GHS Implementation

• From the Law to Labeling
• Top questions and answers
GHS Implementation

• Where We Are, Checklist
• Challenges for Employers
  - Hazard Classifications
  - Training: Right-to-Know vs. Understand
  - Shipped vs Workplace Labels
  - GHS Scenarios
• Simplify In-Plant Labeling Tasks
GHS – Where We Are

- 72 Countries
- USA (HAZCOM) - June 2016
- Canada (WHMIS) – May 2018
- Mexico (NOM) – Oct. 2018
US Implementation Timeline
Federal OSHA 1910.1200

DECEMBER 1, 2013:
Deadline to Train Employees on new label elements and SDS formats

JUNE 1, 2015:
Chemical Manufacturers reclassify chemicals, send SDSs, and update chemical labels

DECEMBER 1, 2015:
Chemical distributors shipping product with updated SDSs and chemical labels

JUNE 1, 2016:
Full GHS Compliance HazCom & workplace labeling programs, processes, documents updated

2013 2014 2015 2016
WE ARE HERE
What’s Not Covered by Hazcom/GHS

- Pesticides (EPA)
- Food, additives, drugs, cosmetics, medical or veterinary devices (FDA)
- Beverages & distilled spirits (Bureau of Alcohol, Tobacco, Firearms)
- Consumer products (CPSC)
- Agricultural
- Wood (unless processing creates hazard - combustible dust)
- Radiation
- Biological Hazards
What is Covered?

- Bricks & Ingots
- Wood (where hazard is not just combustion)
- Combustible Dusts
- Welding Rods/Wire
- Acid Batteries
- Drugs (not in final form – e.g. crushed)
- Consumer Products (used in qty’s and manner inconsistent with how a consumer would use them)
Useful Documents

Source: https://www.osha.gov/dsg/hazcom/
GHS Checklist – These Should be Complete

✔ Employees trained.
✔ Implementation plan created.
✔ Chemical inventory updated.
✔ SDS Management.
  ✔ MSDSs separated from SDSs.
  ✔ Access, storage, backup, on-line, hard copies etc.
✔ Labeling needs identified.
GHS Checklist – These Should be In-Process

- Update current HazCom program.
- Reinforce training (30 mo’s ago).
- Document supplier deviations (inability to provide SDS’s).
- Label printer (if needed) or pre-printed labels from suppliers.
- Audit & stress test hazcom plan.
Biggest Challenges for Employers

Hazard Communication
✓ Labels
✓ Safety Data Sheets (SDS)
✓ Training

New Classifications
✓ Health & Physical Hazards
✓ GHS vs NFPA
✓ Defining Mixtures

Decision logic 2.6 for flammable liquids

1. The substance/mixture is a liquid
2. Does it have a flash point ≤ 93 °C?
   - No: Not classified
   - Yes: Does it have a flash point > 60 °C?
     - No: Does it have a flash point ≥ 23 °C?
       - Yes: Does it have an initial boiling point > 35 °C?
         - Yes: Category 1 Danger
         - No: Category 2 Danger
       - No: Category 3 Warning
     - Yes: Category 4 No symbol Warning
Label Changes…

**NFPA RTK - US**

Methanol
67-56-1

**WARNING**
WARNING HEALTH HAZARDS: Flammable. ORGAN HAZARDS: Eye, Inhalation. Ingested, do not induce vomiting.

**DANGER**
HEALTH HAZARDS: Poison

**Lead 7439-92-1**
Health Hazard 0
Fire Hazard 0
Instability 0

**WHMIS Std – Canada**

Acetone 1128-89

Be sure to handle this substance safely!! Target health hazards include corrosive hazard and vapor hazard. Always wear proper PPE and consult Material Safety Data Sheet.

**HSID Std - Europe**

**Globally-Standardized GHS**

**Acetone**

**ENGLISH:** H200: Unstable explosives. - H221: Flammable gas. - H260: In contact with water releases flammable gases which may ignite spontaneously.

P101: If medical advice is needed, have product container or label at hand. - P220: Keep away from combustible materials. - P223: Keep away from any possible contact with water, because of violent reaction and possible flash fire.

