HazCom 2012 GHS Overview
Scott Baur – Speaker

- Assess regulatory requirements, information management need and the overall effectiveness of EH&S programs in an effort to “right size” 3E’s outsource EH&S solutions for both new and existing clients.

- Prior to joining 3E Company in 2000, served in Sales, Project Management and Engineering roles in the Chemical and Regulated Waste industry.
  - IT Corporation
  - Laidlaw Environmental Services
  - Greenfield Environmental / Westinghouse Environmental Services
  - Philip Services Corporation (PSC)
Agenda

HazCom 2012: Global Harmonization

- MSHA HazCom Update
- Overview of the HCS
- Upstream & Downstream Impacts
  - Challenges
  - Upstream & Downstream Considerations
  - Compliance Strategies
“MSHA developed its HazCom standard to be compatible with OSHA’s standard. We are currently reviewing OSHA’s updated Hazard Communication standard to determine if MSHA needs to take any additional action. However, because MSHA’s HazCom standard is performance based, a mine operator who is compliant with the OSHA standard should generally be compliant with MSHA’s standard. We will keep the mining community informed if we issue any additional guidance.” **August 29, 2012**

Reginald J. Richards, DrPH, CIH  
Chief, Division of Health  
Metal/Nonmetal Mine Safety and Health
Overview of the New HCS

Q. What is the Globally Harmonized System?

- Based on United Nations initiative to develop global standards for classification and communication of chemical hazards
- Unified hazard communication for workers, consumers, transport workers, and emergency responders
- Provides the underlying infrastructure for establishment of national, comprehensive chemical safety programs
Time Line of HCS 2012

NPRM

- September 30, 2009 published the proposed rule in the FR

OMB

- OSHA submitted the final rule to OMB on October 25, 2011.
- OMB finished the review on February 21st.

Final Rule

- Final rule available on March 20th. The Federal Register publication on Mar. 26th
- December 1, 2013 – Training on the new label elements and Safety Data Sheet (SDS) format
- June 1, 2015 - Classification, Label, SDS implementation
- December 1, 2015 – Distributors may ship with the old labels
Examples where GHS legislation or standards have been passed include:

- **New Zealand** (2001)
- **Japan** (2006)
- **Korea** (2008)
- **Taiwan** (2008)
- **EU** (2008)
- **Indonesia** (2009)
- **SOLAS (International Convention for the Safety of Life at Sea)** (2009)
- **USA** (2012)

Draft regulations on GHS published:

- **Malaysia**
- **Philippines**
Q. What are the major changes to the Hazard Communication Standard?

1. Hazard Classification (not Determination)
2. Labels
3. Safety data sheets (SDS not MSDS)
5. Definition Additions & Terminology Changes
   - Definitions for “substance” and “mixture” (Chemical - GHS language in OSHA regulatory language such as “shall” not “should”)
Overview of the New HCS

XIII. Summary and Explanation of the Modifications to the Hazard Communication Standard (pg. 17786 of FR)
(a) Purpose
(b) Scope
(c) Definitions
(d) Hazard Classification
(e) Written Hazard Communication Program
(f) Labels and Other Forms of Warning
(g) Safety Data Sheets
(h) Employee Information and Training
(i) Trade Secrets
(j) Effective Dates

XIV. References
XV. Authority and Signature
XVI. Amendments
Overview of the New HCS

(c) Definitions (continued)

New definitions:
- Substance or Mixture
- Hazard category
- Hazard not otherwise classified (HNOC)
- Hazard statement
- Label elements
- Pictogram
- Precautionary statements
- Product identifier
- Safety data sheet
- Signal word
- Substance
Overview of the New HCS

(c) Definitions

- Physical hazard definitions deleted from paragraph (c), and placed in a new Appendix B on physical hazard classification criteria

- Removed and/or Replaced: Combustible liquid, Compressed gas, Explosive, Flammable, Flashpoint, Hazard warning, Identity, Material safety data sheet, Organic peroxide, Oxidizer, Pyrophoric, Unstable (reactive), and Water-reactive
Q. How will chemical hazard evaluation change under the revised Hazard Communication Standard?
• Definition of “hazardous chemical”
  - Any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified.
(d) Hazard Classification

- Concept of “hazard class” such as acute toxicity, carcinogenicity, further subdivided into “hazard categories”
- Determination of hazardous effect
- Evaluation based on weight of evidence and degree of severity of the hazard
Overview of the New HCS

• Under **the previous (non-GHS) HCS**, the concept of “Floor” of hazardous chemicals applied.

