! Classification process is complicated and may take 2-3 years to develop new SDSs and labels.
- Raw material SDSs will be needed ASAP by those who blend or manufacture chemical mixtures so they can classify their products.

Additional Toxicology Resources

- **Hazardous Substances Data Bank (HSDB)** - Comprehensive, peer-reviewed toxicology data for about 5,000 chemicals:
<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>
- ECHA website (Dossiers submitted to EU for REACH registration):
<http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
- eChemPortal:
<http://www.echemportal.org/echemportal/propertysearch/page.action?pageID=9>

Federal OSHA Resources

Haz Com Web Page - www.osha.gov/dsg/hazcom/index.html

Regulatory

- Haz Com 2012 Final Rule
- Haz Com Comparison: (1994 vs. 2012)
 - Side-by-side
 - Redline Strikeout of the Regulatory Text
- FAQs

Guidance

- OSHA Briefs
- Fact Sheet
- Quick Cards
 - Labeling
 - Safety Data Sheets
 - Pictograms
 - Effective Dates
- OSHA Guide to GHS
www.osha.gov/dsg/hazcom/ghs.html
- GHS documents (links to purple book)



MIOSHA Resources

Website and CET library handout (8/22/2012):

- CET-5531 *HAZARD COMMUNICATION - GHS Overview of Major Changes to the Hazard Communication Standard*
- DVDs on GHS and Haz Com through CET DVD/Video library services
- PowerPoint for employers to use to train employees
- Guidance documents including sample written program
- Revised posters
- State-wide seminars - Visit the MIOSHA CET webpage for GHS training calendar

Summary

- Reviewed updates to MIOSHA's Hazard Communication Standard (Haz Com) and Act 154
- Highlighted the notable Haz Com changes (1994 vs. 2012)
 - Labels
 - Safety Data Sheets (SDS)
 - Training
- Discussed other MIOSHA Standards affected
- Reviewed available resources

Questions

Contact MIOSHA for additional information or assistance:

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