**FRANCAIS:** H200: Explosif instable. - H221: Gaz inflammable. - H260: Dégage au contact de l'eau des gaz inflammables qui peuvent s'enflammer spontanément.


**DANGER**

2222222-22-2
333-33-3-3

**DANGER**

111-111-1
Reach Authorization #

250L

Brady Corporation
6555 West Good Hope Road
Milwaukee, WI 53223
414-444-4444

Shipped Label
### 9 Label Pictograms

* Note there’s a precedence to the pictograms

#### Toxicity…
- If 🥀 than ✗

#### Skin corrosion…
- If 🥀 than ✗

#### Respiratory…
- If 🥀 than ✗

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<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>

<table>
<thead>
<tr>
<th>Gas Cylinder</th>
<th>Corrosion</th>
<th>Exploding Bomb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gases Under Pressure</td>
<td>Skin Corrosion/ Burns</td>
<td>Explosives</td>
</tr>
<tr>
<td></td>
<td>Eye Damage</td>
<td>Self-Reactives</td>
</tr>
<tr>
<td></td>
<td>Corrosive to Metals</td>
<td>Organic Peroxides</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flame Over Circle</th>
<th>Environment (Non-Mandatory)</th>
<th>Skull and Crossbones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxidizers</td>
<td>Aquatic Toxicity</td>
<td>Acute Toxicity (fatal or toxic)</td>
</tr>
</tbody>
</table>
**SDS Changes**

**MSDS**
- 8 (OSHA) or 16 (ANSI) section format.
- **Material** data safety sheets.
  1. Product identifier
  2. Hazardous ingredients
  3. Physical/chemical data
  4. Fire/explosion data
  5. Reactivity
  6. Health, toxicological data
  7. Precautions for handling
  8. Control measures

**SDS**
- 16 Mandatory sections.
- Uniform format.
- **Safety** data sheets.
  1. Product identification
  2. Hazard identification
  3. Composition/ingredients
  4. First aid measures
  5. Firefighting measures
  6. Accidental release measures
  7. Handling & storage
  8. Exposure controls / PPE
  9. Physical, chemical properties
  10. Stability, reactivity
  11. Toxicological info
  12. Ecological info
  13. Disposal considerations
  14. Transport information
  15. Regulatory information
  16. Other information
Creating Labels from SDS’s

# Black Liquor

## 1. Identification

<table>
<thead>
<tr>
<th>TRADE NAME(S):</th>
<th>Black Liquor</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNONYMS and/or GRADES:</td>
<td>Spent Kraft Cooking Liquor, Spent Kraft Pulping Liquor</td>
</tr>
<tr>
<td>PRODUCT USES:</td>
<td>The liquor is burned in the recovery boiler to reclaim certain pulping chemicals. Tall oil may also be extracted from the liquor.</td>
</tr>
<tr>
<td>CHEMICAL NAME/CLASS:</td>
<td>Chemical mixture. CAS# 66071-92-9</td>
</tr>
<tr>
<td>MANUFACTURER’S NAME:</td>
<td>Weyerhaeuser</td>
</tr>
<tr>
<td>ADDRESS:</td>
<td>33663 Weyerhaeuser Way S., Federal Way WA 98001-9620</td>
</tr>
<tr>
<td>EMERGENCY PHONE:</td>
<td>(844) 523-4081 (3E Company)</td>
</tr>
<tr>
<td>BUSINESS PHONE:</td>
<td>(253) 924-3865</td>
</tr>
<tr>
<td>INTERNET ACCESS:</td>
<td>See section 10</td>
</tr>
<tr>
<td>REVISED DATE:</td>
<td>May 26, 2015</td>
</tr>
</tbody>
</table>

## 2. Hazard(s) Identification

### Signal Word(s)

- **DANGER**

### Hazard Statement(s)

<table>
<thead>
<tr>
<th>Product Classification</th>
<th>Health</th>
<th>Eye Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin Corrosion/Irritation - Category 1</td>
<td>Causes Severe Skin Burns and Eye Damage</td>
<td>Causes Serious Eye Damage</td>
</tr>
<tr>
<td>Acute Toxicity Oral - category 3*</td>
<td>Toxic If Swallowed</td>
<td></td>
</tr>
</tbody>
</table>

## 3. Precautionary Statement(s)

### Preventative Statements:

P201: Avoid breathing mist or vapors.

