5 Easy Steps to GHS Compliance

Kami Blake, Solutions Engineer
3E Company
Kami Blake – Solutions Engineer

- Assess regulatory requirements, information management technology and effectiveness of existing HazMat programs to develop and re-engineer compliance solutions
- Prior to joining 3E in 2002, served in Quality Assurance, Supply Chain Management and Process Engineering roles in the biotech and medical device manufacturing industries
- U.S. Marine
  - Computer Programmer / Systems Analyst
  - Two time Navy Achievement Medal recipient for small systems implementation and training
Agenda

• HazCom 2012 Overview
• Upstream Impacts (Product Stewardship)
• Downstream Impacts (Workplace)
• 5 Steps to GHS Compliance
• Compliance Strategies
GHS Overview

• Methodology

  – **Classification**: A common approach, using common (established criteria) to defining and classifying hazards of chemical substances and mixtures

  – **Communication**: Conveying information about those hazards via standardized Safety Data Sheets (Mandatory 16-section) and harmonized labeling systems
Global Implementation

GHS Implementation by Country/Region

- New Zealand (2001)
- Japan (2006)
- Korea (2008)
- Taiwan (2008)
- EU (2008)
- Singapore (2008)
- Australia (2011)
- Thailand (2012)
- USA (2012)
- Vietnam (2008)
- China (2009)
- Russia (2009)
- South Africa (2009)
- Brazil (2009)
- Indonesia (2009)

- Draft regulations on GHS published:
  - Malaysia
  - Philippines
## Overview of the New HCS

<table>
<thead>
<tr>
<th>Effective Completion Date</th>
<th>Requirements</th>
<th>Applies To</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 1, 2013</td>
<td>Train employees on new label elements and SDS format</td>
<td>Employers</td>
</tr>
<tr>
<td>June 1, 2015*</td>
<td>Comply with all modified provisions of final rule, except:</td>
<td>Chemical manufacturers, importers, distributors and employers</td>
</tr>
<tr>
<td></td>
<td>Distributors may ship products labeled by manufacturers under the old system until Dec. 1, 2015</td>
<td></td>
</tr>
<tr>
<td>December 1, 2015</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>June 1, 2016</td>
<td>Comply with either 29 CFR 1910.1200, HazCom 2012, or both</td>
<td>All chemical manufacturers, importers, distributors and employers</td>
</tr>
</tbody>
</table>

*This date coincides with the European Union implementation date for classification of mixtures*
Phase I

• Significant overhaul of the HCS
• Inclusion of other hazards and provisions for HNOC
• Adoption of GHS Classification and Labeling (for shipping)
• SDS format and specific content requirements

Phase II

• Workplace labeling?
• Increased data requirements (Sections 12 through 15)?
• Revised regulatory reporting requirements?
Overview of the New HCS

• Based on the 3rd Revised Edition of GHS
• Affected 29 CFR Parts 1910, 1915, and 1926

• Significant Changes
  – Classification according to GHS
  – Labeling requirements
  – SDS replaces MSDS

• Define Harmony???
  – Selective compliance: Cherry pick desired elements, modify those that don’t suit you, 4 Purple Book revisions – mix and match
  – Phased approach – develop your own implementation timeline
  – Country-specific provisions (HNOC, ACGIH TLVs, carcinogen classification, etc.)
GHS Classification

• Under previous HCS, the “Floor” concept of hazardous chemicals applied based on criteria and specific substances cited in multiple reference lists
  ✓ Toxic and Hazardous Substances (OSHA) with PELs
  ✓ ACGIH TLVs
  ✓ NTP Annual Report on Carcinogens
  ✓ IARC Monographs

• Under GHS, no floor of chemicals cited
  → Instead, specific, detailed criteria are provided for each type of health hazard is applied to guide the evaluation of relevant data and subsequent classification of the chemical

• Hazard Classifications
  • Assigned hazard categories (e.g. acute toxicity, carcinogenicity), which can be further subdivided into sub-categories
  • Evaluation based on weight of evidence and degree of severity
  • Ascending vs. Descending (as represented with NFPA & HMIS) ratings

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Potential Re-classification Impacts

1. SDS for products not previously required
2. Changes in physical and health hazards
3. Revised PPE, Exposure Controls & First Aid measures
4. Updated ER (spill & release) measures
5. Expansion (additional substances) of Federal (e.g. IARC, NRP OSHA Carcinogens) and State (e.g. Prop 65, NJ RTK) regulated lists
6. Increased regulatory reporting requirements
7. Labels and Other Forms of Warning revisions (within 6 months)
Regulated Materials Manufacturer & Consumer