• Chemical was determined to be hazardous if:
  - 29 CFR Part 1910, subpart Z,
  - Toxic and Hazardous Substances (OSHA) with PELs
  - ACGIH TLVs
  - NTP Annual Report on Carcinogens
  - IARC Monographs
Overview of the New HCS

- Chemical was determined to be carcinogenic if:
  - NTP Annual Report on Carcinogens
  - IARC Monographs
  - Carcinogen standards in 29 CFR part 1910, subpart Z
• Under **HazCom 2012**, no floor of chemicals exists.

• Follow GHS classification system

• Hazard classes are specified in substance-specific 29 CFR part 1910, subpart Z
• Revision on Carcinogenicity

- “Where the weight of evidence for the carcinogenicity of a substance does not meet the above criteria, any positive study conducted in accordance with established scientific principles, and which reports statistically significant findings regarding the carcinogenic potential of the substance, must be noted on the safety data sheet.”

- Under subheading 11(e) of the SDS indicate whether the hazardous chemical is listed in the NTP Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the IARC Monographs (latest edition), or by OSHA.
(c) Definitions (continued)

- “Unclassified hazard” is now called Hazard Not Otherwise Classified” (HNOC)
- No label requirement for HNOC but SDSs and training must address HNOC chemicals
- HNOC and
  - Simple asphyxiant
  - Pyrophoric gas
  - Combustible dust
Q. What is the phase-in period in the revised Hazard Communication Standard?

Q. Why must training be conducted prior to the compliance effective date?
During the phase-in period, employers would be required to be in compliance with either the existing HCS or the revised HCS, or both. OSHA recognizes that hazard communication programs will go through a period of time where labels and SDSs under both standards will be present in the workplace. This will be considered acceptable, and employers are not required to maintain two sets of labels and SDSs for compliance purposes.
OSHA Requires:

- Employees will be trained on the new label elements (e.g., pictograms and signal words) and SDS format by December 2013, while full compliance with the final rule will begin in 2015.

OSHA believes that it is possible that American workplaces may begin to receive labels and SDSs that are consistent with the GHS. Thus, making it important to ensure that when employees begin to see the new labels and SDSs in their workplaces, they will be familiar with them, understand how to use them, and access the information effectively.
Overview of the New HCS

(c) Definitions (continued)

- **Label elements**: the specified pictogram, hazard statement, signal word and precautionary statement for each hazard class and category

- **Pictogram**: a composition that may include a symbol plus other graphic elements, such as a border, background pattern, or color, that is intended to convey specific information about the hazards of a chemical. Eight pictograms are designated under this standard for application to a hazard category
Q. How will labels change under the revised Hazard Communication Standard?

Q. Can I use a black border on pictograms for domestic shipment? Will OSHA allow blank red borders?

Q. When must label information be updated?

Q. How will workplace labeling provisions be changing under the revised Hazard Communication Standard?
(f) Labels and other forms of warning (pg. 17787 of FR)

- Required information on shipped containers
  1. Product identifier
  2. Name, address, and telephone number of the chemical manufacturer, importer, or responsible party
  3. Signal word
  4. Hazard statement(s)
  5. Pictogram(s) with red borders for all labels and empty borders are NOT permitted
  6. Precautionary statement(s)
Overview of the New HCS

(f) Labels and other forms of warning (continued)

• Use Appendix C to create appropriate labels

• Under (f)(6), workplace labeling does NOT have to be conformed to the GHS label.

• Permits workplace label, which provides the physical and health hazard information

• Under (f)(8), the employer is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee.
(f) Labels and other forms of warning (continued)

- Revise **container labels** within **six** months of becoming aware of any significant new information.

- **GHS Labeling of Small Packages** 1.4.10.5.4.4 guidance was **NOT** accepted.

- OSHA continues practical accommodation approach.
Overview of the New HCS

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

SAMPLE LABEL

Product Identifier

Company Name
Street Address
City State
Postal Code Country
Emergency Phone Number

Hazard Pictograms

Signal Word Danger

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

Precautionary Statements

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 any contaminated clothing. Rinse skin with water.

Supplemental Information

Directions for Use

Fill weight: Lot Number:
Gross weight: Fill Date:
Expiration Date:
Compliance Challenges: Labeling

Current OSHA Template
- Identity of hazardous chemical
- Hazard warnings
- Contact information for manufacturer/importer/responsible party.