P271: Use only outdoors or in a well-ventilated area.

P272: Contaminated clothing should not be taken out of the workplace.

P273: Avoid release to the environment.

P280: Wear gloves, clothing, eye, face and respiratory protection.

P264: Wash hands after handling.

### Response Statements:

P305 and P351: If in eyes rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do, continue rinsing.

P338: Remove clothing if present and easy to do, continue rinsing.

P337 and P313: If eye irritation persists get medical advice/attention.

P301 and P330: If swallowed, rinse mouth.

P302, P351 and P340: If swallowed or inhaled immediately call a poison center or doctor, remove victim to fresh air and keep at rest in a position that is comfortable for breathing.

P303, P352 and P353: Rinse skin with water/shower, continue rinsing. Wash with plenty of soap and water.

P301 and P340: Immediately take off all contaminated clothing. Wash contaminated clothing before reuse.

P333 and P313: If skin irritation or rash occurs, get medical advice/attention.

### Disposal:

P811: Dispose of in accordance with federal, state and local regulations.

### Ingredients:

If Unknown Acute Toxicity (>1%): NAP
Reinforce Training

Hazard Communication
The standard that gave workers the right to know, now gives them the right to understand.

Right-to-Know
Knowledge “The What’s”
Pictos, SDSs, Hazards, PPE required

Right-to-Understand
Understanding “The How’s, Who’s, Why’s”
How do I handle… Who do I contact… How will this affect the…

Simply handing an employee the SDS sheet doesn’t comply.
Reinforce w/Visuals
GHS Labels
Shipped and Workplace Labels
Two Types of Labels

Primary (Shipped) Container Label

- “Shipped Container” = “Any container leaving the workplace”
- 6 required elements
- Pictos with red diamonds
- Chemical, signal word, hazard & precautionary statements, supplier info

Workplace (Secondary Container) Label

- Match primary label (best practice) -or-
- Chemical, words, pictures, symbols or in combination with other info conveys all the physical and health hazards of the chemical
Additional Shipped Label Requirements

- English
- Legible (readable with corrective lenses)
- Pictograms – Red diamonds, black pictos, white background

Supplementary information permitted:
- Additional languages
- PPE symbols/info
- HMIS / NFPA designations
Classification Differences

Also...

• “Chronic Health Hazards” are not addressed by NFPA704.

• Includes carcinogenicity (cancer causing), teratogenicity (causing congenital defects), and mutagenicinity (induce genetic mutations) as well as blood dyscrasias (such as anemia), chronic bronchitis and liver atrophy.

• Must be communicated by words, pictures, symbols in addition to NFPA or HMIS system.
Stationary Process Containers & GHS

1910.1200(f)(7)

• Signs, placards, process sheets, batch tickets, operating procedures, or other written materials in lieu of affixing labels to individual stationary process containers.

• Identifies the containers and conveys the information for “workplace labels” to be on a label.

• Written materials must be readily accessible to the employees.
Tank Sign Examples
Combustible Dust & GHS

- Forms combustible dust when processed.
- No pictogram.
- Signal word: WARNING
- Hazard statement: “May form combustible dust concentrations in air”
- Precautionary statement: None req’d.
- Responsible parties may add their own precautionary statements to Section 2 so long as they are relevant and do not contradict or cast doubt on the validity of the other information in the SDS.
Labs – 2 types

Laboratories – Research & Academic
- Workplace where relatively small amounts of chemicals are used on a non-production basis
- Follow 1910.1450 Laboratory Standard

Laboratories – Production / QA
- Produce commercial quantities of material
- Quality control of a production process
- Formulators & mixers e.g. coatings, sealents, cleaners etc.
- Follow Hazcom / GHS 1910.1200 (workplace and shipped labels).
GHS
Questions & Scenarios

• SDS Sheets
• Labels
Safety Data Sheets

Are hard copies of SDS sheets required?