• Upstream
  – Re-classification to meet new standards
  – SDS/Label authoring for petroleum substances
  – Distribution of revised docs

• Downstream
  – Document management
  – GHS classification impacts
  – Update container labeling capabilities
  – Re-educate workers
Transition Guideline

1. Understand Raw Materials - Current list of all products and phys chem data
2. Gather Baseline GHS classification Data
3. Classify Substances & Mixtures
4. Determine Template, Rules, and Phrase for New SDS and Labels
5. Author New SDS and Labels
6. Maintenance Plan
# Classification: Process

<table>
<thead>
<tr>
<th>Substance or Mixture Determination</th>
<th>Compile &amp; Prioritize data</th>
<th>Evaluate Data &amp; Classify Hazards</th>
<th>Document &amp; Justify</th>
</tr>
</thead>
<tbody>
<tr>
<td>List raw materials</td>
<td>Accumulate data from various sources</td>
<td>Evaluate data</td>
<td>Document decision logic for classification and Data Sources</td>
</tr>
<tr>
<td>Identify physical and chemical properties</td>
<td>Organize data</td>
<td>Classify substances based on GHS criteria</td>
<td>Begin internal and external dialogue</td>
</tr>
<tr>
<td>Gather special use determination</td>
<td>Identify data gaps</td>
<td>Classify mixtures based on GHS methods</td>
<td></td>
</tr>
</tbody>
</table>

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Noteworthy Components

• Ingredient disclosure
  – Concentration (exact percentage) shall be specified
  – Exceptions when concentration ranges may be used
    • Trade secret claim; corresponding statement describing what is being withheld, including percentage
    • Batch-to-batch variability in the production of a mixture
    • Group of substantially similar mixtures with similar chemical composition

• NFPA / HMIS® Ratings
  – OSHA stated at the spring SCHC conference these conflict with revised HCS and should not be displayed on the SDS or as label content until hazard criteria is aligned
  – HMIS is planning to release a new guidance document as of Q1 2013, “re-organizing” hazard information
Automated Authoring Overview

- Enterprise level system for global chemical regulatory compliance & hazard communication
- SDS “generator,” but much more...
  - Material data authoring and chemical management system
    - Repository for all material data
  - Chemical regulatory system
    - Classifications
    - Regulatory analysis
  - Hazard communication system
    - Global (M)SDS distribution
    - Plant-level label generation
    - Technical Data Sheets, Transport Information Sheets, Safety Summary, etc.
Integrated Regulatory & chemical content

- For dynamic access to PhysChem properties, Tox/EcoTox data, International Inventories, as well as GHS classifications and other international regulatory and advisory data.
Data Management

- **Product Data Management**
  - **Formula Management**
    - Formulas may be maintained as the primary point of entry
    - Formulas revisions due to change in regulations, hazards, and/or ingredients
  - Management of empirical, product/mixture level data
Calculations

- Product-level Mixture Calculations and Calculations
  - Automatic Calculations/Estimations
    - Determination of quantitative data entry elements at the mixture level:
      - Flash Point
      - Boiling Point
      - Specific Gravity
      - Vapor Density
      - LD50/LC50
  - Automatic Regulatory Assessments
    - Automatic determination of regulatory elements
      - GHS Classifications
      - OSHA Hazards
      - International Inventories
      - EU Hazard Classifications
      - Transportation Classifications

1. Regulatory & Chemical Data

2. Product Data Management

3. Product Estimations & Regulatory Assessments

4. Rules-Based Authoring

5. HazCom Document Generation

6. Document Distribution
**Pre-determined Rules**

- **Rules-based Authoring**
  - Automatic Authoring of SDS and related documents based on Automatic Mixture Calculations and Classifications

  - **Rule Name:** RCRA Waste Code D002
  - **Condition:** \( \text{ph\_typical} \leq 2 \) \( \text{ph\_typical} \geq 12.5 \)
  - **Consequences:**
    - Incinerate the material under controlled conditions in an approved incinerator
    - Dispose of this material and its container at hazardous or special waste collection point
    - D002: Waste Corrosive material \([\text{ph\_typical} \leq 2 \text{ ph\_typical} \geq 12.5, \text{or corrosive to steel}] <n>\)
Document Generation

- **Hazard Communication Document Generation**
  - Generate SDS, Labels, Technical Data Sheets, Hazard Summaries, etc.
    - Language support
    - Country / region specific SDS formats for global regulatory compliance (templates for SDS and labels)
Document Distribution

