GHS and DOT
What You Need to Know Today

Bruce Carlile and John Baker
COQA Meeting – February 2015
Introduction for COQA Meeting – February 2015

► What has Bureau Veritas become today?
► What is GHS?
► Review of Deadlines, Fines, who is Responsible?
► What has changed? (MSDS SDS)
► How do you come up with a classification?
► OSHA Hazard Classes, DOT and Labeling
► What requirements apply to SDS?
► Resources
Bureau Veritas at a Glance

- Established in 1828

- **Eight global businesses** providing a complete set of services including:
  - Largest market share in the “TIC Industry”
  - Testing, inspection, audit, certification, risk management, outsourcing and training services

- A global leader in conformity assessment and certification services in the areas of:
  - Quality
  - Health, Safety, & Environment
  - Social Responsibility

- Group Key Figures
  - More than 1330 offices and laboratories in 140 countries
  - 59,000 employees

---

**Eight Global Businesses**

Revenue breakdown

- Government Services & International Trade: 7%
- Marine: 8%
- Consumer Products: 11%
- Industry: 23%
- Commodities: 19%
- In-Service Inspection & Verification: 12%
- Certification: 9%
- Construction: 11%
- The Americas: 23%
- Asia Pacific: 28%
- EMEA: 29%
- France: 20%
- Europe – excluding France
- Middle-East
- Africa

---

**Broad Geographical Presence**

Revenue breakdown

- Asia Pacific: 28%
- The Americas: 23%
- EMEA: 29%
- France: 20%
Globally Harmonized System (GHS)

Is your company ready for compliance with the Globally Harmonized System (GHS) for Classification and Labeling of Crude Oils?
What is GHS?

A globally harmonized system developed by the United Nations for the classification of substances and mixtures based on their health, physical and environmental hazards.

http://www.osha.gov/dsg/hazcom/images/01.jpg
It is often light heartedly stated that the GHS is not actually “global” or “harmonized”, though it is a “system.”
Impact on Employers

Employee Training
Written Program
Hazard Classification
Labels
Safety Data Sheets
## Important Dates

<table>
<thead>
<tr>
<th>Effective Completion Date</th>
<th>Requirements</th>
<th>Who Must Comply</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 1, 2013</td>
<td>Train employees on the new label elements and safety data sheet (SDS) format.</td>
<td>Employers</td>
</tr>
<tr>
<td>June 1, 2015</td>
<td>Compliance with all modified provisions of the final rule, except those listed below:</td>
<td>Chemical manufacturers, importers, distributors and employers</td>
</tr>
<tr>
<td>December 1, 2015</td>
<td>Distributors shall not ship containers of hazardous materials labeled by the chemical manufacturer or importer unless it carries the appropriate HCS label.</td>
<td>Employers</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>All chemical manufacturers, importers, distributors and employers.</td>
</tr>
</tbody>
</table>
Major Changes in HCS 2012

► Hazard Classification based on GHS
  - Physical hazards
  - Health hazards
  - Environmental hazards

► Labeling
  - Signal words
  - Pictograms
  - Hazard and precautionary statements

► Safety Data Sheets
  - Name change from MSDS to SDS
  - Specified 16-section format
# OSHA Pictograms and Hazards

**SDS Section: 2**

### Health Hazard
- Carcinogen
- Mutagenicity
- Reproductive Toxicity
- Respiratory Sensitizer
- Target Organ Toxicity
- Aspiration Toxicity

### Flame
- Flammables
- Pyrophorics
- Self-Heating
- Emits Flammable Gas
- Self-Reactives
- Organic Peroxides

### Exclamation Mark
- Irritant (skin and eye)
- Skin Sensitizer
- Acute Toxicity
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer (Non-Mandatory)

### Gas Cylinder
- Gases Under Pressure

### Corrosion
- Skin Corrosion/Burns
- Eye Damage
- Corrosive to Metals

### Exploding Bomb
- Explosives
- Self-Reactives
- Organic Peroxides

### Flame Over Circle
- Oxidizers

### Environment
- Aquatic Toxicity

### Skull and Crossbones
- Acute Toxicity (fatal or toxic)

Keys to Success: Understanding the SDS Process

- DATA
- Composition
- Physical Properties
- Classification
- Transportation & Regulation
- SDS
Keys to Success:
Pressurized vs. Non-Pressurized Sampling

Pressurized Sampling

Non-Pressurized Sampling
Product Identification Exercise
Can you guess the product

Physical Properties

Vapor Pressure
4.34 psi @ 77ºF

Initial Boiling Point
38ºC (100ºF)

Flash Point
< 15-93ºC (<59ºF-199ºF)