From OSHA Brief 3696 Steps to Effective Hazard Communication…

• **Electronic copies are permitted**, however...

• **Must have back-up system** in event of power failure and/or equipment failure of primary system

• Employees **must be trained** on how to use system and obtain hard copies if needed

• In **medical emergency**, **hard copy SDS’s** must be immediately available to emergency personnel
If the SDS sheets include the hazard pictograms, are they required to have the red diamond border?

Pictograms/symbols

- Appendix D of the HCS, section 2, states, “Hazard symbols may be provided as graphical reproductions in black and white or the name of the symbol, e.g., flame, skull and crossbones.”

- The hazard symbol is the symbol inside the frame of the pictogram. Therefore, just the symbol can be used or the name of the symbol can be used.

- If the pictogram is used, it may be printed in black and white.
Safety Data Sheets

When is an employer required to replace their MSDS with revised SDSs?

From July, 2014 OSHA Letter of Interpretation…

• Manufacturers (chemical), importers, and distributors must be providing SDSs by June 1, 2015
• All employers must have, maintain, and make available to employees the most recent MSDS or SDS received.

• OSHA would not issue citations for maintenance of MSDSs when SDSs have not been received. As OSHA explained in a January 2013 letter employers may, but are not required to, contact manufacturers or distributors of products they have previously ordered to request new SDSs. The SDSs must be provided

Would OSHA cite employers who only have an MSDS available?
Where should SDS information be stored when on a remote (e.g. construction) site?

SDS for Remote Worksites

• May be stored at primary workplace.

• Employer must ensure no delay in worker receiving SDS information.

• May be accomplished by having designated employee always available at primary workplace to provide info (via smartphone, tablet, etc.)

• Must be defined in written hazcom plan.
Labels - Do I need to re-label my chemicals?

“The **employer is not responsible** for updating labels on **shipped** containers, even if the shipped containers are labeled under HazCom 1994.

The employer **must re-label** items if the labels are **removed or defaced**.

However, if the employer is aware of **newly-identified hazards** that are not disclosed on the label, the employer must ensure that the workers are aware of the hazards as discussed under workplace labels.”

- OSHA Brief Hazard Communication Standard: Labels & Pictograms
Labels - What about Small Containers?

Small Primary “Shipped” Containers (syringes, tubes, ampoules):
• Fold back labels, pull-out labels, tags

OSHA’s Practical Accommodation (at a Minimum):
• Product Identifier
• Pictograms
• Manufacturer’s Name/Phone
• Signal Word
• Statement indicating full label info is on outside of package
• The outer package
  - Outside package label meets 1910.1200(f)(1)
  - Informs users that small containers must be stored in the outer container bearing full GHS information
  - Cannot conflict with any other standards
Labels

We purchase preprinted labels with 4 blank diamonds. Can we black-out the ones we don’t use?

Are pictogram labels with adhesive backing compliant under Appendix C, 29CFR1910-1200?

From Dec, 2012 OSHA Letter to Intercontinental Chemical Corporation...

- A blank square red frame set on point is not a pictogram and is not permissible under HCS2012
- Black-out option is compliant
- Red frame must be fully covered

- Pictogram labels with adhesive backing on a label that are sufficiently wide to be clearly visible are acceptable
Labels

Can we continue to use NFPA diamond or HMIS system for our “Workplace Labels”

- YES IF it conveys ALL the physical and health hazards of the chemical.
- Must use words, pictures, symbols and/or text to convey the physical and health hazards.
- NO IF the hazard includes a chronic health condition – carcinogen (cancer causing), congenital birth or gene defects, or blood dyscrasias – anemia, chronic bronchitis, liver disease etc.
  - You must include those hazards on the label as well.
  - Found in section 2 of SDS
What about Transportation DOT Labels?