GHS Template
- Product Identifier
- Pictograms
- Signal word
- Precautionary Statements
- Hazardous Statements
- Supplemental Information
- Supplier Identification

"A" Components for Pressure Pour

Health: 2*
Flammability: 1
Reactivity: 1
PPE: B

Danger
- Danger: May cause a fire. Combustible liquid.
- May cause damage to organs through prolonged or repeated exposure.
- Harmful to fish and aquatic life. May be fatal if inhaled.
- May cause damage to organs through prolonged or repeated exposure by skin contact.
- Contains: acetylene, water.
- Contains: flammable liquid, toxic gas, oxygen.
- Keep away from heat/sparks/open flames/fireplaces.
- - No smoking.

Supplemental Label Information
For further information on this product, see Safety Data Sheet.

Supplemental Information
For further information on this product, see Safety Data Sheet.

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Compliance Challenges: Labeling

GHS-Pictogram-Exploding Bomb

Usage

Explosives (Divisions 1.1, 1.2, 1.3, 1.4)
Unstable Explosives
Self-Reactive Substances and Mixtures (Type A, B)
Organic Peroxides (Type A, B)
Compliance Challenges: Labeling

GHS-Pictogram-Flame Usage

Flammable Gases (Category 1, 2, 3)
Flammable Aerosols (Categories 1, 2)
Flammable Liquids (Categories 1, 2, 3)
Flammable Solids (Category 1, 2)
Self-Reactive Substances (Type B, C, D, E, F)
Pyrophoric Liquids (Category 1)
Pyrophoric Solids (Category 1)
Self-Heating Substances and Mixtures (Categories 1, 2)
Substances And Mixtures, which in contact with Water, Emit Flammable Gases (Categories 1, 2, 3)
Organic Peroxides (Type B, C, D, E, F)
Compliance Challenges: Labeling

GHS-Pictogram-Skull and Crossbones Usage

Acute Toxicity: Oral (Categories 1, 2, 3)
Acute Toxicity: Skin (Categories 1, 2, 3)
Acute Toxicity: Inhalation (Category 1, 2, 3)
Compliance Challenges: Labeling

GHS-Pictogram-Health Hazard Usage

Respiratory Sensitization (Category 1)
Germ Cell Mutagenicity (Categories 1A, 1B, 2)
Carcinogenicity (Categories 1A, 1B, 2)
Toxic to Reproduction (Categories 1A, 1B, 2)
Specific Target Organ Toxicity (Single Exposure) (Categories 1, 2)
Specific Target Organ Toxicity (Related Exposure) (Categories 1, 2)
Aspiration Hazard (Categories 1, 2)
Q. What pictograms are required in the revised Hazard Communication Standard? What hazard does each identify?
# Overview of the New HCS

## HCS Pictograms and Hazards

<table>
<thead>
<tr>
<th>Health Hazard</th>
<th>Flame</th>
<th>Exclamation Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Carcinogen</td>
<td>* Flammables</td>
<td>* Irritant (skin and eye)</td>
</tr>
<tr>
<td>* Mutagenicity</td>
<td>* Pyrophorics</td>
<td>* Skin Sensitizer</td>
</tr>
<tr>
<td>* Reproductive Toxicity</td>
<td>* Self-Heating</td>
<td>* Acute Toxicity (harmful)</td>
</tr>
<tr>
<td>* Respiratory Sensitizer</td>
<td>* Emits Flammable Gas</td>
<td>* Narcotic Effects</td>
</tr>
<tr>
<td>* Target Organ Toxicity</td>
<td>* Self-Reactives</td>
<td>* Respiratory Tract Irritant</td>
</tr>
<tr>
<td>* Aspiration Toxicity</td>
<td>* Organic Peroxides</td>
<td>* Hazardous to Ozone Layer (Non Mandatory)</td>
</tr>
</tbody>
</table>

| Gas Cylinder                                       | Corrosion                                                            | Exploding Bomb                                                                   |
|----------------------------------------------------|                                                                     |                                                                                 |
| * Gases under Pressure                              | * Skin Corrosion/ burns                                             | * Explosives                                                                     |
|                                                    | * Eye Damage                                                         | * Self-Reactives                                                                 |
|                                                    | * Corrosive to Metals                                               | * Organic Peroxides                                                              |

| Flame over Circle (Non Mandatory)                  | Environment (Non Mandatory)                                         | Skull and Crossbones                                                             |
|----------------------------------------------------|                                                                     |                                                                                 |
| * Oxidizers                                        | * Aquatic Toxicity                                                  | * Acute Toxicity (fatal or toxic)                                                |
|                                                    |                                                                     |                                                                                 |
Overview of the New HCS

Q. How is the Safety Data Sheet (SDS) changing under the revised Hazard Communication Standard?
Overview of the New HCS

• (g) Safety Data Sheets
  - Section numbers, headings and associated info as defined in Appendix D and §1910.1200

  1. Identification
  2. Hazard(s) identification
  3. Composition/information on ingredients
  4. First-aid measures
  5. Fire-fighting 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 date of preparation or last revision

*Sections 12-15 outside of OSHA’s jurisdiction
Q. Will TLVs be required on the Safety Data Sheet (SDS)?

