Hazard Communication Training Program

(including Globally Harmonized System (GHS) revisions)
Agenda

• Overview of changes to the Hazard Communication Standard (Haz Com)
• Labeling requirements
• Safety Data Sheets (SDS) format – 16 sections
Why the Change to Haz Com?

- 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
- Reduce confusion and increase understanding of the hazards
- Facilitate training
- Help address literacy problems
Who is Affected?

- Manufacturers, Distributors, Importers
  - Change SDS information and format
  - Change container labeling

- Employers
  Training employees on changes to:
  - SDS (change from MSDS to SDS and 16-section format)
  - Container Labels (including secondary containers)

- Employees
  Recognize and understand hazards based on:
  - Information in new SDS format
  - Pictograms on container labels
  - Precautionary and hazard statements
Other Standards Affected – Health (signage requirements)

- Asbestos
- Carcinogens
- Vinyl Chloride
- Inorganic Arsenic
- Lead
- Cadmium
- Benzene

- Coke Oven Emissions
- Acrylonitrile
- Ethylene Oxide
- Formaldehyde
- Methyleneedianiline

**DANGER**

LEAD
MAY DAMAGE FERTILITY OR THE UNBORN CHILD
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM
DO NOT EAT, DRINK OR SMOKE IN THIS AREA

**WARNING**

LEAD WORK AREA
POISON
NO SMOKING OR EATING

New Sign “LEAD”
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
Chemical Classifications

Chemicals will be classified using a harmonized system that provides standardized language for:

- Health Hazard Categories
- Physical Hazard Categories
- Environmental Hazard Categories*
Chemical Classifications: Health Hazards

- Acute Toxicity
- Skin Corrosion/Irritation
- Respiratory or Skin Sensitization
- Germ Cell Mutagenicity
- Carcinogenicity
- Reproductive Toxicity
- Specific Target Organ Toxicity – Single Exposure
- Specific Target Organ Toxicity – Repeated Exposure
- Aspiration
- Simple Asphyxiants
## Chemical Classifications:

### Health Hazards

<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>Hazard Category</th>
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<tbody>
<tr>
<td>Acute toxicity</td>
<td>1 2 3 4</td>
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<tr>
<td>Skin Corrosion/Irritation</td>
<td>1A 1B 1C 2</td>
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<td>Serious Eye Damage/Eye Irritation</td>
<td>1 2A 2B</td>
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<td>Respiratory or Skin Sensitization</td>
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<td>Germ Cell Mutagenicity</td>
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<td>Carcinogenicity</td>
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<td>Specific Target Organ Toxicity – Single Exposure</td>
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<td>Specific Target Organ Toxicity – Repeated Exposure</td>
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<td>Aspiration</td>
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<td>Simple Asphyxiants</td>
<td>Single Category</td>
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</table>
Chemical Classifications: Physical Hazards

- Explosives
- Flammable Aerosols
- Oxidizing Gases
- Gases under Pressure
  - Compressed Gases
  - Liquefied Gases
  - Refrigerated Liquefied Gases
  - Dissolves Gases
Chemical Classifications: Physical Hazards (continued)

- Flammable Liquids
- Flammable Solids
- Self-Reactive Chemicals
- Pyrophoric Liquids
- Pyrophoric Solid
- Pyrophoric Gases
- Self-heating Chemicals
- Chemicals, which in contact with water, emit flammable gases
Chemical Classifications: Physical Hazards (continued)

- Oxidizing Liquids
- Oxidizing Solid
- Organic Peroxides
- Corrosive to Metals
- Combustible Dusts
# Chemical Classifications: Physical Hazards

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<tr>
<th>Hazard Class</th>
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Labels

There are several new label elements:

- Symbols called “Pictograms”
- Signal Words
- Hazard Statements
- Precautionary Statements
- Product Identification
- Supplier/Manufacturer Identification
Labels: Shipping

Effective June 1, 2015 all shipping labels will be required to have all GHS label elements.

Shipping Container Label
(55 gallon/200 liter drum)

PRODUCT IDENTIFIER

SIGNAL WORD

HAZARD STATEMENT

Highly flammable liquid and vapor.

SUPPLEMENTAL INFORMATION

Directions for use

Fill weight: Lot Number

Gross weight: Fill Date:

Expiration Date:

Pictograms within DOT label

DOT Shipping

Flammable liquids, toxic, n.o.s.
(contains XYZ)
UN 1992

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 (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
Transport "Pictograms"

- Flammable Liquid
- Flammable Gas
- Flammable Aerosol

- Flammable solid
- Self-Reactive Substances
- Pyrophorics (Spontaneously Combustible)
- Self-Heating Substances

- Substances, which in contact with water, emit flammable gases (Dangerous When Wet)

- Oxidizing Gases
- Oxidizing Liquids
- Oxidizing Solids

- Explosive Divisions 1.1, 1.2, 1.3
- Explosive Division 1.4
- Explosive Division 1.5
- Explosive Division 1.6