When the **primary container is** also the **shipping container:**

- OSHA picto’s do not replace diamond shaped labels for DOT
- DOT harmonized with GHS in 2008
- OK to **have both**
- Still needs to meet DOT requirements of 49 CFR 172 (E)

**OSHA Statement:**

*If a label has a DOT transport pictogram, Appendix C.2.3.3 states that the corresponding HCS pictogram shall not appear. However, DOT does not view the HCS pictogram as a conflict and for some international trade both pictograms may need to be present on the label. Therefore, OSHA intends to revise C.2.3.3. In the meantime, the agency will allow both DOT and HCS pictograms for the same hazard on a label.*
Labels

A hazardous bulk chemical is shipped by rail car to a customer? The rail car sits on the tracks at the customer’s facility (weeks). The customer draws the bulk chemical from the rail car in their processing operation. What signage is required?

From p.49 OSHA Hazcom/GHS Directive 7/9/2015...

• Requires a DOT label for transport.
• Considered a “stationary process container”.
• The requirement of HCS (f)(7) apply - signs, placards, process sheets, batch tickets, operating procedures, or other such written materials in lieu of affixing labels.

• Conveys info required by (f)(6).
• Readily accessible to employees.
A lab on a campus of 6 buildings mixes chemicals and walks them over to another campus building for storage and use. What type of GHS label is required – a **shipped** label or a **workplace** label?

From Dept. of Labor…

• All containers moved from one facility to another (unless its immediately used by the person performing the transfer) must be labeled in accordance with (f)(1) – full 6 label elements

• Hazardous Waste labeling is not covered by HCS2012. It’s covered by the EPA under the RCRA Act (Resource Conservation and Recovery Act)

What GHS label do I need to put on the byproduct waste (hazardous) from the lab?
Simplify Labeling: What Are My Labeling Options?

Pre-Printed Labels vs. Print-Your-Own Labels

- Low & high volume
- Not time sensitive

- Medium volume
- Time critical
4”x 6” Vinyl Label Example

Print-Your-Own
• Medium volume
• Medium print speed
• Flexibility to print other labels, text
• Immediate (no lead time
• Templates & stored data

Pre-Printed
• Low volume
• Difficult to cost justify printer investment
• 2-4 day lead time

Pre-Printed
• High volume
• Same text
• High print speed
• 1-2 week lead time

$1.50-3.00+/label
$0.75-1.50/label
$0.30-0.75/label

Approx Qty of Labels Annually
10 - 500
5,000+

Approximate label cost only.
Print Your Own Solutions:

- Review the software
- Minimize typing
- Ability to store frequently printed labels
- Multi-color vs. one-color print
## Multi-Color Print
- Higher cost
- Greater flexibility
- No separate stock of label templates

## One-Color Print
- Lower cost
- Stock preprinted label rolls (for shipped labels)
- Less flexibility
Or Use Existing B/W Printer

- No GHS software
- Create your own label / template
- Add preprinted pictos
- Lots of typing
Can I use a handwritten label in a pinch if I need to identify it immediately?

- Handwritten labels are permissible.
- Needs to be legible, durable
- In English
- Preprinted pictograms
Labeling – Best Practice

• Base the solution on your anticipated label volume & overall facility needs.

• Have your “Workplace labels” contain same info as “Shipped Labels”.

• Assign person responsible for GHS label implementation.

• Don’t wait for final deadline.
5 Key Questions to Ask

• How many different chemicals do we use in our facility(s)?
• Do we use secondary containers for our chemicals?
• Have I estimated the annual quantity of labels we’ll need?
  - GHS
  - Non-GHS safety labels
• What’s my current labeling solution? Is it effective? Can it print in color?
• Do I need to print labels right away or can I wait a few days?
GHS Checklist –
These are your To-Do’s

➢ Reinforce training from 18 mo’s ago.
➢ Document any supplier deviations (inability to provide SDS’s).
➢ Assign personnel responsible for labeling.
➢ Review label printing systems (if needed) or pre-printed labels from suppliers.
➢ Audit & stress test hazcom plan and compliance.
➢ Update written hazard communication plan.
GHS Implementation

Thank You!