Q. May the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) lists be used to make carcinogen classifications?

Q. Will the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) classifications be required on the Safety Data Sheet (SDS)?
Overview of the New HCS

• (g) Safety Data Sheets (continued)
  - Two important changes:
    1) Continues to require ACGIH TLVs on the SDS
    2) Requires information regarding carcinogenicity classifications by IARC and NTP
Q. How has OSHA addressed pyrophoric gases, simple asphyxiants, and combustible dust?
Overview of the New HCS

• Pyrophoric gas- “a chemical in a gaseous state that will ignite spontaneously in air at a temperature of 130 degrees F (54.4 degrees C) or below.”
  - Label (Appendix C.4.30): Danger. Catches fire spontaneously if exposed to air.

• Simple asphyxiant- “a substance or mixture that displaces oxygen in the ambient atmosphere, and can thus cause oxygen deprivation in those who are exposed, leading to unconsciousness and death.”
Overview of the New HCS

• Combustible dust - No specific definition but refer to OSHA’s guidance *Hazard Communication Guidance for Combustible Dusts, OSHA (3371-08-2009)*, and Combustible Dust National Emphasis Program Directive CPL 03-00-008
  – Label elements: *Warning. May form combustible dust concentrations in air.*
  – Note: Paragraph (f)(4) may apply to materials shipped in solid form, which create combustible dust when processed
In a “Facts on Aligning the Hazard Communication Standard to the GHS” webpage, OSHA notes, “the Department of Transportation (DOT), Environmental Protection Agency (EPA), and the Consumer Product Safety Commission (CPSC) were actively involved in developing the GHS. DOT has already modified their requirements for classification and labeling to make it consistent with international UN transport requirements and the GHS.”

Of importance to the transport community are the changes to the Hazard Communication system. “The revised HCS primarily affects manufacturers and importers of hazardous chemicals. Chemical manufacturers and importers are required to re-evaluate chemicals according to the new criteria in order to ensure the chemicals are classified appropriately. For health hazards, this will involve assigning the chemical both to the appropriate hazard category and subcategory. For physical hazards, these new criteria are generally consistent with current DOT requirements for transport.

Therefore, if the chemicals are transported, this classification should already be done to comply with the DOT requirements.
Upstream and Downstream Impacts

Regulated Materials Manufacturers & Users

• Upstream
  – Re-classification to meet new standards
  – SDS/Label Authoring
  – Distribution of revised docs

• Downstream
  – Document management
  – GHS classification impacts
  – Update container labeling capabilities
  – Re-educate workers (See 29 CFR 1900.1200 (h))
  – Keep information up to date
## Upstream and Downstream Impacts

<table>
<thead>
<tr>
<th>Category</th>
<th>Manufacturer (upstream)</th>
<th>Employer/Workplace (downstream)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hazard Classification</strong></td>
<td>Classify hazards to GHS categories</td>
<td>Evaluate impact of GHS classification</td>
</tr>
</tbody>
</table>
| **Hazard Communication**  | Update SDS and product labels to GHS standards | • Ensure updated SDS are available to employees for every product onsite  
• Update secondary container labels  
• Train workers |
## Compliance Challenges: Reclassification

<table>
<thead>
<tr>
<th>Category</th>
<th>Impact</th>
<th>Action</th>
</tr>
</thead>
</table>
| Raw Material Classification | Finished goods may become more/less hazardous to manufacturer, store, use, transport, and dispose of. This is the GREAT X-FACTOR that is seldom raised. | • Reclassified hazards could have significant workplace safety impacts,— especially when hazards increase (e.g. CMR)  
• Evaluation system for identification of less hazardous use chemicals and consumables may need to be developed |
| Regulatory Reporting      | Hazard re-classifications will impact regulatory reporting responsibilities — A new ‘carcinogen’ may create reporting requirements at a state or federal level that did not previously exist. | Access to revised regulatory lists will be critical to capture all impacts. Analysis of revised lists with product level ingredients (CAS# and % range) will be of significant value. |
| Waste Disposal            | Product reclassified as more hazardous                                  | Waste holders /generators may need to consider the concentrations of any newly re-classified dangerous substances for use, storage and disposal |
| Purchasing                | Product classification impacts purchasing decisions as it impacts storage, PPE, disposal, finished goods, and training requirements, amongst others. | • Ability to analyze alternative, less hazardous products may need to be applied to vendor and product selection s  
• Assess quantity limitations that may drive compliance requirements  
• GHS information can be funneled into the emerging sustainability and green purchasing strategies to help companies buy less toxic and harmful products |
| Training & Awareness      | GHS classification is very different to current methods used within each country. | Stakeholder awareness and training is necessary to educate employees and other downstream users to understand new information, and impacts. |
Downstream Considerations