Explosive Limits
No data

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Product</td>
<td>100</td>
</tr>
<tr>
<td>Gasoline</td>
<td>0 - 30</td>
</tr>
<tr>
<td>Hexanes Plus</td>
<td>0 - 10</td>
</tr>
<tr>
<td>Xylene</td>
<td>0 - 10</td>
</tr>
<tr>
<td>Toluene</td>
<td>0 - 10</td>
</tr>
<tr>
<td>Benzene</td>
<td>0 - 9</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>0 - 4</td>
</tr>
<tr>
<td>Trimethyl Benzene (mixtures and isomers)</td>
<td>0 - 2</td>
</tr>
<tr>
<td>Hydrogen Sulfide</td>
<td>0 - 1</td>
</tr>
</tbody>
</table>
Product Identification Exercise

Can you guess the product

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methane</td>
<td>85 - 90</td>
</tr>
<tr>
<td>Ethane</td>
<td>3 - 5</td>
</tr>
<tr>
<td>Propane</td>
<td>1 - 3</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>1 - 3</td>
</tr>
<tr>
<td>n-Butane</td>
<td>1 - 2</td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Physical Properties

**Vapor Pressure**

108 psi

**Initial Boiling Point**

-162°C (-259°F)

**Flash Point**

-187°C (-306°F)

**Explosive Limits**

4 - 17 vol %
# Product Identification Exercise

Can you guess the product?

## Physical Properties

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Product</td>
<td>100</td>
</tr>
<tr>
<td>n-hexane</td>
<td>&lt;= 6.5</td>
</tr>
<tr>
<td>n-Heptane</td>
<td>&lt;= 5.4</td>
</tr>
<tr>
<td>Isohexane</td>
<td>&lt;= 4.6</td>
</tr>
<tr>
<td>Octane</td>
<td>&lt;= 4</td>
</tr>
<tr>
<td>Nonane</td>
<td>&lt;= 2.7</td>
</tr>
<tr>
<td>methylcyclohexane</td>
<td>&lt;= 2.6</td>
</tr>
<tr>
<td>3-methylhexane</td>
<td>&lt;= 2.2</td>
</tr>
<tr>
<td>2-methylhexane</td>
<td>&lt;= 2</td>
</tr>
<tr>
<td>Decane</td>
<td>&lt;= 1.8</td>
</tr>
<tr>
<td>2-methylheptane</td>
<td>&lt;= 1.7</td>
</tr>
<tr>
<td>3-methylheptane</td>
<td>&lt;= 1.6</td>
</tr>
<tr>
<td>Undecane</td>
<td>&lt;= 1.3</td>
</tr>
<tr>
<td>toluene</td>
<td>&lt;= 0.5</td>
</tr>
<tr>
<td>Benzene</td>
<td>&lt;= 0.1</td>
</tr>
</tbody>
</table>

### Vapor Pressure
434 psi @ 77°F

### Initial Boiling Point
21°C (69°F)

### Flash Point
< -15°C (<4°F)

### Explosive Limits
2.1 - 9.9 vol %
Label Requirements for Shipped Containers

The following must be included on a label for each hazard category of the product:

► Product identifier
► Signal word(s)
► Hazard statement(s)
► Pictogram(s)
► Precautionary statement(s)
► Supplier name, address, phone
What NOT To Do: DOT, EPA, CPSC

► **DOT** is the most harmonized
  • But marine pollutant may differ from GHS

► **EPA** considering FIFRA, not RCRA or TSCA

► **CPSC** timetable = ?
  • 15 CFR 1500.40 to 42 methods provide useful data
Do’s and Do not’s: MSDS to SDS

► Don’t only drop “Material” from title and…

► Don’t only switch Sections 2 and 3 around

► Don’t copy over legacy warnings

► Do perform a hazard classification

► Do add HNOC’s

► Do state X% of mixture is of unknown toxicity
Keys to Success:
Use Industry Association Resources

► American Petroleum Institute/IPIECA
► Portland Cement Association
► Check with your industry association
Keys to Success: Author Credentials

► AIHA/SCHC SDS/Label Authoring Registry

► Use someone with experience….
Keys to Success: Peer Review

► Don’t assume that computerized hazard classifications are correct.

► Be sure that you understand and agree with the hazard classifications.

► Don’t assume that going by the Purple Book means you’re done. Be aware of country specific differences.
Summary – Know and Adhere to Deadlines!

► Chemical manufacturers or importers shall “obtain or develop” a SDS.

► MSDS must become SDS by 6/1/2015.

► Distributors have an extra 6 months to clear out old labels by 12/1/2015.
John.baker@us.bureauveritas.com
281.310.3119

bruce.carlile@inspectorate.com
713.944.2000

us.bureauveritas.com/hse