- **MSDS Distribution (Push & Web)**
  - MSDSs are pushed to end users
  - Customer orders from the ERP provide with triggers to automate SDS delivery
  - Order history is maintained in to automate future SDS distribution
  - SDS are made available on the web

- **Label Generation**
  - Labels are automatically printed at the appropriate mfg. or distribution facility based on production, shipping, or other activity
Based on criteria outlined in Appendix C

Under Section (f)(6), workplace labeling
  - does NOT have to conform to the GHS requirements
  - Must provide physical and health hazard information
  - HMIS & NFPA acceptable label templates

Section (f)(8), provides a portable container exemption (intended only for the immediate use of the employee)

Significant new information (re-classification) rule requires container label revision within six months

GHS Labeling of Small Packages guidance was NOT accepted

OSHA continues practical accommodation approach
Flammable gases 1
Flammable aerosols 1.2
Flammable liquids 1,2,3
Flammable solids 1.2
Pyrophoric liquids & Solids
Self heating substances & mixtures 1,2
Substances & mixtures when in contact with water emit flam. Gases 1,2,3
Organic peroxides B,C,D,E,F

Defines Flammability
**Defines an Oxidizer**

Any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does.
Pictogram – Gas Cylinder

- Gases under pressure
- Compressed gases
- Liquefied gases
- Refrigerated liquefied gases
- Dissolved gases

Defines all types of Gases
Pictogram – Exploding Bomb

Defines

• Explosives
• Self-Reactive
• Organic Peroxides
Pictogram – Corrosives

- Skin corrosive, burns 1A, 1B, 1C
- Eye Damage
- Corrosives to metal 1

Defines both physical & health hazards
- Corrosive to metals
- Corrosive to skin or eyes
Pictogram – Health Hazard

- Carcinogen. 1A, 1B, 2
- Mutagen 1A, 2B, 2
- Reproductive Toxicity 1A, 1B, 2
- Respiratory Sensitizer. 1
- Mutagenic 1A, 1B, 2
- Specific organ Toxicity 1,2
- Aspiration Hazard 1

Defines Chronic & Specific long term type effects
Acute toxicity
Categories 1,2,3
Oral
Dermal
Inhalation

Defines Acute Toxicity (Fatal or Toxic)
Pictogram – Exclamation Mark

- Irritant Skin & Eyes 2
- Skin sensitization 1
- Acute toxicity – cat 4 oral, dermal, inhalation
- Narcotic effects
- Respiratory tract irritation
- Hazardous to ozone layer (not mandatory)

Defines lower level Toxicity and Irritation effects
Pictogram – Environmental

- Acute hazard 1
- Chronic hazard 1,2
- Based on aquatic toxicity only
- Chronic based on toxicity & persistence in environment.

Defines Aquatic Toxicity (Optional)
Required information on shipped containers

1. Product Identifier

2. Supplier Information: Name, address, telephone number (24-7-365 access) of the chemical manufacturer, importer, or responsible party

3. Signal Word: One of two words used to distinguish between hazard levels and emphasize the extent of the hazard

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


6. Precautionary Statement: Phrases that describe measures recommended to minimize or prevent adverse effects resulting from exposure, improper storage or handling.
GHS Labeling

SAMPLE LABEL

CODExxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx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Labeling for Shipped Containers

Example 2: Combination packaging for a Category 1 specific target organ toxicant and Category 2 flammable liquid

Outer Packaging: Box with a flammable liquid transport label

Inner Packaging: Plastic bottle with GHS hazard warning label

Annex 7

EXAMPLES OF ARRANGEMENTS OF THE GHS LABEL ELEMENTS

The following examples are provided for illustrative purposes and are subject to further discussion and consideration by the GHS Sub-Committee.

Example 1: Combination packaging for a Category 2 flammable liquid

Outer Packaging: Box with a flammable liquid transport label

Inner Packaging: Plastic bottle with GHS hazard warning label

PAINT (FLAMMALINE, LEAD CHROMIUM)

Product identifier:
(see 1.4.10.5.2 (d))

SIGNAL WORD (see 1.4.10.5.2 (a))

Hazard statement(s) (see 1.4.10.5.2 (b))

Precautionary statement(s) (see 1.4.10.5.2 (c))

Additional information as required by the competent authority as appropriate.

Supplier identification (see 1.4.10.5.2 (e))

2-METHYL FLAMMALINE

Product identifier:
(see 1.4.10.5.2 (d))

SIGNAL WORD (see 1.4.10.5.2 (a))

Hazard statement(s) (see 1.4.10.5.2 (b))

Precautionary statement(s) (see 1.4.10.5.2 (c))

Additional information as required by the competent authority as appropriate.