- Compressed Gases

- Acute Toxicity (Poison): Oral, Dermal, Inhalation

- Marine Pollutant

- Corrosive

- Organic Peroxides
DOT 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).
Labels: Pictograms

- There are 9 pictograms.
  - Health Hazards
  - Physical Hazards
  - Environmental Hazards
Labels: Pictograms – Health Hazards

Acute toxicity (Severe)

Acute toxicity (Less Severe):
- Irritant
- Dermal sensitizer
- Acute toxicity (harmful)
- Narcotic effects
- Respiratory tract irritation

Acute = short-term effect
Labels: Pictograms – Health Hazards (continued)

Skin corrosion
Serious eye damage/
Eye irritation

Carcinogen
Respiratory sensitiser
Reproductive toxicity
Target organ toxicity
Mutagenicity
Aspiration Hazard
Labels: Pictograms – Physical Hazards

Explosives
Self reactives
Organic peroxides

Flammables
Self reactives
Pyrophorics
Self heating
Emits flammable gas
Organic peroxides
Labels: Pictograms – Physical Hazards (continued)

- Corrosive to Metals
- Gases under Pressure
- Oxidizer
Labels: Signal Word

These are words used to indicate the severity of the hazard and alert employees to the potential hazard.

Only 2 signal words will appear:

- “DANGER” (more severe hazard)
- “WARNING” (less severe hazard)

Not all labels will have a signal word. Some chemicals are not hazardous enough to require that a signal word appear on the label.
Labels: Hazard Statement

There are specific hazard statements that must appear on the label based on the chemical hazard classification.

Examples:
- Flammable liquid and vapor
- Causes skin irritation
- May cause cancer
Labels and other forms of warning – Precautionary Statements

- 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.
Label: Identification

- Product identification (i.e. name of product)
- Supplier identification:
  - Address
  - Telephone number
Label: Other information

Other information that may be included on the label:

- Physical state
- Color
- Hazards not otherwise classified
- Route of exposure
- Storage and disposal
- Hazard prevention and emergency response instructions
ToxiFlam (Contains: XYZ)

Danger! Toxic If Swallowed, Flammable Liquid and Vapor

Do not eat, drink or use tobacco when using this product. Wash hands thoroughly after handling. Keep container tightly closed. Keep away from heat/sparks/open flame. - No smoking. Wear protective gloves and eye/face protection. Ground container and receiving equipment. Use explosion-proof electrical equipment. Take precautionary measures against static discharge.

Use only non-sparking tools. Store in cool/well-ventilated place.

IF SWALLOWED: Immediately call a POISON CONTROL CENTER or doctor/physician. Rinse mouth.

In case of fire, use water fog, dry chemical, CO₂, or "alcohol" foam.

See Safety Data Sheet for further details regarding safe use of this product.
Secondary Container Labels

Excerpt from the Hazard Communication Standard (f):

- 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 (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.
Labels: Secondary containers

• Must be consistent with the revised Haz Com 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 compliant labels (same as shipping).

NFPA Label

Must include notation of chronic health effects
Safety Data Sheets

- Under the new Haz Com Standard, Material Safety Data Sheets (MSDS) are now called Safety Data Sheets (SDS).
- All SDSs will have a consistent 16-section format.
- Employers must ensure that SDSs are readily accessible to employees.
Safety Data Sheets (SDSs)

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

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 Controls / Personal Protection
Section 9 – Physical and Chemical Properties
Section 10 – Stability and Reactivity
Section 11 – Toxicological Information
Section 12 – Ecological Information
Section 13 – Disposal Consideration
Section 14 – Transport Information
Section 15 – Regulatory Information
Section 16 – Other information including date of preparation of last revision
Section 1 – Identification:
Identifies the chemical on the SDS as well as the recommended uses. It also provides the essential contact information of the supplier.

Section 2 - Hazards Identification:
- Hazards of the chemical presented on the SDS
- Appropriate warning information associated with those hazards.
Section 3 – Composition / Ingredients:
Identifies the ingredient(s) contained in the product indicated on the SDS, including:
- impurities and stabilizing additives.
- information on substances, mixtures, and all chemicals where a trade secret is claimed.

Section 4 - First-Aid Measures:
Describes the initial care that should be given by untrained responders to an individual who has been exposed to the chemical.
Section 5 – Fire-Fighting Measures:
Provides recommendations for fighting a fire involving the chemical.

Section 6 - Accidental Release Measures:
Provides recommendations:
- Appropriate response to spills, leaks, or releases, (e.g. containment and cleanup practices)
- Response for large vs. small spills, if different.
Safety Data Sheets (continued)

Section 7 – Handling and Storage:
Provides guidance on the safe handling practices and conditions for safe storage of chemicals.

Section 8 – Exposure Controls / Personal Protection:
Indicates the exposure limits, engineering controls, and personal protective measures that can be used to minimize worker exposure.
Safety Data Sheets (continued)

Section 9 – Physical and Chemical Properties:
Identifies physical and chemical properties associated with the substance or mixture.