- **Cost/Resources: Money, time, and tools**
  - “Do I even know what products I have on site?”...absent an accurate chemical inventory list, it will be difficult to assess GHS impacts
  - Increased updating effort and tracking volume of inbound SDS
  - Hazard reclassification challenges
    - Some products that currently do not require an MSDS now, may in the future
    - Increased hazards may result in increased compliance requirements
  - Hazard reclassification analysis tools
    - Immediate notification of products with revised hazards
    - Electronic integration with revised regulations, at an ingredient level
    - Immediate and accurate regulatory impact analysis at ingredient, product, site inventory levels, with all applicable revised regs
  - Where/how to store, manage and retrieve GHS documents and data as it arrives
Compliance Strategies

- **Actions: “…..And now what, and with what?”**
  - Outline your compliance framework NOW, predetermining
    - Roles and responsibilities at a corporate, site, field level
    - # of employees to be trained / estimated training hours required
    - # of work sites impacted
    - # of plant managers and safety professionals involved / estimated time requirement
    - # of product MSDS to be revised
  - Develop a capacity plan to address the transition and all required changes
  - Conduct a resource assessment
  - Develop a draft training plan
  - Analyze required infrastructure revisions and upgrades
    - Expanded data fields
    - GHS symbols/pictograms
    - New label templates for internal containers
  - Analyze required internal process changes
  - Evaluate impact of GHS re-classification
  - Analyze and confirm vendor capabilities to improve compliance
1. American Petroleum Institute - legality of hazardous mixtures as in HCS 2012

2. American Tort Reform Association - possible non-preemption involved with HazCom 2012; deals with federal law trumping or not trumping state/local laws. Tort Reform Association is likely concerned HCS 2012 provides more opportunities for work-place injury related lawsuits against the employers.

3. CropLife America - pesticide labeling: possible conflicts between HCS 2012 v. EPA requirements, somewhat addressed by EPA in this Pesticide Registration guidance notice- for more info: http://www.epa.gov/PR_Notices/

4. Coalition of five industry groups, including American Chemistry Council (ACC) is questioning the legality of "combustible dust" as in HCS 2012

5. "The Chamber of Commerce has expressed support for the Petitions for Judicial Review“ - the Chamber supports the court's review of overall legality of the revised HCS.
“In a recent podcast published on WorkSafeBC, Lorraine Davison, Manager of Chemical Services at the Canadian Centre for Occupational Health and Safety (CCOHS), reported on tentative dates/plans for Canada’s revision of WHMIS to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

According Davison, proposed Controlled Products Regulations *could be* published in the Canada Gazette 1 by **March 2013**, final regulations *could be* published in Canada Gazette 2 by **January 2014**, and actual implementation of GHS within WHMIS *could happen* by **July 2015**.
## Effective Dates

<table>
<thead>
<tr>
<th>Effective Completion Date</th>
<th>Requirement(s)</th>
<th>Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 1, 2013</td>
<td>Train employees on the new label elements and SDS format.</td>
<td>Employers</td>
</tr>
<tr>
<td>June 1, 2015*</td>
<td>Comply with all modified provisions of this final rule, except:</td>
<td>Chemical manufacturers, importers, distributors and employers</td>
</tr>
<tr>
<td>December 1, 2015</td>
<td>Distributors may ship products labeled by manufacturers under the old system until December 1, 2015.</td>
<td></td>
</tr>
<tr>
<td>June 1, 2016</td>
<td>Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.</td>
<td>Employers</td>
</tr>
<tr>
<td>Transition Period</td>
<td>Comply with either 29 CFR 1910.1200 (this final standard), or the current standard, or both.</td>
<td>All chemical manufacturers, importers, distributors and employers</td>
</tr>
</tbody>
</table>
Questions?

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