Supplier identification (see 1.4.10.5.2 (e))

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- workplace label, which provides the physical and health hazard information
- Same as on shipped containers or
- “Product identifier and words, pictures, symbols, or combination thereof... at least general information regarding the hazards... with the specific information regarding the physical and health hazards...”
GHS Safety Data Sheets

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 prep/rev date

*Sections 12-15 outside of OSHA’s jurisdiction
Compliance Challenges

Workplace Labeling

"A" Components for Pressure Pour

- Severe
- Serious
- Moderate
- Slight
- Minimal

Health 2*
Flammability 1
Reactivity 1
PPE B

Danger

- Caution: May cause a fire. Combustible liquid.
- May cause burns. May cause burns in eyes.
- Harmful to aquatic life. May cause long-term adverse effects in the aquatic environment.
- May cause cancer.

Supplemental Label Information

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

Contains:

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

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## Compliance Challenges

### GHS Classification of Materials

<table>
<thead>
<tr>
<th>Category</th>
<th>Impact</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Raw Material Classification</strong></td>
<td>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.</td>
<td>• 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</td>
</tr>
<tr>
<td><strong>Regulatory Reporting</strong></td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Waste Disposal</strong></td>
<td>Product reclassified as more hazardous</td>
<td>Waste holders /generators may need to consider the concentrations of any newly re-classified dangerous substances for use, storage and disposal.</td>
</tr>
<tr>
<td><strong>Purchasing</strong></td>
<td>Product classification impacts purchasing decisions as it impacts storage, PPE, disposal, finished goods, and training requirements, amongst others.</td>
<td>• Ability to analyze alternative, less hazardous products may need to be applied to vendor and product selections • 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</td>
</tr>
<tr>
<td><strong>Training &amp; Awareness</strong></td>
<td>GHS classification is very different to current methods used within each country.</td>
<td>Stakeholder awareness and training is necessary to educate employees and other downstream users to understand new information, and impacts.</td>
</tr>
</tbody>
</table>
HCS 2012 Compliance

5 Easy Steps

1. Leadership Commitment
2. Chemical Inventory Accuracy
3. Document Control
4. Data Management
5. Employee Information and Training
Step 1: Leadership

Commitment vs. Priority

• Executable Plan
• Sustainable Program
• Budget
• Resources
• Tools
Step 2: Chemical Inventory

“Do I even know what products I have on site?”

...absent an accurate chemical inventory list, it will be difficult to assess GHS impacts and achieve HCS 2012 Compliance

• Random sampling will assist with determining accuracy
• Allocate resources (internal/external) to complete site assessments
• Establish practices to update inventories regularly
Significant Increase in Inbound Volume

- 1.2 million in U.S. Commerce
- All products in your inventory that currently required SDS and potentially SDS for products not previously required
- Date Stamp to meet time specific/sensitive requirements
- Supplier compliance tracking
Impact Analysis: Hazard Classification Changes

• Revised hazards = additional compliance activity
  → Relabeling of workplace containers
  → Supplemental employee training
  → IH implications (administrative and engineering controls)
  → Increased regulatory reporting requirements

• Hazard reclassification analysis tools
  – Immediate notification of products with revised hazards
  – Electronic integration with revised regulations, at an ingredient level
    (NTP, IARC, Prop 65, NJ RTK, etc.)

• Analyze required infrastructure revisions and upgrades
  – Expanded data fields
  – New label templates for internal containers
Step 5: Employee Training


- Essentials for HCS 2012
  - Labeling / All GHS Label Elements
    - Product Identifier
    - Supplier Information
    - Signal Word
    - Precautionary Statements
    - Pictograms
    - Hazard Statements
  - SDS Format and Content
  - Classification of Hazards
  - Presented in a language and format that employees can understand

- Revised HazCom Training
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 SDS 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
  - Analyze required internal process changes
  - Evaluate impact of GHS re-classification
  - Analyze and confirm vendor capabilities to improve compliance
Online Resources

- OSHA’s HCS


- OSHA’s HCS Training Fact Sheet
  [https://www.osha.gov/Publications/OSHA3642.pdf](https://www.osha.gov/Publications/OSHA3642.pdf)

- OSHA’s HCS Label and Pictogram Brief
  [https://www.osha.gov/Publications/OSHA3636.pdf](https://www.osha.gov/Publications/OSHA3636.pdf)

- Canadian Action Plan for GHS Adoption

- 3E Company
  [www.3ecompany.com](http://www.3ecompany.com)

- UN GHS Website
  [http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html](http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html)
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