Section 10 – Stability and Reactivity
Describes the reactivity hazards of the chemical and the chemical stability information. Includes: reactivity, chemical stability, and other.
Safety Data Sheets (continued)

Section 11 - Toxicological Information:
Identifies toxicological and health effects information or indicates is data unavailable.

Section 12 – Ecological Information

Section 13 – Disposal Consideration

Section 14 – Transport Information

Section 15 – Regulatory Information
Section 16 – Other Information

Indicates when the SDS was prepared or when the last known revision was made.

The SDS may also state where the changes have been made to the previous version.
Federal OSHA Resources

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

**Regulatory**
- Haz Com 2012 Final Rule
- Haz Com Comparison: Haz Com 1994 and 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)
Training Summary

Today’s training program included:

- Overview of changes to Hazard Communication Standard (Haz Com)
- Labeling requirements
- Safety Data Sheets (SDS) format – 16 categories
- Details of the facility specific hazard communication program
- Resources
- Quiz – print, complete, & file.
Questions/Comments?
Contact Environmental Health and Safety
780-5406, 780-5227, 780-5338
QUIZ – Multiple Choice

1. GHS stands for?
   1. Global Harmonized Stationary
   2. Generalized Happy State
   3. Grand Hotel & Sauna
   4. Globally Harmonized System

2. How many nations have adopted this system?
   1. 12
   2. 29
   3. 67
   4. 61
QUIZ – Multiple Choice

3. Chemical classifications will use standardized language for?
   1. Health, Physical, & Environmental hazard categories
   2. Chemical, Gas, & Solid hazard categories
   3. Health, Gaseous, & Liquid hazard categories
   4. Global, Local, & Federal health hazard categories

4. Who is affected by the change to Haz Com?
   1. Football, Baseball, & Basketball teams
   2. Manufacturers, Employers, Employees
   3. Cats, Dogs, Horses & sometimes fish
   4. Eagles, Broncos, Chiefs, Jets
QUIZ – Multiple Choice

5. Health hazards are rated as?
   1. 1 is least hazardous, 4 is most hazardous
   2. A is most hazardous, D is least hazardous
   3. 1 is most hazardous, 4 is least hazardous
   4. D is most hazardous, A is least hazardous

6. Chemical Classifications – physical hazards include?
   1. Combustible dust, Smelly, Organic Peroxide, Aerosol
   2. Explosive, Oxidizing, Flammable, Corrosive
   3. Pyrophoric, Self heating, Self reactive, Shiny
   4. Liquefied gas, Dissolves gas, Brown, Water reactive
QUIZ – Multiple Choice

7. New label elements include?
   1. Pictograms, Signal words, Hazard statements
   2. Red symbols, Blue lettering, Italics, Bolding
   3. Flashy words, Graphic pictures, Chemical lists
   4. Statements, Product names, Supplier IDs

8. GHS label elements are required by?
   1. October 2019
   2. December 2013
   3. June 2012
   4. June 2015
9. There are how many Pictograms in GHS?
   1. 15
   2. 6
   3. 9
   4. 30

10. Pictograms represent what?
    1. Chemical names
    2. Chemical composition
    3. Chemical formulas
    4. Chemical hazards
11. This pictogram represents what?
   1. Skin corrosion
   2. Carcinogen
   3. Acutely toxic
   4. Self reactive

12. This pictogram represents what?
   1. Aspiration hazard
   2. Narcotic effects
   3. Flammable
   4. Corrosive
13. This pictogram represents what?
   1. Skin corrosion
   2. Carcinogen
   3. Acutely toxic
   4. Self reactive

14. This pictogram represents what?
   1. Aspiration hazard
   2. Narcotic effects
   3. Flammable
   4. Acutely toxic
15. Secondary container labelling info shall?
   1. Be colored according DOT regs.
   2. Have information concerning retail costs.
   3. Be consistent with revised HazCom standard.
   4. Contain disposal info according to NRC regs.

16. Safety Data Sheet section 6 info?
   1. Stability and Reactivity
   2. Transport info
   3. Handling and Storage
   4. Accidental Release Measures
17. Regulatory information is found in which section of an SDS?
   1. Section 15
   2. Section 1
   3. Section 12
   4. Section 8

18. Chemical composition is found in what section of an SDS?
   1. Section 15
   2. Section 12
   3. Section 3
   4. Section 6
19. A “Signal Word” does what?
   1. Tells the user when to dispose of chemical.
   2. Indicates the severity of the hazardous chemical.
   3. Recommends appropriate 1st aid measures.
   4. Clarifies what can not be mixed with the chemical.

20. This pictogram represents what?
   1. Alcoholic beverage
   2. Rolling pin missing a handle
   3. Pressurized gas cylinder
   4. Tool for working with leather
QUIZ – Answer Sheet

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2. _______
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